ADEQ
OPERATING
AIR PERMIT

Pursuant to the Regulations of the Arkansas Operating Air Permit Program, Regulation #26:

Permit #: 1113-AOP-R0

IS ISSUED TO:

U.S. Army, Pine Bluff Arsenal
State Hwy 365 South
White Hall, AR 71602
Jefferson County
AFIN: 35-00116

THIS PERMIT AUTHORIZES THE ABOVE REFERENCED PERMITTEE TO INSTALL, OPERATE, AND MAINTAIN THE EQUIPMENT AND EMISSION UNITS DESCRIBED IN THE PERMIT APPLICATION AND ON THE FOLLOWING PAGES. THIS PERMIT IS VALID BETWEEN:

and

AND IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

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Anthony G. Davis
Interim Chief, Air Division

Date

SECTION I: FACILITY INFORMATION

PERMITTEE: U.S. Army, Pine Bluff Arsenal
AFIN: 35-00116
PERMIT NUMBER: 1113-AOP-R0

FACILITY ADDRESS: State Hwy 365 South
White Hall, AR 71602

COUNTY: Jefferson

CONTACT POSITION: Elaine Wachowiak
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REVIEWING ENGINEER: Lyndon Poole

UTM North-South (Y): 3642.0
UTM East-West (X): 351.0

SECTION II: INTRODUCTION

Summary of Permit Activity

This permit (1113-AOP-R0) is being issued in order to satisfy the requirements of Title V of the Clean Air Act. This permit also incorporates the requirements of 40 CFR Part 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*, promulgated on September 30, 1999. In addition, **this permit is being issued in accordance with the provisions of 40 CFR** Part **52.21, Prevention of Significant Deterioration (PSD). This permit also consolidates all active air permits for Pine Bluff Arsenal and the Pine Bluff Chemical Agent Disposal Facility (PBCDF) into one permit document.**

The following is a summary of changes at the facility addressed by this permit modification:

- **the addition of a third Glatt mixer in the Glatt Process (Ammunition Operations).**
- **the addition of a dry ingredient sifter in the Glatt Process (Ammunition Operations).**
- a new Ton Container Decontamination Facility.
- a new Munitions Assessment System (PBMAS).
- a new Load and Pack Line for the Light Vehicle Obscuration Smoke System (LVOSS M90 LAP Line).
- a new M295 Decontamination Kit process.
- a new binary destruction facility (BDF).
- removal of the Dunnage Incinerator from the PBCDF design.
- replacement of an Acid Wash System in each PBCDF PAS filter system (PFS) with a Water Wash System.
- replacement of chillers, separators, and gas-to-gas reheaters in each PBCDF pollution abatement system's (PAS) filter system (PFS) with smaller reheaters to control the relative humidity of the flue gas.
- the addition of a purge air vent for the Charge Airlock to vent vapors at the PBCDF Metal Parts Furnace (MPF).
- the replacement of a valve between the cyclone and the afterburner at the PBCDF Deactivation Furnace System (DFS).
- an increase in the size of the bypass air duct to the PBCDF DFS Afterburner on the fuel gas supply line of the PBCDF Liquid Incinerator Primary Combustion Chamber.
- a redesign of the PBCDF Brine Reduction Area (BRA) in order to reduce brine capacity, due to improvements in the pollution control equipment.
- an increase in horsepower for the PBCDF process steam boilers.
- the addition of a small skid-mounted hot water heater at the PBCDF Laboratory Building.
- the quantification of three emergency generators in the PBCDF section of the permit.

- the addition of a Residue Handling Area for solid waste packaging at the PBCDF.
- authorization to process special equipment testing hardware (SETH, containing ethylene glycol and water) at the PBCDF.
- a revision in fugitive road dust estimates due to paving of traffic routes to the PBCDF.
- recalculation of emission rates for the PBCDF, based upon test data and additional information from other demilitarization sites, upon new mass and energy balances reflecting the latest operating data and conditions, and upon an assumption of continuous annual operation.

The following processes have been removed from service:

- Impregnated Clothing Plant.
- DC (Methyl Phosphonic Dichloride) Production.
- DF (Methyl Phosphonic Difluoride) Production.
- Bigeye Fill/Close Process.
- Pit Incinerator.
- PBCDF Dunnage Incinerator (construction cancelled for this unit).

Process Description

Pine Bluff Arsenal has a unique and varied mission as part of the U.S. Army Materiel Command (AMC). PBA is the Army's only chemical arsenal and the only installation with both manufacturing and depot functions. This diverse and complex mission requires PBA to operate facilities and perform support operations that emit air pollutants. These air pollution sources are the subject of this Title V air permit.

PBA' s mission operations can be grouped into the following six categories:

(1) Ammunition Operations
(2) Chemical and Biological Defense Operations
(3) Product and Process Development
(4) Demilitarization, Waste Treatment, and Resource Recovery
(5) Base Operations
(6) Chemical Stockpile Disposal

Ammunition operations consist of some combination of blending of pyrotechnic mixes, filling of these mixes into a munition item, assembling the munition components, open air quality testing, and packaging for shipment. PBA's ammunition operations include the manufacture of screening and signaling smokes (colored smoke, white phosphorus, and red phosphorus mixes), riot control agent (CS tear gas), incendiary mixtures (thermate), and the various mixes used to initiate and control the burning rate of the munitions.

Chemical and biological defense operations consist of protective mask maintenance, repair, and performance testing, fabrication and performance testing of various configurations of charcoal filters, and the production of chemical agent skin decontamination kits.

Product and process development is conducted in the Production Engineering Laboratory (PEL) Complex. It includes the development of new and/or improved pyrotechnic mixes, mixing processes, and munition configurations and also includes the identification and testing of processes for recovery of materials from munition components. Also included is the operational testing of chemical treatment processes.

Demilitarization, waste treatment, and resource recovery operations are performed at various locations and involve off-specification mixes, outdated munition components, and hazardous and non-hazardous solid wastes. Demilitarization and waste treatment are essentially the same operations except that demil refers to items used for military purposes that are considered wastes. The locations/units where demilitarization, waste treatment, and resource recovery activities occur are the Central Incinerator Complex (CIC), the Open Burning/Open Detonation Units, and the Waste Volume Reduction Unit.

Base operations consist of the functions which support all of the activities required to operate a military installation. This includes the operation of three boiler plants used to supply steam to the ammunition production area, operation of an industrial wastewater treatment plant, miscellaneous painting activities, and wood working operations performed at several locations.

The final category is **Chemical Stockpile Disposal**. The PBCDF is being constructed and operated to destroy PBA's stockpile of chemical agent materials. A Prevention of Significant Deterioration (PSD) air permit application was submitted to the Arkansas Department of Pollution Control and Ecology in June 1995 to initially address planned construction and operation of the PBCDF. A PSD permit was issued for the PBCDF on January 15, 1999. A new PSD application for the PBCDF was submitted on August 23, 2002 in order to update planned equipment changes and to incorporate higher emission estimates for particulate matter [including less than 10 microns (PM_{10})], carbon monoxide (CO), nitrogen oxides (NO_X), sulfur dioxide (SO_2), and volatile organic compounds (VOC). The increases for PM_{10}, NO_X, and SO_2 required further review under the PSD regulations. This Title V permit incorporates the new PSD review for the PBCDF, as well as its applicability under 40 Code of Federal Regulations (CFR) Part 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*. This permit also incorporates the PBCDF into one comprehensive air permit document with all other air emitting activities at PBA.

Regulations

Operations at this facility are subject to regulation under the following:

- *Arkansas Air Pollution Control Code* (Regulation 18)
- *Regulations of the Arkansas Plan of Implementation for Air Pollution Control* (Regulation 19)
- *Regulations of the Arkansas Operating Air Permit Program* (Regulation 26)
- 40 CFR Part 60 Subpart Dc - *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*
- 40 CFR Part 60 Subpart DDDD - *Emission Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999*
- 40 CFR Part 60 Subpart Kb - ***Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984***
- 40 CFR Part 63 Subpart EEE - *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*
- 40 CFR Part 52.21, *Prevention of Significant Deterioration of Air Quality* (PSD).

PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

With this permit modification, the permittee is proposing changes to the PBCDF which are applicable to the provisions of 40 CFR Part 52.21 (Prevention of Significant Deterioration).

On January 15, 1999, the Department issued Air Permit 1789-A for the PBCDF. Due to proposed design changes occurring during construction and lessons learned from other chemical demilitarization facilities, the permittee submitted a PSD application on August 23, 2002, which proposed changes in emission limits and conditions in Permit 1789-A.

The total potential emissions from the PBCDF PSD-applicable projects are listed in the following table:

Pollutant	NO_X (ton/yr)	PM_{10} (ton/yr)	SO_2 (ton/yr)	Beryllium (ton/yr)
Liquid Incinerator (LIC) SN-PBCDF-01	357.4	10.2	75.2	0.0009151
Deactivation Furnace System (DFS) SN-PBCDF-01				
Metal Parts Furnace (MPF) SN-PBCDF-01				
Incinerator Pollution Filter System (PFS) Reheaters SN-PBCDF-01				
Industrial Boilers SN-PBCDF-03, 04, 05, 06, 16	21.3	2.9	0.6	0.00000421
Brine Reduction Area and Duct Preheater SN-PBCDF-07		5.8		0.00042
Emergency Generators	21.6	0.7	0.5	-

Pollutant	NO_X (ton/yr)	PM_{10} (ton/yr)	SO_2 (ton/yr)	Beryllium (ton/yr)
SN-PBCDF-09, 10, 12				
Tailpipe Emissions	1.3	-	-	-
Fugitive Emissions	-	0.5	-	-
Total Potential Emissions (ton/yr)	401.6	20.1	76.3	0.0013
PSD Significant Emission Rate (ton/yr)	40	15	40	0.0004
PSD Applicability (Yes/No)	Yes	Yes	Yes	Yes

As indicated in the table above, the cumulative emissions increase of NO_X, PM_{10}, SO_2, and Beryllium will exceed the PSD significant emission rate for this project.

Best Available Control Technology (BACT) Analysis

For a PSD permit, the applicant must perform a BACT analysis for each new unit. For a PSD permit the applicant must also perform a BACT analysis for each affected emission unit that is undergoing a physical change or change in the method of operation. The BACT evaluation must address each pollutant subject to PSD review emitted by the unit. For this permitting action, NO_X, PM_{10}, SO_2, and Beryllium emission increases have been determined to be significant and are therefore subject to PSD review. BACT is determined on a case-by-case basis for each source taking into account technical feasibility, energy and environmental impacts, and cost.

BACT: OXIDES OF NITROGEN (NO_X)

NO_X from Incinerators (SN-PBCDF-01)

There are three incineration processes at PBCDF that have the potential to generate significant quantities of NO_X: the LIC, the DFS, and the MPF (all are equipped with PFS reheaters). The maximum “worst-case” operating scenarios for NO_X generation at PBCDF is the campaign consisting of processing M55 rockets containing VX chemical agent while the MPF is processing Demilitarization Protective Ensemble (DPE) suit dunnage. Under this operating scenario, a maximum total NO_X generation rate of 357.4 tons per year may be possible from the DFS, LIC, MPF, and associated control equipment.

The expected processing duration of this incineration project is five years. There are other campaigns that will be conducted during this period, none of which will generate as much NO_X as the VX rocket campaign. In fact, for a significant portion of the five-year period, the materials being processed will contain no nitrogen and will result in lower NO_X evolution than the most conservative condition. Thus, any post-combustion NO_X control installed into the process would not result in significant NO_X reduction for a portion of the operating period.

The permittee's application presented several technical arguments against the use of post-combustion NO_X control. Because these processes have not been applied to hazardous waste incineration, design variables and operation parameters would need to be based upon other types of incineration systems that have notable differences from the proposed incinerators. Consequently, reliability and NO_X reduction performance for waste incineration are large unknowns, especially over the long term. For both selective catalytic reduction and selective noncatalytic reduction, the process control would be extremely difficult, if possible at all. This is due mainly to the highly variable combustion rate and thus NO_X evolution from the materials to be processed, particularly from the energetic compounds (for example, propellants). Such control inefficiency could lead to a situation of large releases in the off-gas.

Low-NO_x burners and flue gas recirculation are sometimes considered together to be a subset of combustion controls and sometimes considered to be separate options. For the purpose of this BACT analysis, low-NO_x burners and flue gas recirculation will be dealt with as separate control options. The use of combustion controls for NO_x reduction has limitations. The temperatures, long residence times, turbulence, and excess air required for maximum destruction of the highly hazardous waste precludes the use of many techniques used for combustion control. And since the major portion of NO_X is derived from the incineration of chemical agent VX and energetic compounds, combustion control would have at best a minor impact on reducing NO_X emissions from these sources.

As part of the BACT review, an online search of the Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse indicated that neither selective catalytic reduction nor selective noncatalytic reduction has been applied to hazardous waste incineration systems. In those cases where NO_X controls were used, the method of control chosen was combustion control. However, the greatest support for the proposed control system comes from the RACT/BACT/LAER Clearinghouse data search. The Alabama Department of Environmental Management (ADEM) has issued a permit to operate the Anniston Chemical Agent Disposal Facility (ANCDF) at the army depot in Anniston, Alabama. The facility has the same design as PBCDF. The primary NO_X control at the Anniston site is also combustion control.

Based upon these reviews, the accepted BACT for NO_X control on hazardous waste incinerators is combustion control. This will be accomplished by using high operating temperatures, high excess oxygen concentrations, and low residual carbon monoxide concentrations. These are the same techniques recognized by the previous air permit (1789-A). The BACT limit for NO_X at the hazardous waste incinerators (SN-PBCDF-01) is 81.6 lb/hr.

NO_X from Industrial Boilers

All of the NO_X control techniques discussed are theoretically applicable to the five boilers (SN-PBCDF-03, SN-PBCDF-04, SN-PBCDF-05, SN-PBCDF-06, and SN-PBCDF-16). However, there are practical limitations imposed by the size and standard designs that are available for package boilers. For instance, the largest boilers (SN-PBCDF-03 and SN-PBCDF-04), at 850 bhp and 28.4 MMBtu/hr each, have a steam generation rate of less than 17,250 pounds per hour of 135 psig saturated steam. These are small boilers by an industrial scale. Consequently, there is no installed facility experience in applying either selective catalytic reduction or selective noncatalytic reduction to boilers at this scale. For selective catalytic reduction, this small scale will impose an economic burden. For selective noncatalytic reduction, the small scale imposes technical limits and economic limitations.

The small package boilers proposed are fire-tube boilers. This is a standard design to produce cost-competitive package boilers that can be shipped to a site on skids with minimal site construction. The short residence time and wide variability of gas temperature profile inherent in these units would make it very difficult to control the time-temperature-ammonia concentration profile within the operating envelope required for effective selective noncatalytic reduction NO_X control.

The development of the control scheme for a fire-tube package boiler would require a considerable research and development effort on the first application of the technology. Actual NO_X control efficiency could only be estimated, not guaranteed, due to the absence of existing facilities using selective noncatalytic reduction on fire-tube boilers for comparison. A technology requiring experimental investigation to determine its effectiveness and applicability cannot be considered to be an available technology under the BACT guidelines. Therefore, selective noncatalytic reduction is dropped from further consideration as a potential BACT for the industrial boilers in review.

Another effect of the short residence time and small size of the package boilers is that they are inherently low-NO_X producers. For the 850 bhp (28.4 MMBtu/hr) and 350 bhp (11.7 MMBtu/hr), the USEPA AP-42 uncontrolled emission rate is 0.10 lb NO_X/MMBtu heat input. A comparison of the uncontrolled emission rates shows that NO_X emissions for these small package boilers is three to five times less than uncontrolled NO_X emission rates for large industrial and utility boilers.

Package boiler vendors state that low-NO_X burners can be used with or without flue gas recirculation in the package boiler industry as NO_X control techniques. Flue gas recirculation is applied to package boilers when the flue gas is externally recirculated to the burner. Flame impingement on boiler walls/tubes has caused reliability problems and questionable long-term performance with flue gas recirculation.

Low-NO_X burners are also readily applied to package boilers. Other NO_X control techniques are not easily applied to package boilers. Package boilers have relatively small fireboxes, so there is not sufficient room available for other combustion controls, such as staged combustion or over-fired air. There is no database of existing installed facilities for these other combustion control technologies within the package boiler industry. Consequently, these other combustion control technologies are not considered to be available NO_X control technologies under this BACT analysis.

The available BACT control technologies for the package industrial boilers are selective catalytic reduction, low-NO_X burners, and flue gas recirculation. Selective catalytic reduction, low-NO_X burners, and low-NO_X burners with flue gas recirculation are all capable of producing a lower emission rate than the uncontrolled emission rate stated in USEPA AP-42 for boilers rated at 850 and 350 bhp (0.10 lb NO_X per MMBtu).

The use of selective catalytic reduction is not desirable since it would impose an additional risk of accidental release of ammonia on the community surrounding the PBCDF. Selective catalytic reduction is also a capital-intensive process. Capital facilities include an anhydrous ammonia storage tank, ammonia vaporizer and controls, a flue gas cooler, a catalytic bed, temperature monitors and NO_X and/or nitrogen gas stack monitors. Small sized selective catalytic reduction systems generally range from $250,000 (installation not included) to $750,000 and up (installation included). Due to the size of the boilers, the uncontrolled maximum NO_X emissions are less than 30 ton/yr for all boilers. In addition, the proposed PBCDF operation is scheduled for less than five years. When the capital costs alone are depreciated over a five-year period and a 90 percent NO_X control is assumed, the cost for NO_X reduction is approximately $5,555 per ton NO_X removed. Based upon the small size of the boilers, the inherently low uncontrolled NO_X emissions, and the short-life cycle of the project (less than five years), selective catalytic reduction is not considered to be BACT for the PBCDF boilers.

The use of low-NO_X burners and/or flue gas recirculation to minimize NO_X formation are a readily available design for new gas-fired package boilers. There are no significant environmental impacts associated with the use of this technology. Purchased capital costs for the low-NO_X burners are estimated to be approximately $7,500 to $25,000 for each boiler. Flue gas recirculation, which is used as an add-on to low-NO_X boilers in new applications, adds approximately $6,000 to $9,000 to the capital cost for each boiler. Since these are package boilers, there are no additional capital costs for the installation of skid-mounted boilers. Operating and maintenance costs are minimal for low-NO_X burners. Flue gas-recirculation may present problems. No additional labor increments or fuel costs are expected for either of these NO_X control technologies.

The cost-effectiveness for low-NO_X burners and low-NO_X burners with flue gas recirculation are both within accepted criteria for BACT for small package boilers. Since flue gas recirculation presents reliability and long term performance problems and it results in a very small incremental decrease in NO_X emissions, it is not proposed as BACT for the PBCDF boilers.

The permittee's proposed BACT for the package boilers is low-NO_X burners without flue gas recirculation. Selective catalytic reduction is cost-prohibitive for the package boilers, primarily because of the relatively low uncontrolled NO_X emission rates produced by these small boilers. In addition, selective catalytic reduction will impose an additional risk of accidental release of toxic materials upon the surrounding community. The BACT limits for NO_X at the boilers (SN-PBCDF-03, 04, 05, 06, 16) are as follows:

Source	Description	BACT Limit for NO_X (lb/hr)
SN-PBCDF-03	Process Steam Boiler I	1.5
SN-PBCDF-04	Process Steam Boiler II	1.5
SN-PBCDF-05	Hot Water Boiler I	0.6
SN-PBCDF-06	Hot Water Boiler II	0.6
SN-PBCDF-16	Laboratory Boiler	0.3

NO$_X$ from the Brine Reduction Area Pollution Abatement System

Gas from the knockout drum of the BRA is reheated by a direct-fire burner (10 MMBtu/hr) to prevent condensation of salt-laden water in the PAS. In addition, a natural gas-fired duct pre-heater raises the temperature of outside air prior to entering the dryers.

The BRA burner and BRA duct preheater are relatively small combustion sources much like the package boilers. Consequently, most of the same technical and economic concerns apply to both the package boilers and the BRA burner and duct pre-heater.

The BRA duct preheater and BRA PAS burner are relatively unusual NO$_X$ emission sources, so there is no installed database of existing facilities for reference to the performance of selective noncatalytic reduction on this source. The BRA duct preheater and BRA PAS burner also have the maximum potential to emit only 2.8 ton/yr of NO$_X$ without any controls, so the scale is too small to economically justify selective catalytic reduction. Combustion control techniques using over-fire air, stage combustion, or flue gas recirculation have not been demonstrated on sources such as the BRA PAS burner. The recirculation of flue gas containing particulates from the drying operations is a particular concern in terms of the burner performance and erosion that might reduce the burner life. These considerations delete these technologies from considerations as BACT for control of NO$_X$ emissions from the BRA duct preheater and PAS burner since these technologies are unproven and not readily transferable to this source.

The only technology that appears to be applicable to this source is low-NO$_X$ burners. Low-NO$_X$ burners are reported to achieve 25 to 50 percent NO$_X$ reduction.

A low-NO$_X$ burner will not have any negative environmental effects that would preclude the use of low-NO$_X$ burners as BACT.

The capital costs for low-NO$_X$ burners are estimated to be \$7,500 to \$25,000 per unit. With a \$1,000 allowance for annual maintenance and a five-year site operating lifetime, the annualized cost for low-NO$_X$ burners is estimated to be \$2,500 to \$6,000 per year. With a conservatively high assumed control efficiency of 80 percent, the low-NO$_X$ burners are projected to remove 3.5 ton/yr NO$_X$. Cost-effectiveness for the low-NO$_X$ burners is estimated to be \$714 to \$1,700 per ton NO$_X$ removed.

Low-NO$_X$ burners are the only NO$_X$ control technology that is considered to be available under BACT analysis guidance. The cost effectiveness of low-NO$_X$ burners is \$714 to \$1,700 per ton NO$_X$ removed. Consequently, BACT for the BRA duct preheater and BRA PAS burner is proposed to be the use of low-NO$_X$ burner technology. The BACT limit for NO$_X$ at the BRA preheater and PAS burner (SN-PBCDF-07) is 0.7 lb/hr.

NO_X from Emergency Generators

The emergency generators (SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12) supply power to the facility during power outages, and are classified as NO_X emission units within the PBCDF and require a BACT analysis. The generators are self-contained units from a vendor that are designed for automatic operation in case of a power failure at the facility.

There are several pollution prevention techniques that can be used to reduce NO_X formation. The adjustment of the air to fuel ratio to reduce oxygen within the combustion chamber and retardation of spark ignition are proven methods to reduce NO_X formation by reducing peak firing temperatures. In a compression (diesel) engine, the delay of fuel injection will reduce NO_X depending on the engine, valving, and fuel. However, excessive timing retardation can cause combustion instability or misfire. Steam/water injection reduces NO_X formation by cooling the combustion zone. The techniques described above are simple adjustments that can be made by the manufacturer to produce variable results in NO_X reduction, depending on the type of engine.

Modification of the combustion and ignition chambers to reduce combustion temperature and reduce the oxygen level is also a proven control technology to reduce NO_X formation. The pre-stratified charge engine is equipped with a pre-combustion chamber that has a rich fuel to air ratio. Upon ignition, the pre-combustion chamber fires a jet of flame into the main combustion chamber which contains a lean fuel to air ratio. The pre-combustion activity is required for engine dependability. Alternatively, a plasma ignition system (an alternating current) can be utilized with a lean fuel mixture to lower formation of NO_X. Catalytic combustion uses a catalyst to react fuel with air at a lower temperature and NO_X formation is greatly reduced. However, this technology has a high capital and maintenance cost. Additionally, these technologies require major modification in engine design.

Add-on emission controls for internal combustion also include selective catalytic reduction or selective noncatalytic reduction. While similar to the boiler controls in theory, the application is quite different. Ammonia is not used to reduce NO_X formation by as much as 90%. Selective noncatalytic reduction is a treatment method similar to a three-way catalytic converter where unburned hydrocarbons are used as the reducing agent to reduce NO_X formation. Due to the rich fuel mixture and back pressure, the fuel consumption is increased. Non-thermal plasma reactors can be used to reduce NO_X emissions. This approach uses a non-thermal plasma reactor to ionize a reacting agent that is injected into a flue gas and then reacts with NO_X.
The primary methods of NO_X control in diesel internal combustion engines used for power generation are limitation of the operating hours and engine design modifications. These modifications include timing retardation, fuel injection, turbochargers, and aftercoolers.

All of the NO_X control techniques discussed are theoretically applicable to the generators. However, there are practical limitations imposed by the size and standard designs that are available for diesel engines coupled to a power generator. The generators are package units of standard design that are for emergency use only. PBCDF has purchased generators with a modern engine design that utilizes current emission control technology.

Steam/water injection is a proven NO_X reduction technology that has been very effective with gas turbines. However, in the case of diesel engines, it results in increased CO and unburned hydrocarbons emissions. The increased CO and hydrocarbons require a second stage combustion device which limits the effectiveness of the steam/water injection technique. While catalytic combustion is one of the most effective means to reduce NO_X emissions in internal combustion engines, it is also one of the most expensive. This technology has a relatively high capital and maintenance cost, due to the substantial initial investment and replacement cost of the catalyst. Considering the limited operation of the generators, catalytic combustion is not cost effective. Likewise, the use of pre-combustion technology to reduce NO_X is not cost effective since it requires a non-standard diesel engine that is not available as a package generator.

The use of non-selective catalytic reduction or non-thermal plasma reactors was not documented in the BACT database and would impose an unreasonable economic burden on the relatively small diesel engines used for emergency power generation. Review of the RACT/BACT/LAER Clearinghouse database indicates that selective catalytic reduction is also a viable NO_X control method for internal combustion diesel engines. However, selective catalytic reduction was used on large diesel engines and not on the relatively small diesel engines used for power generation. The use of selective catalytic reduction units on small diesel engines is not cost effective due to the initial capital cost and the continued maintenance cost of catalyst replacement.

BACT for NO_X for the emergency generators is proposed to be limitation of operating hours to less than 1,200 (combined) hours per year for the 2,500 kW generators (SN-09 and SN-10) and 500 hours per year for the 250 kW generator (SN-PBCDF-12). This also assumes that pollution preventive measures including minor engine design modification will be incorporated in the package generators to further reduce NO_X emissions below USEPA AP-42 emission estimates using uncontrolled factors. The BACT limits for NO_X at the emergency generators (SN-PBCDF-09, 10, and 12) are as follows:

Source	Description	BACT Limit for NO_X (lb/hr)
SN-PBCDF-09	Emergency Electrical Generator I (2,500 kW)	33.9
SN-PBCDF-10	Emergency Electrical Generator II (2,500 kW)	33.9
SN-PBCDF-12	Emergency Electrical Generator III (250 kW)	4.7

BACT: Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2), along with small amounts of sulfur trioxide (SO_3), is formed as a result of high temperature incineration of compounds containing sulfur. This is released to the atmosphere as part of the process off-gas. In the case of PBCDF, the incinerators (DFS, LIC, and MPF) and the industrial boilers (process steam and water heaters) combine to produce SO_2 emission quantities that are deemed to be significant according to PSD regulations. As such, a BACT analysis for SO_2 control is required.

During incineration, SO_2 is formed from 2 sources: the first is from sulfur which is contained in the feed and released when broken down by incineration; the second source is sulfur in the fuel used to maintain the temperature of the incinerators. On contact with oxygen at high temperature, SO_2 is produced through chemical reaction. The major source is the incinerators, with the boilers being minor sources (due to the low sulfur content of the natural gas fuel).

In most industrial applications, SO_2 from combustion and incineration is controlled by one or more of the following processes:

- wet scrubbers

    -spray towers
    -packed-bed scrubber towers
    -ionizing wet scrubbers
    -venturi scrubbers
    -dual alkali scrubbers

- dry scrubbers

- low sulfur fuels.

Apart from the fuel option, the scrubber options primarily depend upon SO_2 removal by dissolution and chemical reaction or straight chemical reaction producing a dry flue gas entrained particulate emission.

The U. S. Army has made a policy decision to use natural gas as the main temperature maintaining fuel for all combustion sources, except the emergency power generators. The emergency power generators are diesel-powered and will be operating using a low sulfur diesel fuel (< or = 500 ppm sulfur). Additionally, these generators are only emergency standby generators and their potential emissions are fairly low. The impact of this decision is that fuel-derived SO_2 is minimized for all combustion emission sources due to the minimal sulfur content of natural gas. The USEPA has recommended low sulfur fuels (of which natural gas is one option) as an effective means of controlling fuel-derived SO_2. Therefore, for purposes of BACT since the low sulfur fuel option was already included, it will not be considered further.

The main source of SO_2 emissions is the incineration of sulfur containing chemical agent in the incinerators. Of the four chemical agents involved in the various campaigns (HD, HT, VX, and GB), only GB does not contain sulfur. The other chemical agents contain up to 24 percent sulfur by weight based on pure chemical agent. This leads to significant levels of SO_2 produced during combustion.

The control technology evaluation will concentrate on the LIC and MPF, since these incinerators produce the bulk of the SO_2 emissions. The DFS is equipped with a similar PAS.

Spray Towers

Prior to flue gas contacting any downstream pollution abatement equipment, it is desirable to have the gas temperature reduced from its expected level of 2,000 ^{o}F. This eliminates the need to construct the pollution abatement equipment from high temperature-resistant alloys, but more importantly, the volumetric flowrate is significantly reduced. Spray towers are of simple design consisting generally of a cylindrical vertical tower. Water or caustic brine liquid is pumped through nozzles at the top of the tower and falls to the bottom by gravity. Meanwhile, the flue gas enters the tower at the bottom and flows countercurrent to the liquid flow. As the liquid spray falls through the rising flue gas, impaction removes particulate matter. At the same time, gas dissolution and chemical reaction occurs to remove gaseous acid pollutants. As these processes occur, water is evaporated into the gas stream, thus reducing its temperature and also its volume. Excess brine is pumped from the bottom of the tower, recirculated and used as make-up liquid for the brine spray. Particulate matter produced as a result of quenching is either captured in the liquid or entrained in the flue gas stream and removed further downstream. Acid gas absorption by the caustic brine is very efficient due to the relatively large contact time and fine droplet size.

Advantages

The simultaneous particulate removal and gas absorption makes for a highly efficient pollutant removal system, which is suitable for high temperature, high moisture, and high dust loading applications. A spray tower's simple design makes the system very rugged with few moving parts. Scaling is not a problem for these scrubbers.

Disadvantages

A major disadvantage is that the dust is collected wet, which adds the need to treat the residue further before disposal. Pumping brine through nozzles in a hot atmosphere sometimes leads to nozzle plugging. Due to the wet nature of the system, a mist eliminator is needed downstream. Its absorption efficiency is somewhat less than a packed tower. Finally, the whole structure needs to be large for greater efficiency.

Packed-Bed Scrubber Towers

Packed-bed scrubber towers are large vertical vessels filled with a particular packing material of large surface area. This material comes in many designs and materials of construction. The most common designs include rings, spiral rings, and saddles. The materials of construction include ceramics and acid- resistant metals. The purpose of the packing is to increase the surface mass transfer area for gas absorption. The flue gas enters the packed tower at the bottom and makes its way up through the packing toward the top of the tower. As this happens, contact is made with a caustic brine, which is pumped into the top of the tower through nozzles and flows to the tower bottom through the packing. As the caustic brine contacts the acidic flue gases, a chemical reaction occurs to produce a neutral salt, thus removing the acidic components. The salt produced generally dissolves in the brine. The controlling parameters for efficient gas absorption include pressure drop, liquid-to-gas ratio contact time, and gas velocity. By correctly combining these parameters a very efficient acid gas removal can be achieved.

Advantages

Packed-bed scrubber towers have a very high gaseous and aerosol removal efficiency with low to moderate pressure drop. The control and operating parameters are relatively simple and well understood and there is a ready availability of corrosion-resistant packing material.

Disadvantages

Typically, these scrubbers are not suitable for high particulate and high-temperature applications and have a low fine particulate efficiency removal rate. Again, a mist eliminator is required downstream and there is considerable potential for scale buildup and fouling.

Ionizing Wet Scrubbers

While ionizing wet scrubbers typically are used for the control of particulate emissions, they also have a good potential for acid gas absorption from combustion flue gases. This is achieved by using either a water or caustic spray to initially contact the flue gas prior to it entering the electrostatic charging region of the scrubber. If a caustic scrubbing medium is used for acid gas removal, then the internal-surfaces of the scrubber are usually made of glass fiber-reinforced plastic, which adds resistance to corrosion of the assembly. When the flue gas passes through the spray region, it enters the charged region where the charged particles are removed. Since the electrode surfaces are continually washed with the caustic liquid, more acid gas removal is achieved here. While ionizing wet scrubbers may be capable of acid gas removal, including SO_2 these systems have not been installed on hazardous waste incinerators and performance data are not available.

Advantages

The dual ability to remove dust and absorb gaseous pollutants with low energy consumption makes this a very attractive pollutant removal technology. Its design prevents fouling and scale buildup.

Disadvantages

Since ionizing wet scrubbers have not been used in hazardous waste incinerators, the reliability and performance of the systems have not been demonstrated. In addition, the particulate is collected wet so that further treatment of the recovered slurry is required before disposal. Flowrate changes affect the removal efficiency.

Venturi Scrubbers

Of the many types of scrubbers available for pollutant removal from flue gas streams, by far the most popular design has been the venturi scrubber. This is due mainly to the simplicity of design and the high efficiency of removal of both particulate matter and acid gases. The theory of operation of the venturi is based on impaction and dissolution in the scrubbing medium. If the scrubbing medium is caustic, then a third mechanism is introduced (that is, chemical neutralization of acidic components in the flue gas). The flue gas is introduced at the top of the venturi assembly and then flows to the constricted area (or throat) where it impacts the scrubber water/caustic, which is sprayed perpendicular to the direction of flow of the flue gas. On impaction the liquid is atomized into fine filaments and droplets, which allow a large surface area for mass transfer. It is this gas/liquid contact area that controls removal efficiency of acidic gaseous components. The controlling parameter for level of efficiency is the pressure drop across the throat. In most applications, this pressure drop ranges from 30 to 50 inches of water. For optimum operations, the pressure drop should be as low as possible, while maintaining the desired pollutant removal efficiency, since higher-than-necessary pressures result in wasted energy. Other important factors for good efficiency are gas contact time and liquid-to-gas ratio. Both of these parameters are well-understood and controlled in most applications.

Advantages

The system design produces very high particulate removal and efficient gas absorption in a high-moisture atmosphere. Again the design is simple, well-understood, and fouling is not a problem. Also, venturi scrubbers have a proven track record within tbe hazardous waste incineration industry.

Disadvantages

Due to the high flue gas velocities created, corrosion/erosion is a potential problem. Since it is a wet scrubber, a mist eliminator is required downstream. The overall energy requirement is high due to the large pressure drop.

Dual Alkali Scrubber

In the dual alkali process, the main ingredient of the scrubbing solution is a mixture of soluble sodium salts, such as sodium carbonate, sodium bicarbonate, sodium sulfite, and sodium hydroxide. When the liquid contacts and reacts with any SO_2 in the flue gas stream, the products include sodium sulfite, sodium bisulfate, and sodium sulfate. These products are water-soluble and are pumped out of the scrubber after a single pass through (that is, without regeneration). From the scrubber, the liquid is eventually pumped into reaction vessels where lime is added to produce insoluble calcium salts and soluble sodium sulfite, which is returned for reuse in the scrubber. The solid precipitate is disposed of after dewatering. A typical scrubber for the dual alkali process is a venturi or a packed-

bed tower. The associated equipment includes reaction vessels, clarifiers, filters, evaporating ponds, and pumps.

Advantages

The major advantage is a relatively high (greater than 97 percent) SO_2 removal efficiency achieved in a single-pass scrubber. Since all of the reagent salts and products are water-soluble, clogging and fouling is greatly reduced. The regeneration process for the scrubber liquid assures that a minimal makeup is required, thus creating a large economic benefit, which is suitable for high moisture applications.

Disadvantages

**The numerous reaction vessels and structures require a high capital investment and extensive process
operating controls and systems. The system will not be suitable for high particulate loadings and will
also need a mist eliminator downstream.**

Dry Scrubbers

In dry scrubbing, a scrubbing medium is sprayed into the flue gas as either a slurry or a dry powder. The first system is referred to as a wet-dry scrubber and operates in a similar manner to a wet scrubber, except much less water is used. In the second system, called dry-dry scrubbing, a dry powder is sprayed directly into the flue gas. The scrubbing medium in both cases is usually lime or limestone (due to its lower cost), but other material, such as soda ash, can also be used, with an increased cost.

In the wet-dry case, the slurry is sprayed into the flue gas where SO_2 is transferred from the gas to the slurry where it is neutralized by the reagent. Simultaneously, the heat from the flue gas evaporates the water to produce a dry powder of mixed composition, which is entrained in the flue gas. This particulate has to be removed downstream.

For dry-dry scrubbing, a pneumatic injection process is needed to introduce the dry powder reagent to the packed-bed scrubber tower. This usually takes the form of a slinger cup delivery device, which slings the reagent material at right angles to the direction of flow of the flue gas. A very high mixing and contact efficiency occurs using this system with better than 90 percent removal of SO_2 achieved. The dry powder product also has to be removed from-the flue gas further downstream.

Advantages

The requirement for water is greatly reduced for the wet-dry system with none being needed for the dry-dry system. The dry product obviates the need for further treatment prior to disposal. There is a high removal efficiency at reduced capital cost compared to wet scrubbers.

Disadvantages

The high stoichiometric reagent to pollutant ratio requires large amounts of reagent. Due to the dry/semidry nature of the scrubbing reagent, nozzle fouling and wear are potential problems. Due to the fine particulate entrained in the flue gas, a particulate collection device is needed downstream.

LIC, DFS, and MPF BACT Analysis

The previous section discussed the available control technology options, along with a brief summary of the advantages and disadvantages of each system option for the control of SO_2 emissions from the PBCDF incinerators. This section reviews the applicability of each option to the LIC, DFS, and MPF. In addition, the control technologies are ranked by control efficiency and effectiveness. A BACT is then selected for SO_2 emissions from these incinerators.

The technically feasible approach for SO_2 removal at PBCDF are described below.

Spray Towers

For spray towers, technical feasibility depends mainly on the ability to construct the rather large structure that supports the tower. Further consideration needs to be given to the supply of water/caustic, of which large volumes will be needed during operation of the scrubber. This requirement is typically up to 30 gallons of brine liquid per 1,000 cubic feet of flue gas. The supporting tanks for storage of prepared brine adds a further requirement to the technical considerations.

The actual technology has been widely used in many industries and is highly successful in the removal of dissolved acid gases, if a caustic scrubbing medium is used. Since there are no constrictions on either building space or supply of scrubbing liquid in sufficient quantity to supply the scrubber, there is no technical reason why a spray tower cannot be used on the proposed PBCDF.

Packed-Bed Scrubber Towers

The use of packed-bed scrubber towers for the removal of acidic gases has been widely demonstrated in various processes including incineration. The efficiency produced is similar to, but better than, spray tower caustic scrubbing. Due to the lack of mechanical moving parts and its simple design, the scrubber is extremely reliable. The controlling factors for effective operation are well-known and well-understood.

Limiting factors for packed-bed scrubber towers are the physical size of the assembly, the availability of sufficient scrubbing liquid, and corrosion-resistant packing materials. These scrubbers are not suitable for high particulate flue gas loadings, so a particulate remova1 device must be placed before the tower inlet.

Based on the availability of space, scrubbing liquid, corrosion-resistant packing material, and willingness of the U. S. Army to provide particulate removal devices, there is no technical reason why a packed-bed scrubber tower cannot be used in this air application.

Ionizing Wet Scrubbers

In these dual application scrubbers, a caustic spray initially contacts the flue gas prior to it entering the particulate removal region. Its ability to function in a dual capacity makes it an attractive possibility. While there are many good examples of particulate removal by electrostatic forces, there is very little information on the performance of wet ionizing scrubbers for SO_2 removal in hazardous waste incinerators with comparable feed constituents as for the PBCDF. A further technical consideration would be determination of the size of the assembly and its energy requirements. Based on the lack of demonstrated performance for SO_2 removal in a similar incineration facility, this scrubbing system is discounted from further consideration.

Venturi Scrubbers

Venturi scrubbers are primarily a particulate removal device, but when used with a caustic scrubber liquid, they generate an effective acid gas removal efficiency. Once again, there is a vast information base on both particulate and acid gas removal efficiency due to the widespread use and popularity of venturi scrubbers. The range of industries in which these scrubbers are used is large, and due mainly to their simple design, their reliability is without question. While the pressure drops created by venturi scrubbers create a large energy demand, this is offset by its ability to remove pollutants. The controlling factors for operation include the scrubber liquid supply and energy in the form of induction fan requirements.

When used in tandem with other scrubbing mechanisms, venturi scrubbers add a significant level of SO_2 removal to their highly efficient particulate removal. Based on the previous technical considerations, a venturi scrubber is deemed to be a reasonable choice for SO_2 removal when used in tandem with other more efficient SO_2 removal devices.

Dual Alkali Scrubbers

One of the most efficient SO_2/acid removal techniques is the dual alkali process. This process is based on using a system of soluble salts as the scrubbing medium and producing reaction products which are also soluble. Using this closed system and a regeneration step involving lime, acid gases are removed very effectively, due to the rapid rate of reaction of the sodium salts with SO_2 in the flue gas. A major advantage of this system is the minimal need for sodium salt makeup due to it being recovered by the lime treatment. Reported SO_2 removal efficiencies have been greater than 97 percent when used on fossil fuel combustion sources.

The major technical consideration for dual alkali scrubber systems is the large physical plant needed for operation. Many reactor tanks, clarifiers, and evaporator basins are needed, which demand a high capital investment. The process and operating controls are complicated, which may increase the risk of operator error.

There is also a lack of information concerning any application of dual alkali SO_2 removal for a commercial incineration operation. While there is no reason to suggest that this process would not work for PBCDF, this option is discounted from further consideration mainly due to the fact that the extensive regeneration process would require a vast area, large capital investment, and would be-untested prior to operation.

Dry Scrubbers

A major feature of dry scrubbing is the requirement for a large mechanical injection process to deliver dry or semidry reagent to the scrubber delivery device. Since all of the scrubbing devices discussed previously involved wet scrubbing liquid delivery, there has been no need for such a delivery system. Compressed air or a rotary atomizer would be used by this unit of the PAS. The fact that a fine particulate product would be entrained in the flue gas would make a high efficiency particulate removal system necessary. All of the foregoing issues would increase the capital cost of the system. On the positive side, dry scrubbers have had widespread implementation in a variety of applications. The low cost of lime/limestone reagent is a good advantage, but with efficiencies of greater than 97 percent SO_2 removal, wet scrubbers outperform this option.

Control Technology Hierarchy

For PBCDF, all of the technically feasible options discussed previously except for ionizing wet scrubbers and dual alkali scrubbers are suitable as methods of SO_2 removal from the flue gas.

With the lowest level of SO_2 removal, the venturi scrubber is clearly not a "stand-alone" option. At 50 percent SO_2 reduction, it is by far the least effective of the control technology feasible options, but combined with its high particulate removal efficiency, it may be effective in combination with other processes (other removal systems need low particulate loadings to operate efficiently).

The dry scrubber system involves high SO_2 removal at greater than 90 percent, but still needs specialized service equipment which would not necessarily be needed otherwise. The need for particulate removal and the possibility of fouling ranks this option below the wet scrubbing options.

Spray towers are generally used for two distinct purposes: the first is as a quenching device to reduce the temperature of flue gases prior to them reaching any other equipment; the second is as a primary pollutant control device. When the second option is used, then removal efficiency for acidic gases using a caustic scrubbing medium is typically greater than 90 percent. When used as a quench tower, pollutant removal is of secondary concern.

The top option for removal of SO_2 is the packed-bed tower. The mechanics of caustic liquid scrubbing the SO_2 from the flue gas are both simple and highly efficient. Using corrosion-resistant packings, a very large surface can be created for gas absorption and neutralization of acidic components. A control efficiency of greater than 95 percent for SO_2 makes this option the best single removal technique available.

Evaluation of Most-Effective Controls

The U. S. Army has given a commitment to incorporate the best control technology available on each of the three incinerators. Based on the evaluation of each of the technologies available, the most effective means of SO_2 removal is a combination of technologies. The U. S. Army proposes to first use a quench tower with caustic scrubbing liquid to initially cool the flue gas and provide some limited SO_2 removal. In line with the quench tower, a venturi scrubber will next treat the flue gas to remove particulates, and also some SO_2. The combined removal efficiency for the quench and venturi is expected to exceed 50 percent. Finally, a very high SO_2 removal efficiency packed-bed scrubber tower will provide in excess of 95 percent SO_2 scrubbing to complete the SO_2 removal system. The overall system will remove a minimum of 97.5 percent of the SO_2 in the flue gas from the incinerators.

Impacts Analysis Summary

No adverse environmental impacts are expected as a result of this choice of technologies.

Selection of BACT

The combined series of technologies chosen for SO_2 removal represents BACT for this system based on the extremely high SO_2 removal rate as compared to any single technology available. Table 5.5 in the application provides details on current BACT determinations for industrial combustion processes. The BACT limit for **SO_2** at the incinerators (SN-PBCDF-01) is 17.2 lb/hr.

Boilers, Brine Reduction Area, Associated Duct Pre-heater, and PFS Reheaters

Since all of these systems will be fired with natural gas, which contains very low sulfur levels and is therefore considered BACT for SO_2 in boilers, no additional SO_2 PAS is being proposed. The PFS is vented through the stack at SN-PBCDF-01. The BACT limit for SO_2 at the boilers and Brine Reduction Area (including the duct pre-heater) is as follows:

Source	Description	BACT Limit for SO_2 (lb/hr)
SN-PBCDF-03	Process Steam Boiler I	0.1
SN-PBCDF-04	Process Steam Boiler II	0.1
SN-PBCDF-05	Hot Water Boiler I	0.1
SN-PBCDF-06	Hot Water Boiler II	0.1
SN-PBCDF-07	Brine Reduction Area	0.1
SN-PBCDF-16	Laboratory Boiler	0.1

Emergency Generators

The generators will be fired with a low sulfur diesel fue1 (< or = 500 ppm) and are being requested to have limited hours of operation. The resulting SO_2 emissions are expected to be very low and are therefore considered BACT for SO_2 in the generators. No additional SO_2 PAS is proposed. The BACT limits for SO_2 at the emergency generators are as follows:

Source	Description	BACT Limit for SO_2 (lb/hr)
SN-PBCDF-09	Emergency Electrical Generator I (2,500 kW)	0.6
SN-PBCDF-10	Emergency Electrical Generator II (2,500 kW)	0.6
SN-PBCDF-12	Emergency Electrical Generator III (250 kW)	0.4

POINT SOURCE PM BACT ANALYSIS

PM emissions, just as with NOx and SO_2, are created almost exclusively in the proposed PBCDF incinerators, boilers (both hot water and process steam), and in the BRA. The accumulation of the PM emissions quantities from all point source categories at the proposed PBCDF are deemed to be significant according to PSD regulations. As such, a BACT analysis for PM control is required.

PM emissions are generated at numerous points in the demilitarization process. PM emissions are generated in the incineration processes of the three incinerators (LIC, MPF, and DFS), the two process steam boilers, the two hot water boilers, the Laboratory Boiler, the BRA, and three emergency electrical generators. Unlike NOx and SO_2 emissions, PM will be generated during all campaigns and is not limited to a particular munition or chemical agent.

Emission calculations were completed based on a maximum of 0.015 grain per dry standard cubic foot (gr/dscf) and mass and energy balances. These calculations determined the maximum, or worst-case, expected PM emissions for the process incinerators, based on the maximum hourly emissions and continuous operation (8,760 hours per year). The most conservative PM emissions are expected during campaigns to process M55 Rockets (either containing VX or GB). This maximum emission estimate also assumes that wood dunnage

is being processed in the MPF during the rocket processing. The calculations predicted a maximum PM emission rate of 20.7 ton/yr from the demiltarization processes. Of the 20.1 ton/yr, 10.2 ton/yr will come from the DFS, LIC, and MPF (SN-01), 2.0 ton/yr will come from the Process Steam Boilers (SN-03 and SN-04), 0.8 ton/yr from the Hot Water Boilers (SN-05 and SN-06), 5.8 ton/yr from the BRA (SN-07), 0.7 ton/yr from the emergency electrical generators (SN-09, SN-10, and SN-12), and 0.1 ton/yr from the Laboratory Boiler (SN-16). Fugitive emissions account for an additional 0.5 ton/yr.

Control Technology Options

In most industrial applications, PM is controlled by one or more of the following processes:

- **Dry Electrostatic Precipitators**
- **Fabric Filters**
- **Wet Electrostatic Precipitators**
- **Mechanical (Cyclone)**

The U.S. Army has made a policy decision to use natural gas as the primary fuel for all combustion sources, except the emergency power generators, which are diesel-powered. These generators will only be used in emergency situations; their potential emissions are not included in the emissions estimates. The impact of this decision is that fuel derived PM emissions will be minimized for all combustion emission sources due to the combustion of a gaseous fuel rather than a solid or liquid fuel. The control technology will address: 1) LIC, MPF, and DFS; 2) Boilers; and 3) BRA.

Dry Electrostatic Precipitators (ESP)

Electrostatic precipitators (ESPs) are generally used for removing particulate matter from gas streams that are relatively easy to ionize. A typical dry ESP consists of a box which contains an array of negatively charged wires or electrodes and positively grounded collection plates. Particulate laden air streams flow through the box where high voltage current is applied by electrodes that ionize the gas molecules. The charged particles are then drawn to oppositely charged plates where they collect in a layer that must be removed periodically. Removal is accomplished by diverting the flow of uncleaned air from a section of the collector plates, grounding the plates to remove the charge, and cleaning the plates. The plates can be cleaned either by vibrating them with rappers or collecting dislodged particulate matter in collection hoppers.

Economic Impacts

The removal efficiency of the dry ESP has an economic efficiency estimated at a range between $50 to $850 per short ton of PM removed. Annualized costs and operation and maintenance costs average between $15 to $45 per standard cubic feet per minute (scfm) annually.

Advantages

Dry ESPs can operate at high temperatures up to 1,292 °F, minimally hinder flue gas, typically cause very low pressure drops, have low operating costs, and can be designed with collection efficiency ranges as high as 99 to 99.9%.

Disadvantages

Dry ESP systems typically have high capital costs ranging from $30 to $190 per scfm. Dry ESPs are not recommended for removing moist particles. Ozone is produced by the negatively charged electrodes during gas ionization. The particulate matter removal efficiency can be adversely affected by changes in flow rate, particle size distribution, particle resistivity, and flue gas characteristics.

Fabric Filters

Baghouse filters have been applied widely to control particulate emissions from a variety of combustion units and industrial process equipment. Under proper conditions, baghouses are capable of achieving very high PM control efficiencies (greater than 99.9 percent). A baghouse consists of several filtering elements (bags) and a bag cleaning system, all contained in a main shell structure equipped with dust hoppers. Particulate laden gases are passed through the bags so that particles are retained on the fabric. This creates a filtering dust layer that is the basis of the performance of the fabric filter. The major fabrics used for bags for incinerator applications are woven and felted fiberglass and Teflon fluorocarbon materials. Typically, a baghouse is divided into compartments or sections, each containing several bags. In larger installations, an extra section is often provided to allow one compartment to be out of service for cleaning without affecting the overall efficiency of the fabric filter.

Economic Impacts

The removal efficiency of a fabric filter has an economic efficiency estimated at a range between $29 to $340 per short ton PM removed. Annualized costs and operation and maintenance costs average between $8 to $71 per scfm annually.

Advantages

Baghouses typically provide very high removal and collection efficiencies both for course and fine grained particles. Fluctuations in gas stream have little to no effect on the function of the filters. Given the composition of the baghouse components, rusting and corrosion is typically not an issue. Operation and maintenance is relatively simple in that there is no danger of exposure to high voltage.

Disadvantages

Fabric life will likely be shortened in the presence of acidic or alkaline particulate. Temperatures in excess of 550 °F typically require metallic or refractory fabrics which can be expensive. Concentrations of some dusts may result in a fire or explosion hazard if a flame is admitted. Fabric filters have relatively high maintenance requirements due to elements such as periodic bag replacement.

Venturi Scrubbers

Venturi scrubbers are the most frequently used air pollution control devices for hazardous waste incinerator emissions. They are also commonly applied to control emissions from sewage sludge incinerators and minerals processing equipment. Venturi scrubbers use the kinetic energy of a moving gas stream to atomize a scrubbing liquid that, in turn, is used to contact and separate particulate matter from the flue gas.

A venturi scrubber consists of four sections: converger, throat, diverger, and scrubber liquid separator. During operation, liquid (either water or water with a caustic agent) is continually injected into the venturi scrubber at the entrance to the convergent section, the venturi throat, or both. As gases pass through the converging section of the venturi, they are accelerated. The high-velocity gas impacts the liquid injected into the venturi, thereby atomizing the scrubbing liquid. The combination of small liquid droplet size and high gas velocities increases liquid to particulate contact, increasing the ability of the liquid to entrap particles and remove them from the gas stream. As the gases exit the venturi throat, they pass through the diverging section, where the gas stream momentum is reduced and some of the stream energy is converted back to system pressure.

Venturi scrubbers have historically been chosen over baghouses and ESPs for relatively small combustion units. Venturi scrubbers have the general advantages of wet scrubbers, but lower capital costs. They operate simply and require only moderate maintenance. Venturi scrubber technology is relatively mature and has been used in numerous applications under a variety of conditions, the technology is well-developed, and its capabilities are well-known.

Economic Impacts

Based on a removal efficiency variance of 70 to 99 percent removal efficiency, the venturi scrubber has a removal efficiency estimated at $76 to $2,100 per short ton PM removed. Annualized costs for operation and maintenance average between $9 to $242 per scfm annually.

Advantages

Venturi scrubbers can handle flammable and explosive dusts with little risks and can handle mists. Typically, the design of a venturi scrubber is simple and easy to install and has a relatively low maintenance cost. In addition, a venturi scrubber provides cooling for hot gases and corrosive gases and dusts can be neutralized.

Disadvantages

Effluent liquids from the scrubber can create water pollution problems as well as yielding a waste product that is to be collected while wet. There is a high potentia1 for corrosion problems and protection from freezing is required. The off-gas may require reheating to avoid a visible plume. Collected PM may be contaminated and disposal of waste sludge may be very expensive.

Wet Electrostatic Precipitators

The wet ESP is a variation of the dry ESP. The differences are that a preconditioning step is used to provide cooling, gas absorption, and coarse particle removal, and a wetted collection surface is provided where liquid is used to continuously flush away collected particulate. Particle collection is achieved by introducing liquid droplets through spray nozzles located above the electrostatic field sections. Charged particles and liquid droplets migrate to the collection plate. The collected liquid droplets form a wet film over the collection plates that continuously flows downward, washing away collected particulate. Wet ESPs offer less potential for particulate matter building-up on collector plates than dry ESPs. In a wet ESP, the buildup of an insulating layer of collected particulate is prevented by continuous washing. In the dry ESP rapping process, particulate emissions may result from the entrainment of rapped particles in the flue gas. The wet ESP collector cleaning process avoids this potential problem. The wet ESP also offers the potential for the collection of gaseous or condensable pollutants in addition to particulate matter.

Economic Impact

The removal efficiency of a wet ESP yields an economic efficiency estimated at a range between $80 to $850 per short ton of PM removed. Annualized costs and operation and maintenance cost average between $22 to $72 per scfm annually.

Advantages

Wet ESPs have a low pressure drop associated with their operation. They are effective in removal of particulate without hindering the flue gas. As a result, energy costs and operating requirements are typically low. Wet ESPs handle relatively large gas flow rates at conditions ranging from vacuum to high pressure. Wet ESPs can also collect mists and explosive particles.

Disadvantages

Corrosion commonly occurs near the top of the structure as a result of acidic conditions. ESPs are typically not suited to use in a system where conditions are highly variable, as they are very sensitive to fluctuations in gas stream conditions. ESPs are difficult to install in areas with limited space, as they must be relatively large to perform their function.

Mechanical (Cyclones)

Although the PBCDF will not use a cyclone as a final method of PM control, one cyclone will serve as a "pre-cleaner". Cyclones are also referred to as cyclone separators, cyclone collectors, centrifugal separators, and inertial separators. Cyclones work by forcing particulate laden gas to change direction and reliance upon centrifugal or inertial forces to then remove the particulate matter. Cyclones themselves are generally not adequate to meet stringent air pollution regulations, but they serve as an important pre-cleaner for the more expensive final control devices such as ESPs, fabric filters, or venturi scrubbers.

Economic Impact

With a widely varying removal efficiency based upon the size of PM targeted for collection, the economic efficiency for the removal per short ton of PM removed varies from $0.41 to $420 per ton. Annualized costs of operation and maintenance average between $2.40 to $26.50 annually per scfm.

Advantages

Cyclone separators have low capital cost, typically in the range of \$2.00 to \$2.40 per scfm. Since the cyclone has no moving parts, typically low maintenance costs are associated, as well as low operating costs. Temperature and pressure variations are only restricted by the material of construction. It is a dry collection and disposal method with small space requirements.

Disadvantages

Most cyclones have relatively low collection efficiencies for PM_{10} to $PM_{2.5}$. Cyclones are not able to handle sticky or tacky materials and high efficiency units designed to remove more of the PM_{10} to $PM_{2.5}$ particles usually result in high-pressure drops.

Technical Feasibility Considerations

The emission streams from the proposed PBCDF incinerators are somewhat unique, because the gas streams can, depending on the munition or agent being processed, contain acid gases (hydrogen chloride, hydrogen fluoride, sulfur dioxide), acid mists (phosphoric acid, sulfuric acid), and NOx concentrations. In addition, waste characterization data (low ash and metals contents) and high organic destruction efficiencies expected for the incinerators indicate that the inlet particulate matter, metals, and organic loadings to the control system will be relatively low.

Many technologies, such as scrubber and baghouse, scrubber and ESP, and wet scrubber combinations will counter the negative effects of acid gases in particulate laden emission streams. Therefore, particulate removal from streams containing acid gases would be technically feasible using any of the available technologies identified earlier. Some concern does develop over the potential for the presence of phosphoric acid mists in particulate laden gas streams. Although fabric filters by themselves may not be particularly effective at phosphoric acid mist removal, their use as particulate removal devices is not compromised by the presence of phosphoric acid mist.

No apparent insurmountable obstacles would prevent the successful use of any of the control options identified previously with the PBCDF incinerators. In addition, there are no technical feasibility problems that prevent the application of the conventional control technologies identified earlier to control particulate matter emission from the BRA equipment.

LIC, DFS, and MPF BACT Analysis

The previous section discussed the available control technotogy options, along with a brief summary of the advantages and disadvantages of each system option for the control of PM emissions from the proposed PBCDF incinerators. This section identifies the technically feasible option for the LIC, MPF, and DFS Common Stack (SN-PBCDF-01).

The selected option for the Common Stack operation of the LIC, MPF and DFS is a venturi scrubber, which serves a dual purpose. The venturi scrubber was selected to obtain maximum removal efficiency for $SO_2$and is equally efficient for PM removal. By allowing the use of the venturi scrubber in conjunction with a caustic scrubbing material, maximum removal efficiency of PM and SO_2 is achieved.

Given the nature of the components to be incinerated in the DFS, a decision was made to enter a "pre- cleaning" device into the process to minimize particulate loading via the vent gases from the DFS. A cyclone has been added between the primary and secondary chambers of the DFS to remove a designed capacity of 90 percent of the PM prior to it reaching the venturi scrubber. **The BACT limits for PM at the incinerators is 2.4 lb/hr as PM_{10}.**

Boilers

The Hot Water Heater, Process Steam Boilers, and Laboratory Boiler at the PBCDF will be controlled by the opacity standards for boiler operation. The boilers operate on natural gas fuel and as such, limited PM is expected from their operation. **The BACT limits for PM at the boilers is as follows:**

Source	Description	BACT Limit for PM **as PM_{10} (lb/hr)**
SN-PBCDF-03	**Process Steam Boiler I**	**0.3**
SN-PBCDF-04	**Process Steam Boiler II**	**0.3**
SN-PBCDF-05	**Hot Water Boiler I**	**0.1**
SN-PBCDF-06	**Hot Water Boiler II**	**0.1**
SN-PBCDF-16	**Laboratory Boiler**	**0.1**

Brine Reduction Area

For the BRA, the decision was made to install a filter fabric baghouse. Baghouses are preferred for several reasons, including the following:

- Baghouses have the potential for effective collection of submicron particles and a corresponding improvement in the capture of trace metals and organic compounds.
- Using improved bag materials provides for the potential flexibility to control collection to more stringent levels.
- EPA guidance suggests that final BACT determination should address how the primary control technique will minimize the emissions, including regulated pollutants. A control technique that provides a higher removal capability for unregulated pollutants than other options may be the preferred option.

At current design, the removal efficiency for PM will be 99.9 percent. The BACT limit for PM at the Brine Reduction Area is 1.4 lb/hr as PM_{10}.

Emergency Electrical Generators

The electrical generators are being requested to have limited hours of operation and limited PM is expected from their operation. The BACT limits for PM at the Emergency Electrical Generators is as follows:

Source	Description	BACT Limit for PM as PM_{10} (lb/hr)
SN-PBCDF-09	Emergency Electrical Generator I (2,500 kW)	1.1
SN-PBCDF-10	Emergency Electrical Generator II (2,500 kW)	1.1
SN-PBCDF-12	Emergency Electrical Generator III (250 kW)	0.4

POINT SOURCE BERYLLIUM BACT ANALYSIS

Beryllium emissions, just as with NOx, SO_2 and PM, are created exclusively in the PBCDF incinerators, boilers (both hot water and process steam), and in the BRA. The accumulation of proposed maximum beryllium emissions quantities from all point source categories at the PBCDF are deemed to be significant, according to PSD regulations. As such, a BACT analysis for beryllium control needs to be considered.

Beryllium is considered as a low volatile metal, and emissions are dependant on the amount of beryllium in the feeds to the combustion device. Beryllium is volatilized in the combustion chamber and condenses at lower air pollution control system temperature onto or into particles. As such, pollution control systems that control the particulate matter emissions also control beryllium emissions. BACT for particulate matter will be considered as BACT for beryllium emissions, and no further analysis will be presented.

BACT SUMMARY TABLE

Pollutant/BACT	NO$_X$ BACT	PM$_{10}$ BACT	SO$_2$ BACT	Beryllium BACT
Liquid Incinerator (LIC) SN-PBCDF-01	Combustion Control (high operating temperatures, high excess oxygen concentrations, and low residual carbon monoxide concentrations)	Venturi Scrubber	Quench Tower with Caustic, Venturi Scrubber, Packed-bed Scrubber, Low Sulfur Fuel	Venturi Scrubber
Incinerator Pollution Filter System (PFS) Reheaters SN-PBCDF-01				
Deactivation Furnace System (DFS) SN-PBCDF-01		Venturi Scrubber, Cyclone Between Primary and Secondary Chambers	Quench Tower with Caustic, Venturi Scrubber, Packed-bed Scrubber, Low Sulfur Fuel	Venturi Scrubber, Cyclone Between Primary and Secondary Chambers
Metal Parts Furnace (MPF) SN-PBCDF-01				
Industrial Boilers SN-PBCDF-03, 04, 05, 06, 16	Low-NO$_X$ Burners (without flue gas recirculation)	Natural Gas as Fuel	Natural Gas as Fuel	Natural Gas as Fuel
Brine Reduction Area and Duct Preheater SN-PBCDF-07		Baghouse		Baghouse
Emergency Generators SN-PBCDF-09, 10, 12	Limited Operating Hours	Limited Operating Hours	Low Sulfur Diesel Fuel (#500 ppm), Limited Operating Hours	-
Fugitive Emissions	-	Munitions haul roads have now been paved. Minimal emissions are	-	-

Pollutant/BACT	**NO_X BACT**	**PM_{10} BACT**	**SO_2 BACT**	**Beryllium BACT**
		expected.		

Ambient Air Impact Analysis

An air dispersion modeling analysis is a required part of a PSD permit application. The air dispersion modeling analysis is used to demonstrate that the emissions resulting from a proposed modification will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or surpass a PSD Increment.

The US EPA requires that PSD modeling be performed in two stages: the significance analysis and the full impact analysis. The significance analysis considers the net emissions change associated with PSD affected emissions units to determine if the increased emissions will have a significant impact upon the surrounding area. If the results of the significance analysis are below the corresponding Modeling Significance Levels the full impact analysis is not required.

The following summaries and tables detail the preliminary analysis for each of the six criteria pollutants that will be emitted by PBCDF.

PM_{10}
Emissions of particulate matter less than ten (10) microns in diameter from facility point sources and fugitives exceed the PSD significant emission rate of 15 tons per year. Therefore, PBCDF was required to perform an ambient impact analysis for this pollutant. Preliminary modeling of PM_{10} emissions showed levels below the 24-hour and annual PSD de minimis levels. Since no significant impact on air quality exists, no further PM_{10} modeling was performed.

SO_2
Emissions of sulfur dioxide exceed the PSD significant emission rate of 40 tons per year. Therefore, PBCDF was required to perform an ambient air impact analysis for this pollutant. Preliminary modeling of sulfur dioxide emissions showed levels below the 3-hour and annual PSD de minimis levels. Since no significant impact on air quality exists, no further SO_2 modeling was performed for these averaging periods.

VOC
No ambient air impact analysis was performed for this pollutant since the proposed emissions of 6.0 tons per year at the PBCDF are far below the PSD significant emission rate of 40 tons per year.

CO

No ambient air impact analysis was performed for this pollutant, since the proposed emissions of 96.1 tons per year at the PBCDF are below the PSD significant emission rate of 100 tons per year.

NO_X

Emissions of nitrogen oxides exceed the PSD significant emission rate of 40 tons per year. Therefore, PBCDF was required to perform an ambient air impact analysis for this pollutant. Preliminary modeling of nitrogen oxides showed levels well below the annual PSD de minimis levels.

The following table is a summary of the ambient air impact analysis for PBCDF.

Ambient Air Impact Analysis

	Concentration (ug/m^3)				
Pollutant	Maximum Predicted Value (1)	NAAQS (2)	PSD Increment (3)	Significant Impact Increment (4)	Significant Monitoring Concentrations (5)
PM_{10} - 24 hour	4.8*	150	30	5	10
PM_{10} - Annual	0.95	50	17	1	N/A
SO_2 - 3 hour	16.1	1300	512	25	N/A
SO_2 - 24 hour	6.8	365	91	5	13
SO_2 - Annual	0.72	80	20	1	N/A
NO_X - Annual	4.8	100	25	1	14
Beryllium - 24 hour	0.00022	N/A	N/A	N/A	0.001

1 - “Maximum Predicted Value” refers to the maximum predicted off-site concentration of the listed pollutant based on preliminary emissions modeling. *PM_{10} value is highest 4th high reading.

2 - “NAAQS” refers to the National Ambient Air Quality Standard for each pollutant. The NAAQS value is the maximum allowable concentration which a person may be exposed to for the given time frame without suffering adverse effects.

3 - “PSD Increment” refers to the maximum concentration allowable from the emissions from a facility (and other facilities in the affected impact area) that can occur without causing a deterioration of air quality.

4 - “Significant Impact Increment” is the concentration at which the change or modification in a facility’s emissions is said to have a significant adverse change in the air quality.
5 - “Significant Monitoring Concentrations” refers to the concentrations at which the facility must perform pre-construction monitoring at the facility site to determine a baseline of concentrations for affected pollutants.

Preliminary modeling showed that the PSD Increment and the Significant Impact Increment was not exceeded for PM_{10}, and thus no further modeling was performed for this pollutant.

The PSD Increment and the Significant Impact Increment was not exceeded for SO_2 on a 3-hour or annual averaging period.

The Significant Impact Increment was exceeded for SO_2 on a 24-hour average and for NO_X on an annual average. A full impact analysis was therefore required for these two pollutants.

Full Impact Analysis for SO_2 and NO_X

The National Ambient Air Quality Standards (NAAQS) inventory for SO_2 and NO_X involved a 3-step process. First, sources located within 60 kilometers of the PBCDF Common Stack were determined using the ADEQ AIRS database. ADEQ records were then used to identify stack parameters and the last dates of modification. The emission data from ADEQ records were compared to the AIRS database emissions. If discrepancies were found, then the higher emissions were used as part of the inventory to generate the most conservative data. The third step was to select the sources to be modeled to determine the potential impact on the NAAQS. The sources with the potential to emit 100 ton/yr or greater were included as NAAQS emission sources. A minor source was considered as a NAAQS emission source if the minor source was installed after the minor source baseline date. The minor source baseline date is the earliest date after the trigger date on which a major stationary source or a major modification subject to the State Implementation Plan (SIP) or PSD is approved.

National Ambient Air Quality Standards (NAAQS) Analysis for SO_2 and NO_X

The NAAQS analysis reflects the overall air quality and consists of two factors: the modeled results for all major sources and the background air quality levels.

The highest annual NO_X concentration including background is 50.5 ug/m^3. This concentration was predicted at 604,000 meters Easting and 3,807,000 meters Northing during the year of 1992. The maximum impact of 50.5 ug/m^3 is less than the NO_X NAAQS of 100 ug/m^3 on an annual average.

The highest annual average SO_2 concentration including background is 14.1 ug/m^3 and occurred at 602,000 meters Easting and 3,787,000 meters Northing during the year of 1993. The maximum impact of 14.1 ug/m^3 is less than the SO_2 NAAQS of 80 ug/m^3 on an annual average.

The highest 24-hour average SO_2 concentration including background is 232.5 ug/m^3 and occurred at 601,000 meters Easting and 3,787,000 meters Northing during the year of 1994. The maximum impact of 232.5 ug/m^3 is less than the SO_2 NAAQS of 365 ug/m^3 on a 24-hour average.

The highest 3-hour average SO_2 concentration including background is 821.8 ug/m^3 and occurred at 600,000 meters Easting and 3,787,000 meters Northing during the year of 1994. The maximum impact of 821.8 ug/m^3 is less than the SO_2 NAAQS of 1300 ug/m^3 on a 3-hour average.

A particulate matter (PM_{10}) NAAQS analysis was not required, since PBCDF impacts are below the significant level for the 24-hour and annual averaging periods. A beryllium (Be) NAAQS analysis was not required, since PBCDF impacts are below the significant level for the 24-hour averaging period.

National Ambient Air Quality Standards Analysis

	Concentration (ug/m^3)	
Pollutant	High Value Including Background	NAAQS
NO_X - Annual	50.5	100
SO_2 - 3 hour	821.8	1300
SO_2 - 24 hour	232.5	365
SO_2 - Annual	14.1	80

PSD Increment Analysis for SO_2 and NO_X

In the PSD increment analysis, emission increases from the major source baseline data that consume a portion of the applicable increment are modeled to determine the increment consumption.

In order to develop the increment inventory, the NAAQS database was screened for increment consuming sources. This included any modification to a major facility occurring after the major source baseline date resulting in an emission increase. Additionally, all minor sources installed after the minor source baseline was triggered were included in the increment inventory.

Of particular interest in the increment inventory was a permit modification proposed by International Paper of Pine Bluff (IP), which is just south of the PBCDF. IP-Pine Bluff had requested an increase of SO_2 emissions related to an increase in the use of sulfur containing fuel oil in facility boilers. This permit application was terminated via ADEQ letter on August 13, 2002, shortly before submittal of the PSD portion of the PBCDF permit application. PBCDF ran the SO_2 increment modeling both with and without the proposed IP increment increase. Another source of interest was the recently permitted Tenaska Arkansas Partners energy production site. Tenaska is located north of PBCDF in Lonoke County at the edge of the 60 kilometer impact area.

Nitrogen Dioxide Increment Analysis

Annual NO_X

The maximum annual NO_X modeled increment consumed was 12.1 ug/m^3. The model included PBCDF and all other inventory sources. The maximum impact occurred at 581,500 meters Easting and 3,803,250 meters Northing during 1994. The maximum incremental increase allowed for NO_X is 25 ug/m^3 minus non-PBCDF contributions. The combined air quality impact modeled from PBCDF and all other sources indicates that the issuance of a permit for the proposed modification would not result in the consumption of more than fifty percent of the available annual increment (i.e., more than 50% of 25 ug/m^3 minus non-PBCDF contributions). Pursuant to Arkansas Regulation 19.904(C)(4), the potential effects on the industrial and economic development within the area do not require further consideration.

Sulfur Dioxide Increment Analysis

Annual SO_2

The maximum annual SO_2 modeled increment consumed including the IP-Pine Bluff fuel oil increment was 11.2 ug/m^3. The model included PBCDF and all other inventory sources. The maximum impact occurred at 602,000 meters Easting and 3,787,000 meters Northing during 1991, 1993, and 1994. If the IP-Pine Bluff increment is left out, the maximum annual SO_2 modeled increment consumed was 0.8 ug/m^3 at 581,500 meters Easting and 3,803,250 meters Northing during 1991, 1992, and 1995. The maximum incremental increase allowed for SO_2 on an annual basis is 20 ug/m^3 minus non-PBCDF contributions.

Since the above referenced IP-Pine Bluff application is no longer active, ADEQ recognizes the 0.8 ug/m^3 as the maximum modeled increment consumed. The combined air quality impact modeled from PBCDF and all other sources indicates that the issuance of a permit for the proposed modification would not result in the consumption of more than fifty percent of the available annual increment (i.e., more than 50% of 20 ug/m^3 minus non-PBCDF contributions). Pursuant to §19.904(C)(4), the potential effects on the industrial and economic development within the area do not require further consideration.

24-hour SO_2

The maximum 24-hour SO_2 modeled increment consumed was 48.5 ug/m^3. The model included PBCDF and all other inventory sources. The maximum impact occurred at 587,000 meters Easting and 3,823,000 meters Northing during 1995. If the IP increment is left out, there is no change in the 24-hour increment consumption, since the primary impact on the 24-hour increment consumption is from Tenaska. The maximum incremental increase allowed for SO_2 on a 24-hour basis is 91 ug/m^3 minus non-PBCDF contributions. The combined air quality impact modeled from PBCDF and all other sources indicates that the issuance of a permit for the proposed modification would not result in the consumption of more than eighty percent of the available 24-hour increment (i.e., more than 80% of 91 ug/m^3 minus non-PBCDF contributions). Pursuant to §19.904(C)(4), the potential effects on the industrial and economic development within the area do not require further consideration.

3-hour SO_2

The maximum 3-hour SO_2 modeled increment consumed was 232.5 ug/m^3. The model included PBCDF and all other inventory sources. The maximum impact occurred at 586,000 meters Easting and 3,823,000 meters Northing during 1992. If the IP increment is left out, there is no change in the 3-hour increment consumption since the primary impact on the 3-hour increment consumption is from Tenaska. The maximum incremental increase allowed for SO_2 on a 3-hour basis is 512 ug/m^3 minus non-PBCDF contributions. The combined air quality impact modeled from PBCDF and all other sources indicates that the issuance of a permit for the proposed modification would not result in the consumption of more than eighty percent of the available 3-hour increment (i.e., more than 80% of 512 ug/m^3 minus non-PBCDF contributions). Pursuant to §19.904(C)(4), the potential effects on the industrial and economic development within the area do not require further consideration.

Particulate Matter (PM_{10}) Increment Analysis

Particulate matter (PM_{10}) increment analysis is not required since PBCDF impacts are below the significant levels for the 24-hour and annual averaging periods.

Beryllium (Be) Increment Analysis

Beryllium (Be) increment analysis is not required since PBCDF impacts are below the 24-hour averaging period significant level.

Pre-Construction Ambient Air Monitoring Requirements

The PSD regulations require that up to a year of pre-construction ambient air monitoring data be collected for each pollutant subject to PSD review. For the PBCDF, these pollutants would include PM_{10}, SO_2, NO_X, and beryllium (Be). If it is demonstrated that the impact of these emissions are less than the de minimis monitoring exemption levels, an exemption from the PSD pre-construction monitoring may be granted by the Department. A case-by-case review of the PSD pollutants is presented below.

PM_{10} The monitoring *de minimis* level (24 hour averaging period) for this pollutant is 10 ug/m^3. The maximum predicted impact (24 hour averaging period) from all PM_{10} sources at the facility is 4.8 ug/m^3. Since this is well below the *de minimis* level, no pre-construction monitoring data will be required for this pollutant.

SO_2 The monitoring *de minimis* level (24 hour averaging period) for this pollutant is 13 ug/m^3. The maximum predicted impact (24 hour averaging period) from all SO_2 sources at the facility is 6.8 ug/m^3. Since this is well below the *de minimis* level, no pre-construction monitoring data will be required for this pollutant.

NO_X The monitoring *de minimis* level (annual averaging period) for this pollutant is 14 ug/m^3. The maximum predicted impact (annual averaging period) from all NO_x sources at the facility is 4.8 ug/m^3. Since this is well below the *de minimis* level, no pre-construction monitoring data will be required for this pollutant.

Be The monitoring *de minimis* level (24 hour averaging period) for this pollutant is 0.001 ug/m^3. The maximum predicted impact (24 hour averaging period) from all Be sources at the facility is 0.0002 ug/m^3. Since this is well below the *de minimis* level, no pre-construction monitoring data will be required for this pollutant.

Class I Impact Analysis

The PSD regulations require that written notification be provided to the Federal Land Manager in the event that a major source or modification is located within 100 kilometers of a Class I Area. Pine Bluff Arsenal is well over 100 kilometers from the Class I Areas in Arkansas: 222 kilometers from Caney Creek, and 206 kilometers from the Upper Buffalo. A Class I Impact Analysis was therefore not required for this application.

Additional Impacts Review

Three areas constitute the Additional Impacts Review: growth analysis, a soils and vegetation analysis, and a visibility analysis.

Growth Analysis

Referencing the **NSR Workshop Manual for PSD and Nonattainment Area Permitting (October 1990)**, a PSD applicant must complete a growth analysis for proposed new sources or major modifications which anticipates the associated industrial, commercial, and residential source growth that will occur in the area due to the sources, as well as estimates of atmospheric emissions generated by the associated industrial, commercial, and residential growth. The growth and associated emissions result from the construction or modification of a source but are not part of the source. This does not consider growth which has already occurred. Factors such as an increase in work force, housing expansion in the surrounding community, and additional commercial and industrial jobs must be reviewed.

Construction and normal operations could affect socioeconomic resources in two ways: (1) through population influx related to employment from the construction and operation of the PBCDF, and (2) by the increased use of resources during construction and operation of the PBCDF.

Construction of the PBCDF started in January 1999 and was completed in December 2002. The construction employment was built from a starting workforce of approximately 40 to a peak of 1000 workers during construction. Manpower requirements gradually tapered off during the last 20 months of construction as the facility neared completion. The largest single source for PBCDF craft employees was from the Little Rock area. This was especially true for the skilled trades such as pipe fitters and electricians. The Pine Bluff area supplied a fair number of civil trades such as carpenters, cement masons, laborers, and ironworkers. However, the greatest source provider for these crafts was still the Little Rock area. The majority of the construction personnel car pooled and commuted from their homes. Some small percentage of these people rented/shared apartments, motel rooms, and rooming houses relatively close to the project. Almost all traveled home for weekends and holidays. Of the construction employees living beyond commuting range, the overwhelming majority were "single status". They rented/shared apartments, motel rooms, and rooming houses relatively close to the project and only traveled home one weekend per month and for holidays and special occasions. As such, there was minimal population influx due to construction at the site.

Approximately 75 permanent support personnel were brought on-site during the first year of the project. The systemization phase overlapped with construction and will continue for approximately 23 months (May 2002 to April 2004). Approximately 300 permanent persons were on site for the start of the systemization phase. The actual operations phase (agent processing) is currently scheduled to start in April 2004 and last for 40 months. PBCDF will operate up to three shifts per day and up to seven days per week. It is expected to begin with one shift requiring roughly 200 persons through the first five months, phase up to 260 persons in two shifts, and peak at 310 workers in three shift operations. Including support personnel, the facility will employ approximately 575 people at its peak during operations. The increase in the number of positions at PBA could be offset slightly by the decrease of up to 70 jobs presently associated with maintenance of the munitions stockpile, although past practice at PBA suggests that many of these workers would be absorbed into other PBA operations and that the excess workforce would be reduced through attrition and retirement. Manpower requirements will start to decrease after operations is complete and the closure phase is initiated. The Program Manager for Chemical Demilitarization (PMCD) anticipates that the majority of workers for the systemization and operations phases would be hired from outside the local area because of special skill requirements.

Based on 2000 census data, the total population of Jefferson County is 84,278. Approximately 55 percent of the population is between the ages of 2l and 65 and can be considered as a viable work force. Thus, assuming a maximum net increase of 500 jobs during systemization and operations, new employment directly related to the project would represent a 1.1 percent increase in Jefferson County's civilian labor force. Due to the anticipated length of the operations, it is likely that most of the new workers would relocate with their families. If it is assumed that 85 percent (approximately 425) of the employees are accompanied by family members, approximately 1,200 persons might be expected to move into the area during operations (assuming a household size of 2.8). This influx represents less than 1.5 percent of the Jefferson County population.

An increase of 425 households in Jefferson County would represent approximately 26 percent of vacant housing units and units under construction. These estimates are based on 1990 census data since the 2000 housing data was not available at the development of this permit. There has been a great deal of new housing constructed in Jefferson County since 1990 and the availability of single family units should be more than adequate to serve the needs of new families associated with the PBCDF moving into Jefferson County. Single-family housing is adequate to meet the expected demand.

Given the large service area and excess capacity of both electricity and natural gas utilities that serve Jefferson County, a population influx of 1,200 would not strain service levels of these utilities. The available capacity at all water systems indicates that an increase of 1,200 people in

Jefferson County could be adequately served. The water supply is presently adequate to meet expected demand. The wastewater systems in Jefferson County also have excess capacity to meet the expected demand produced by project-related population growth. Commercial growth from a 1.5 percent increase in the Jefferson County population is expected to have a minimal impact upon the wastewater treatment systems.

Significant quantities of water, electricity, and fuel would be used to operate the PBCDF. Fire protection for the site will require 3,000 gallons per minute of non-potable water. A peak requirement of 170,000 gallons per minute will be required for proposed PBCDF process water uses. Water would be pumped from existing wells for these fire/process water requirements. The existing PBA sewage system would be adequate to meet the average daily usage requirements of 18,200 gallons. Approximately six megawatts of electrical power would be delivered to the PBCDF from an existing substation. Reserve capacity levels indicate that PBCDF power requirements can be met. In addition, a new natural gas pipeline will be installed to accommodate the projected PBCDF demand.

Additional commuter traffic expected during the PBCDF operations phase is estimated to increase. Significant quantities of waste in the form of ash, dried salts, and metals would be transported from the plant to approved storage and disposal areas. Movement of material and personnel to and from the PBCDF would be accomplished by a variety of vehicles, including privately owned automobiles, buses, and trucks. Traffic on off -site roads to and from the PBA would consist of employee vehicles and solid waste transport containers.

Air impacts due to local growth associated with PBCDF operations are expected to be minimal from additional traffic to and from the facility by commuters and solid waste transporters and from residential housing.

Soils and Vegetation Analysis

According to the NSR Workshop Manual for PSD and Nonattainment Area Permitting (October 1990), a PSD applicant must conduct an analysis of the soils and vegetation (commercial or recreational) types in the impact area. For most types of soils and vegetation, ambient concentrations of criteria pollutants below the secondary NAAQS will not result in harmful effects.

The vegetation in and around PBA consists mainly of hardwoods, pines, and wetland vegetation. Approximately 70 percent of the surrounding area is forested. Black, post, and white oaks are the dominant hardwoods, while short leaf and loblolly pine are the most plentiful pine trees. Wetland areas near the Arkansas River support maple, hickory, willow, and cypress trees. Smaller vegetation consists of sweet gum and tall grasses. Small farms are found in the area surrounding the facility. The principal commercial crops grown in the area are soybeans, corn, cotton, wheat, oats, and rice.

Publications from the U.S. Forest Service and the National Park Service have identified several plant species that are sensitive to sulfur dioxide. According to the U.S. Forest Service report, *Screening Procedures to Evaluate Effects of Air Pollution on Eastern Region Wildernesses Cited as Class I Air Quality Areas,* sulfur dioxide concentrations below 5 ug/m^3 on an annual average and 100 ug/m^3 on a three hour average would not cause impacts on sensitive plant species. The modeled sulfur dioxide impacts associated with the proposed facility are below the significant PSD levels; thus, no adverse impacts on soil or vegetation is expected from future PBCDF construction and operation efforts.

Nitrogen oxides emissions may affect vegetation either by direct contact with the leaf surface or by solution in water drops forming nitric acid through the oxidation and conversion process. The effects of nitrogen oxides impacts on vegetation are not well understood. However, the NAAQS for nitrogen oxides was developed to protect human health and minimize adverse impacts on welfare, including vegetation, soil, and building materials. Since predicted ambient nitrogen oxides concentrations due to the project are well below NAAQS, no adverse impacts on soil or vegetation is expected. In summary, no adverse impacts on local soils and vegetation types in the Pine Bluff/White Hall community and surrounding area is expected from the operation of the PBCDF.

Visibility Analysis

According to the **NSR Workshop Manual for PSD and Nonattainment Area Permitting (October 1990)**, the PSD applicant is suggested to perform a visibility impairment analysis. During this inquiry, the applicant is especially concerned with influences that occur within the impact area of the proposed new source or modification.

The **NSR Workshop Manual for PSD and Nonattainment Area Permitting (October 1990)** recommends that an initial screening of emission sources be conducted to assess the possibility of visibility impairment in the area. The Environmental Protection Agency (EPA) Workbook for Plume Visual Impact Screening and Analysis is recommended to be used to conduct a visibility impairment analysis. The workbook outlines a screening procedure designated to expedite the analysis of emissions impacts on the visual quality of an area. The following is a brief synopsis of the recommended screening procedures.

A Level 1 visibility analysis is the first screening procedure suggested in this EPA document. The Level 1 visibility screening analysis is a series of conservative calculations designed to identify emission sources that have little potential for adversely affecting visibility. The VISCREEN Model is recommended for the first level screening procedure. Calculated values relating source emissions to visibility impacts are compared to a standardized screening value. The sources with calculated values greater than the screening criteria are determined to have potential visibility impairments. In this case, a Level 2 analysis is suggested to be completed by the applicant.

A Level 2 screening procedure is similar to the Level 1 analysis, but utilizes more specific information regarding the emissions source, area topography, regional visual ranges, and meteorological conditions. The VISCREEN Model is also recommended for this second level screening analysis.

The input data for the VISCREEN Model is only for particulates, nitrogen oxides (displayed as nitrogen dioxide), soot, and sulfates.

A Level 3 analysis with the aid of the plume visibility model must be performed if the Levels 1 and 2 screen indicate the potential of visibility impairment exists. This analysis may be performed using the models listed in Appendix B of the Guideline on Air Quality Models (Revised) and Supplement A, EPA-450/2-78-027R. The selection of the appropriate model is determined on a case-by-case basis. The Level 3 models require more site-specific emissions and meteorological and other regional data. The intention of the Level 3 analysis is to provide an accurate description of the magnitude and frequency of occurrence of impact.

Level I visibility impairment screening was accomplished for this application using VISCREEN (Version 1.01, December 6, 1988). The VISCREEN Model assumes conservative conditions for atmospheric stability and wind speed that are persistent in a single wind direction for a period of 12 hours. The model was executed assuming the observer is located in nearby Federal Class I Areas.

Level I screening assumes that over short distances (less than 200 kilometers), under the assumed atmospheric conditions, secondary sulfate (SO_4) is not formed to any significant degree. Hence, the only pollutants that are assumed to affect visibility are particulate, soot, and NO_X emissions.

The results of the visibility modeling submitted with the permit application indicate that none of the Class I screening criteria were exceeded at Caney Creek or Upper Buffalo National Wilderness Areas. Thus, a Level 2 and/or Level 3 screening procedure is not necessary for the PBCDF.

Facility Emission Summary

The following table is a summary of emissions from the facility. Specific conditions and emissions for each source can be found starting on the page cross referenced in the table. This table, in itself, is not an enforceable condition of the permit.

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
Plantwide Totals - Criteria Pollutants		PM$_{10}$	57.1	89.4	N/A
		SO$_2$	28.9	87.3	
		VOC	782.7	229.0	
		CO	88.7	226.8	
		NO$_X$	250.8	532.6	
		Lead	0.47142	1.85878	
Plantwide Totals - Hazardous Air Pollutants (HAPs)		Acetaldehyde	0.00134	0.0007256	
		Acrolein	0.000268	0.000149	
		Antimony	0.0085	0.00332	
		Arsenic	0.0030	0.000493	
		Benzene	0.3117	0.00381	
		Beryllium	0.0007	0.00134	
		Bis (2-ethylhexyl)-phthalate	0.0219	0.0397	
		Bromoform	0.0012	0.00161	
		2-Butanone (MEK)	12.2638	0.0222	
		Cadmium	0.05756	0.00231	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Carbon Disulfide	0.0653	0.00121	
		Carbon Tetrachloride	6.6205	0.00267	
		Chlorobenzene	4.9343	0.000442	
		Chloroform	0.2028	0.00259	
		Chlorine	2.8495	0.2210	
		Chloromethane (MeCl)	0.2218	0.0562	
		Chromium	0.0438193	0.0450266	
		Cobalt	0.006172	0.00585	
		Cumene	0.12	0.14	
		Cyanide	2.81	0.06	
		Dichlorobenzene	0.002	0.000487	
		1,1-Dichloroethane	0.0413	0.000430	
		Dimethyl Phthalate	0.0088	0.04176	
		Di-n-butyl Phthalate	0.0023	0.00269	
		2-4-Dinitrotoluene	0.0007	0.000366	
		Dioxins and Furans	0.000000103	0.0001226	
		1,2 Dichloropropane	0.0080	0.0215	
		cis-1,3-Dichloropropene	0.0069	0.0186	
		trans-1,3-Dichloropropene	0.0003	0.000429	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Ethyl Benzene	4.6034	1.3407	
		Ethylene Glycol	0.04	0.05	
		Formaldehyde	0.0325	0.0310	
		Glycol Ether	88.66	30.02	
		Hexachloroethane	0.23	0.25	
		Hexamethylene Diisocyanate	0.0399	0.00159	
		Hexane	8.4852	2.9149	
		Hydrogen Chloride	14.4779	0.6490	
		Hydrogen Fluoride	0.9460	1.5020	
		Hydroquinone	0.0004	0.0006	
		Lead Compounds	0.47142	1.08439	
		Manganese	0.0911	0.1640	
		Methanol	84.59	31.800	
		Mercury	0.0009	0.00188	
		Methylene Chloride	23.6965	11.8416	
		Methyl Methacrylate	0.0004	0.012	
		2-Methyl Phenol	0.0225	0.0313	
		3-Methyl Phenol	0.0020	0.0153	
		4-Methyl Phenol	0.0042	0.00684	
		4-Methyl 2-Pentanone	0.0004	0.000625	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Methyl Isobutyl Ketone	90.820	31.790	
		Naphthalene	0.00460319	0.0038003	
		Nickel	0.0621	0.0103	
		Polychlorinated Biphenyl	0.000002398	0.00000306	
		Phosphorous	0.0774	0.08702	
		Phthalic Anhydride	0.0019	0.0006	
		Polycyclic Organic Matter	5.03	2.75	
		Polyglycol Oleate	0.02	0.02	
		Red Phosphorous	0.256	0.280	
		Selenium	0.2265	0.00247	
		Silica Compounds	0.51	0.260	
		Styrene	0.2363	0.00797	
		Tetrachlorodibenzo-p-dioxin	0.000000006	0.000000027	
		1,1,2,2-Tetrachloroethane	0.0003	0.000459	
		Tetrachloroethane	0.0002423	0.0005165	
		Toluene	89.3331	33.0713	
		1,1,1-Trichloroethane	0.0018	0.0065	
		Vinyl Acetate	0.0003	0.000445	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Vinyl Chloride	0.0009	0.00129	
		Xylene	88.9679	33.09223	
Plantwide Totals - Air Contaminants		PM	57.1	89.4	
		Acetone	517.4	283.80	
		Crystalline Silica	0.006	0.01	
		2-(Diisopropylamino) Ethanol (KB)	0.00012	0.0000003	
		Ethanol Vapors (ZS)	1.19	0.000000151	
		Methane	0.2	0.9	
		Methylphosphonic Difluoride (DF)	0.0000153	0.00000975	
		O-Ethyl-O' (2-Diisopropylaminoethyl) Methylphosphonite (QL)	0.00000861	0.00000155	
		Nerve Agent VX	ND	ND	
		Nerve Agent GB	ND	ND	
		Mustard Agent HD	ND	ND	
		Mustard Agent HT	ND	ND	
AMM-01	Ammunition Operations	PM_{10}	21.0	17.5	81
		VOC	296.8	132.7	
		PM	21.0	17.5	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Acetone	467.40	283.30	
		Methanol	72.00	31.50	
		Methyl Isobutyl Ketone	72.00	31.50	
		Toluene	72.00	31.50	
		Xylene	72.10	31.56	
		Ethyl Benzene	0.02	0.02	
		Hexane	4.2	2.1	
		Hydroquinone	0.0004	0.0006	
		Methylene Chloride	19.3	11.3	
		Methyl Methacrylate	0.004	0.006	
		Cyanide Compounds	0.04	0.06	
		Glycol Ethers	61.85	29.45	
		Hexachloroethane	0.07	0.07	
		Phthalic Anhydride	0.0004	0.0006	
		Phosphorous	0.04	0.01	
		Silica Compounds	0.36	0.08	
32-230	Chemical and Biological Defense Operations	VOC	15.8	0.2	90
		Chromium	0.016	0.00018	
		Cobalt	0.0029	0.000031	
		Hexamethylene Diisocyanate	0.0266	0.00029	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
32-510 32-520 32-550 32-720	Production Engineering Lab	PM_{10}	0.1	0.1	92
		VOC	24.0	0.30	
		PM	0.1	0.1	
		Acetone	50.0	0.50	
		Methanol	6.00	0.08	
		Methyl Isobutyl Ketone	6.00	0.08	
		Toluene	6.00	0.08	
		Xylene	6.00	0.08	
		Glycol Ethers	4.8	0.06	
42-960(1)	CIC Combustion Units	PM_{10}	1.1	4.6	95
		SO_2	0.5	1.4	
		VOC	17.5	57.4	
		CO	27.2	89.2	
		NO_X	8.48	28.3	
		Lead	0.23	0.74	
		PM	1.1	4.6	
		Dioxins and Furans	0.000002106	0.00006899	
		Arsenic	0.004924	0.0171	
		Cadmium	0.0127	0.042	
		Chromium	0.011	0.036	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Nickel	0.011	0.037	
		Hydrogen Chloride	0.078	0.2555	
		Mercury	0.00872	0.029	
42-960(4)	RDF Shroud	PM_{10}	0.1	0.1	95
		PM	0.1	0.1	
42-960(5)	Waste Volume Reduction Unit Shredder	PM_{10}	0.1	0.2	95
		PM	0.1	0.2	
42-960(6)	Waste Volume Reduction Unit Sludge Dryer	PM_{10}	1.0	3.3	95
		PM	1.0	3.3	
42-960(7)	Emergency Generator	PM_{10}	0.3	0.1	95
		SO_2	3.2	0.2	
		VOC	0.6	0.1	
		CO	2.4	0.2	
		NO_X	51.4	2.7	
		PM	0.3	0.1	
42-960(8)	2 Boilers 2.4 MM Btu/hr each	PM_{10}	0.1	0.2	95
		SO_2	0.1	0.1	
		VOC	0.1	0.2	
		CO	0.4	1.8	
		NO_X	0.5	2.1	
		PM	0.1	0.2	

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
32-690 33-760 44-212 77-950	Quality Assurance Testing *Includes:* Drop Tower Grenade Test Basin Dilly Farm Bombing Mat	PM$_{10}$	16.0	17.5	105
		SO$_2$	1.6	1.8	
		VOC	1.6	1.8	
		CO	9.4	10.3	
		NO$_X$	1.6	1.8	
		PM	16.0	17.5	
		Polycyclic Organic Matter (POM)	5.03	2.75	
		Red Phosphorous	0.256	0.28	
		Hexachloroethane	0.16	0.18	
77-950	Open Air Disposal (Bombing Mat)	PM$_{10}$	6.0	13.2	110
		SO$_2$	3.0	6.6	
		VOC	3.0	6.6	
		CO	3.0	6.6	
		NO$_X$	3.0	6.6	
		PM	6.0	13.2	
32-060	Boiler 1 25.1 MM Btu/hr	PM$_{10}$	0.4	1.6	113
		SO$_2$	0.1	0.1	
		VOC	0.2	0.7	
		CO	0.9	3.9	
		NO$_X$	3.6	15.4	
		PM	0.4	1.6	

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
32-060	Boiler 2 25.1 MM Btu/hr	PM_{10}	0.4	1.6	113
		SO_2	0.1	0.1	
		VOC	0.2	0.7	
		CO	0.9	3.9	
		NO_X	3.6	15.4	
		PM	0.4	1.6	
33-060	Boiler 1 30 MM Btu/hr	PM_{10}	0.5	1.8	113
		SO_2	0.1	0.1	
		VOC	0.2	0.8	
		CO	1.1	4.6	
		NO_X	4.2	18.4	
		PM	0.5	1.8	
33-060	Boiler 2 30 MM Btu/hr	PM_{10}	0.5	1.8	113
		SO_2	0.1	0.1	
		VOC	0.2	0.8	
		CO	1.1	4.6	
		NO_X	4.2	18.4	
		PM	0.5	1.8	
34-125	Boiler 1 14.7 MM Btu/hr	PM_{10}	0.2	0.9	113
		SO_2	0.1	0.1	
		VOC	0.1	0.4	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		CO	0.5	2.3	
		NO_X	2.1	9.0	
		PM	0.2	0.9	
34-125	Boiler 2 14.7 MM Btu/hr	PM_{10}	0.2	0.9	113
		SO_2	0.1	0.1	
		VOC	0.1	0.4	
		CO	0.5	2.3	
		NO_X	2.1	9.0	
		PM	0.2	0.9	
42-930 (1)	Bulk Carbon Storage/Feed System	PM_{10}	0.2	0.9	117
		PM	0.2	0.9	
42-930 (2)	Bulk Lime Storage/Feed System	PM_{10}	0.1	0.1	117
		PM	0.1	0.1	
PW-01	Parts Washers	VOC	2.6	2.6	119
TANKS-01	Tanks	VOC	319.7	2.9	120
32-035	Motor Pool Paint Booths	PM_{10}	0.1	0.1	123
		VOC	82.2	7.6	
		PM	0.1	0.1	
		Methanol	0.56	0.14	
		Methyl Isobutyl Ketone	5.8	1.02	
		Toluene	8.55	1.08	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Xylene	10.55	1.09	
		Glycol Ethers	15.67	3.20	
		Ethyl Benzene	4.30	0.97	
		Methyl Ethyl Ketone	8.50	1.08	
		Chromium Compounds	0.0147	0.0023	
		Selenium	0.0017	0.0004	
		Lead and Lead Compounds	0.0780	0.0195	
		Cadmium and Compounds	0.0113	0.0028	
		Hexane	0.56	0.14	
		Methylene Chloride	0.56	0.14	
		Cyanide Compounds	2.57	0.104	
		Styrene	0.225	0.009	
		Cobalt	0.0014	0.0001	
		Hexamethylene Diisocyanate	0.0133	0.0013	
60-070	Depot Support	VOC	3.4	0.1	129
		Hexane	1.70	0.042	
		Toluene	1.20	0.030	
		Methyl Ethyl Ketone	1.20	0.030	
74-100	Depot Support	VOC	3.4	0.1	129

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Hexane	1.70	0.042	
		Toluene	1.20	0.030	
		Methyl Ethyl Ketone	1.20	0.030	
TC-01 TC-02	Environmentally Controlled Enclosure Filtration Systems 1 and 2	PM_{10}	0.4	1.8	132
		PM	0.4	1.8	
TC-03	Mobile Chemical Laboratory Filtration System	PM_{10}	0.1	0.1	132
		PM	0.1	0.1	
LVOSS-01	LVOSS Paint Booth	VOC	2.9	3.6	138
		Xylene	0.283	0.35	
		Ethyl Benzene	0.283	0.35	
		Crystalline Silica	0.006	0.01	
		Cumene	0.12	0.14	
LVOSS-02	LVOSS Fume Hood	VOC	0.8	0.2	138
		Toluene	0.23	0.04	
		Xylene	0.03	0.01	
LVOSS-03	LVOSS Stencil/Clean-up	VOC	1.6	2.0	138
		Ethylene Glycol Monobutyl Ether	0.34	0.42	
		Toluene	0.01	0.01	
		Ethylene Glycol	0.04	0.05	
		Methanol	0.02	0.02	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Glycol Ether	0.01	0.01	
		Methyl Isobutyl Ketone	0.01	0.01	
M295-01	M295 Decontamination Kits	PM_{10}	0.1	0.1	143
		PM	0.1	0.1	
SN-BDF-01	BDF Combined Stack	VOC	1.20	0.1	145
		Methylphosphonic Difluoride (DF)	0.0000153	0.00000975	
		O-ethyl-O' (2-diisopropylaminoethyl) Methylphosphonite (QL)	0.00000861	0.00000155	
		2-(diisopropylamino) ethanol (KB)	0.00012	0.0000003	
		Hydrogen Fluoride (HF)	0.0000181	0.000000151	
		Ethanol Vapors (ZS)	1.19	0.00329	
SB-BDF-02	**BDF Tub Grinder (475 Hp diesel-fired)**	PM_{10}	0.5	0.4	145
		SO_2	0.5	0.3	
		VOC	0.6	0.4	
		CO	1.5	1.0	
		NO_X	6.7	4.5	
		PM	0.5	0.4	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
PBCDF-01	Incinerator Common Stack	PM_{10}	2.4	10.2	158
		SO_2	17.2	75.2	
		VOC	0.7	3.0	
		CO	12.7	55.6	
		NO_X	81.6	357.4	
		Lead	0.005486	0.008665	
		PM	2.4	10.2	
		Arsenic	0.002149	0.003867	
		Beryllium	0.0004748	0.0009151	
		Cadmium	0.0006249	0.001097	
		Chromium	0.0009669	0.001515	
		Cobalt	0.0009043	0.001497	
		Manganese	0.08523	0.1622	
		Mercury	0.0006330	0.001109	
		Nickel	0.002339	0.005250	
		Selenium	0.001275	0.002042	
		Hydrogen Chloride	0.2828	0.5726	
		Hydrogen Fluoride	0.7159	1.502	
		Antimony	0.001812	0.002901	
		Phosphorus	0.03544	0.06864	
		Chlorine	0.1204	0.2208	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		PCBs	0.000002398	0.000003063	
		Benzene	0.005764	0.01025	
		Bromoform	0.001097	0.001612	
		Carbon Disulfide	0.0006779	0.001210	
		Carbon Tetrachloride	0.001082	0.002671	
		Chlorobenzene	0.0002199	0.0004417	
		Chloroform	0.001378	0.002587	
		1,1-Dichoroethane	0.001256	0.0004301	
		1,2-Dichloropropane	0.007937	0.02153	
		cis-1,3-Dichloropropene	0.006872	0.01862	
		trans-1,3-Dichloropropene	0.0002101	0.0004287	
		Ethyl Benzene	0.0003748	0.0006381	
		Methylene Chloride	0.2511	0.5416	
		Styrene	0.003771	0.007967	
		1,1,2,2-Tetrachloroethane	0.0002214	0.0004594	
		Tetrachloroethane	0.0002423	0.0005165	
		Toluene	0.1364	0.2980	
		1,1,1-Trichloroethane	0.001755	0.003207	
		Vinyl Acetate	0.0002161	0.0004452	

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Vinyl Chloride	0.0008148	0.001294	
		Xylene	0.0004901	0.0009453	
		Dimethyl Phthalate	0.008358	0.02088	
		Naphthalene	0.001717	0.002706	
		2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.000000005499	0.00000001318	
		2-Butanone	0.01216	0.02223	
		Chloromethane	0.02075	0.05615	
		4-Methyl-2-Pentanone	0.0002817	0.0006246	
		Di-n-Butyl Phthalate	0.001699	0.002687	
		bis(2-Ethylhexyl)-phthalate	0.02080	0.03967	
		2,4-Dinitrotoluene	0.0002868	0.0003664	
		2-Methylphenol	0.02143	0.03131	
		3-Methylphenol	0.006391	0.01529	
		4-Methylphenol	0.003618	0.006839	
		Ethylene Glycol	2.400	0.2500	
PBCDF-02	Not installed.				
PBCDF-03	Process Steam Boiler I	PM_{10}	0.3	1.0	170
		SO_2	0.1	0.1	
		VOC	0.2	0.7	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		CO	2.4	10.5	
		NO_X	1.5	6.3	
		Lead	0.0000142	0.0000623	
		PM	0.3	1.0	
		Arsenic	0.00000569	0.0000249	
		Beryllium	0.000000341	0.00000149	
		Cadmium	0.0000313	0.000137	
		Chromium	0.0000398	0.000174	
		Cobalt	0.00000239	0.0000105	
		Manganese	0.0000108	0.0000473	
		Mercury	0.00000739	0.0000324	
		Nickel	0.0000569	0.000249	
		Selenium	0.000000682	0.00000299	
		Methane	0.0700	0.310	
		Hexane	0.0512	0.224	
		Formaldehyde	0.00213	0.00934	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000250	0.0000110	
		Dichlorobenzene	0.0000341	0.000149	
		Benzene	0.0000597	0.000261	
		Toluene	0.0000967	0.000423	

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Naphthalene	0.0000173	0.0000760	
PBCDF-04	Process Steam Boiler II	PM$_{10}$	0.3	1.0	170
		SO$_2$	0.1	0.1	
		VOC	0.2	0.7	
		CO	2.4	10.5	
		NO$_X$	1.5	6.3	
		Lead	0.0000142	0.0000623	
		PM	0.3	1.0	
		Arsenic	0.00000569	0.0000249	
		Beryllium	0.000000341	0.00000149	
		Cadmium	0.0000313	0.000137	
		Chromium	0.0000398	0.000174	
		Cobalt	0.00000239	0.0000105	
		Manganese	0.0000108	0.0000473	
		Mercury	0.00000739	0.0000324	
		Nickel	0.0000569	0.000249	
		Selenium	0.000000682	0.00000299	
		Methane	0.0700	0.310	
		Hexane	0.0512	0.224	
		Formaldehyde	0.00213	0.00934	
		Polycyclic Aromatic Hydrocarbon	0.00000250	0.0000110	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		(PAH)			
		Dichlorobenzene	0.0000341	0.000149	
		Benzene	0.0000597	0.000261	
		Toluene	0.0000967	0.000423	
		Naphthalene	0.0000173	0.0000760	
PBCDF-05	Hot Water Boiler I	PM_{10}	0.1	0.4	170
		SO_2	0.1	0.1	
		VOC	0.1	0.4	
		CO	1.0	4.3	
		NO_X	0.6	2.6	
		Lead	0.00000585	0.0000256	
		PM	0.1	0.4	
		Arsenic	0.00000234	0.0000103	
		Beryllium	0.000000140	0.000000615	
		Cadmium	0.0000129	0.0000564	
		Chromium	0.0000164	0.0000718	
		Cobalt	0.000000983	0.00000431	
		Manganese	0.00000445	0.0000195	
		Mercury	0.00000304	0.0000133	
		Nickel	0.0000234	0.000103	
		Selenium	0.000000281	0.00000123	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Methane	0.0300	0.130	
		Hexane	0.0211	0.0923	
		Formaldehyde	0.000878	0.00385	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000103	0.00000451	
		Dichlorobenzene	0.0000140	0.0000615	
		Benzene	0.0000246	0.000108	
		Toluene	0.0000398	0.000174	
		Naphthalene	0.00000714	0.0000313	
PBCDF-06	Hot Water Boiler II	PM_{10}	0.1	0.4	170
		SO_2	0.1	0.1	
		VOC	0.1	0.4	
		CO	1.0	4.3	
		NO_X	0.6	2.6	
		Lead	0.00000585	0.0000256	
		PM	0.1	0.4	
		Arsenic	0.00000234	0.0000103	
		Beryllium	0.000000140	0.000000615	
		Cadmium	0.0000129	0.0000564	
		Chromium	0.0000164	0.0000718	
		Cobalt	0.000000983	0.00000431	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Manganese	0.00000445	0.0000195	
		Mercury	0.00000304	0.0000133	
		Nickel	0.0000234	0.000103	
		Selenium	0.000000281	0.00000123	
		Methane	0.0300	0.130	
		Hexane	0.0211	0.0923	
		Formaldehyde	0.000878	0.00385	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000103	0.00000451	
		Dichlorobenzene	0.0000140	0.0000615	
		Benzene	0.0000246	0.000108	
		Toluene	0.0000398	0.000174	
		Naphthalene	0.00000714	0.0000313	
PBCDF-07	Brine Reduction Area	PM_{10}	1.4	5.8	171
		SO_2	0.1	0.1	
		VOC	0.1	0.3	
		CO	1.1	4.6	
		NO_X	0.7	2.8	
		Lead	0.00139	0.00605	
		PM	1.4	5.8	
		Arsenic	0.000227	0.000992	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		Beryllium	0.0000960	0.000420	
		Cadmium	0.000189	0.000826	
		Chromium	0.00104	0.00454	
		Cobalt	0.000960	0.00419	
		Manganese	0.000388	0.00170	
		Mercury	0.000156	0.000680	
		Nickel	0.000985	0.00430	
		Selenium	0.0000962	0.000420	
		Hydrogen Chloride	0.0174	0.0761	
		Antimony	0.0000959	0.000419	
		Phosphorus	0.00192	0.00838	
		Methane	0.0300	0.130	
		Hexane	0.0225	0.0983	
		Formaldehyde	0.000935	0.00410	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000110	0.00000482	
		Dichlorobenzene	0.0000150	0.0000655	
		Benzene	0.0000262	0.000115	
		Toluene	0.0000424	0.000186	
		Naphthalene	0.00000761	0.0000333	
PBCDF-08	Demilitarization HVAC	Nerve Agent VX	ND	ND	174

EMISSION SUMMARY					
Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
	Exhaust Vent	Nerve Agent GB	ND	ND	
		Mustard Agent HD	ND	ND	
		Mustard Agent HT	ND	ND	
PBCDF-09	Emergency Electrical Generator I	PM_{10}	1.1	0.4	175
		SO_2	0.6	0.2	
		VOC	1.0	0.3	
		CO	9.0	2.7	
		NO_X	33.9	10.2	
		PM	1.1	0.4	
		Formaldehyde	0.000834	0.000250	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00224	0.000672	
		Benzene	0.00820	0.00246	
		Toluene	0.00297	0.000891	
		Naphthalene	0.00137	0.000412	
		Xylene	0.00201	0.000603	
		Acetaldehyde	0.000266	0.0000799	
		Acrolein	0.0000833	0.0000250	
PBCDF-10	Emergency Electrical Generator II	PM_{10}	1.1	0.4	175
		SO_2	0.6	0.2	
		VOC	1.0	0.3	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		CO	9.0	2.7	
		NO_X	33.9	10.2	
		PM	1.1	0.4	
		Formaldehyde	0.000834	0.000250	
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00224	0.000672	
		Benzene	0.00820	0.00246	
		Toluene	0.00297	0.000891	
		Naphthalene	0.00137	0.000412	
		Xylene	0.00201	0.000603	
		Acetaldehyde	0.000266	0.0000799	
		Acrolein	0.0000833	0.0000250	
PBCDF-11	Diesel Tank (1,000 gallon)	Insignificant source.			
PBCDF-12	Emergency Electrical Generator III	PM_{10}	0.4	0.1	175
		SO_2	0.4	0.1	
		VOC	0.4	0.1	
		CO	1.0	0.3	
		NO_X	4.7	1.2	
		PM	0.4	0.1	
		Formaldehyde	0.00125	0.000312	
		Polycyclic Aromatic Hydrocarbon	0.000178	0.0000444	

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		(PAH)			
		Benzene	0.000989	0.000247	
		Toluene	0.000434	0.000109	
		Naphthalene	0.0000897	0.0000224	
		Xylene	0.000302	0.0000755	
		Acetaldehyde	0.000813	0.000203	
		Acrolein	0.0000978	0.0000244	
PBCDF-13	Laboratory Building HVAC Exhaust Vent	Nerve Agent VX	ND	ND	174
		Nerve Agent GB	ND	ND	
		Mustard Agent HD	ND	ND	
		Mustard Agent HT	ND	ND	
PBCDF-14	Diesel Tank (4,000 gallon)	Insignificant source.			
PBCDF-15	RHA Baghouse	PM_{10}	0.1	0.1	178
		PM	0.1	0.1	
PBCDF-16	Laboratory Boiler	PM_{10}	0.1	0.1	179
		SO_2	0.1	0.1	
		VOC	0.1	0.1	
		CO	0.2	0.6	
		NO_X	0.2	0.7	
		PM	0.1	0.1	
PBCDF-17	PBCDF Fugitives	PM_{10}	0.2	0.6	179

EMISSION SUMMARY

Source No. (SN)	Description	Pollutant	Emission Rates		Page
			lb/hr	ton/yr	
		NO_X	0.3	1.3	
		PM	0.2	0.6	

ND = Nondetectable. Emissions shall be below levels of detection using the monitoring protocols set forth in ADEQ Hazardous Waste Permit 29-H.

SECTION III: PERMIT HISTORY

Date Issued	Air Permit Number	Description
03/23/79	505-A	First air permit for PBA. Includes 12 emission points: 6 boilers, 3 sources of phosphorous pentoxide, and 3 sources of acetone.
07/27/79	505-AR-1	Modifies 505-A to include an emission source of methylene chloride at 5 lb/hr. No annual quantities listed.
08/24/83	719-A	Permits the DF (methyl phosphonic difluoride) portion of the Binary Facility.
05/30/84	731-A	Permits the BZ (3-quinuclidynyl benzilate) Demilitarization Project. Request for discontinuance granted 12/19/90.
03/25/85	748-A	Permits Open Burning/Open Detonation.
12/07/88	924-A	Permits the transfer of FS Smoke Mix. Request for discontinuance granted 12/29/90.
12/16/88	445-I	Permits the Pit Incinerator.
08/24/89	505-AR-2	Modifies 505-AR-1to incorporate the L8A3 Red Phosphorous Facility. Includes 13 ton/yr of methylene chloride.
08/22/89	958-A	Permits the M819 Red Phosphorus Mix Facility.
07/06/90	1066-A	Permits the BIGEYE [ethyl (2-diisopropyl-aminoethyl) methylphosphonite] portion of the Binary Facility.
07/12/90	1058-A	Permits the DC (methyl phosphonic dichloride) portion of the Binary Facility.
12/03/90	958-AR-1	Modifies 958-A with the removal of the Turbo Dryer.
06/17/91	1113-A	Consolidates all previous air permits.
06/16/93	1464-A	Permits the L8A3 Red Phosphorous Mix Facility.
01/15/99	1789-A	Permits the Pine Bluff Arsenal Chemical Agent Disposal Facility. Permit issued under provisions of 40 CFR Part 52.21 (PSD).

SECTION IV: EMISSION UNIT INFORMATION

AMMUNITIONS OPERATIONS
SN-AMM-01

Pyrotechnic Mixing

PBA' s ammunition operations involve the manufacture of screening and signaling smokes (colored smoke, white smoke, and red phosphorus mixes), riot control agent (CS tear gas), incendiary mixtures (thermate), and the various mixes usually referred to as "starter mixes" used to initiate and control the buffing rate of the munitions. Pyrotechnic mixing is a batch operation where some combination of chemicals is blended together to produce the mix. There are four (4) general mixing processes that can be used for blending of the majority of the pyrotechnic mixes, the acetone process, the Glatt process, the jet-air process, and the MIGRAD (Mixer, Granulator, Dryer) process, the latter three named for the type of mixing equipment used. Each of the processes involves the mixing of dry ingredients together to create the particular type of mix. There are two additional processes for blending of red phosphorus mixes, one uses acetone in a manner similar to that above while the other uses methylene chloride as the blending enhancer.

Acetone Process: The process utilizes acetone as a blending enhancer to thoroughly mix dry ingredients together, after which the acetone is evaporated off. First, the dry materials are weighed and sifted and added to large mixing bowls, similar to those used in a bakery, and mixed together. Next, a binder solution consisting of a nitrocellulose and acetone mixture and an additional quantity of acetone is added to the dry materials and the mix is blended together. When the blending step is complete, the resulting mixes are used as a slurry (without drying), dried, granulated, and either pressed into a slug or used in granular form. Particulate emissions result from the dust created during the blending of the dry materials and are usually controlled by dust collectors. Acetone is emitted during the blending and drying steps of the process; no control equipment captures these emissions. Particulates are also generated during the granulating and slugging steps; however, since the quantity of dust created during these steps is minimal, no control equipment is utilized. The finished products; mix slurry, granulated mix, or slugs are taken to storage for later use or are taken directly to the munitions assembly lines for filling into munition items.

Glatt Process: The Glatt is a type of mixing machine designed specifically for the manufacture of pyrotechnics. There are currently three (3) Glatt mixers at PBA. In this process, which does not require acetone as a blending agent, air is forced in from the bottom to blend the ingredients. Dry ingredients are weighed, sifted, and transferred to the mixer. Prior to mixing, some ingredients are sifted in a rotary sifter to obtain the desired particle size. The rotary sifter is fitted with pleated paper filters to control particulate emissions. A binder solution is then formulated by adding dry polyvinyl alcohol (PVA) to water, the blend cycle is started, and the binder solution is metered to the mixer. Following the blending cycle, the mix is dried and ready for use in granular form or is compacted into slugs. Water is evaporated during the drying step and particulates are again emitted during the slugging operation. No control equipment is used to capture particulate emissions from this process. The finished products, dry mix or slugs, are taken to storage for later use or are taken directly to the. munitions assembly lines for filling into munition items.

Jet-Air Process: The jet-air mixer is another type of mixing device that uses forced air to blend dry ingredients and does not require use of a blending enhancer. Dry ingredients are first sifted, weighed, and transferred to the mixer. The dry ingredients are then subjected to pulses of air until thoroughly blended. Particulates are emitted from the mixer and are controlled by a filter unit.

The finished product is then transferred to the munitions assembly operations or to storage for use at a later date.

MIGRAD Process: MIGRAD is an acronym for mixer/granulator/dryer. The MIGRAD mixer is a third type of pyrotechnic mixing device which uses an impeller instead of forced air. Dry ingredients are first added to the mixing bowl followed by the addition of a binder solution, then the ingredients are thoroughly blended. The design of the mixer allows the mix to be granulated simultaneously with the blending and then allows for the mix to be dried. The dried mix is ready for use in granular form or is compacted into slugs. Acetone and particulates are emitted during the blending process and are controlled by a vacuum system. This system pulls air directly from the mixer through an in-line particulate filter to a liquid ring vacuum pump which functions similar to a scrubber. The finished products, dry mix or slugs, are taken to storage for later use or are taken directly to the munitions assembly operations for filling into munition items.

Red Phosphorus Mix (Epoxy Binder): In this process, a two-part epoxy is used as a binder to hold red phosphorus (RP) mix. The first step involves mixing RP with a two-part epoxy , acetone, and sodium nitrate. When the mixing is complete, the material is transferred to a dryer where the acetone is evaporated from the mixture. This is followed by a screening step to remove any lumps found during drying and the addition of a flow enhancer (fumed silica). The mixture is then blended and transferred to a press where pellets are produced. The uncured pellets are then loaded into munition body tubes and transferred to a curing oven which sets the epoxy. The munition body tubes are then returned for final assembly in the munitions assembly operation. Acetone is emitted during the blending and drying steps and is controlled by a wet scrubber system. VOCs from the epoxy are emitted during the curing step and are also controlled by the scrubber system. No credit was taken for the control efficiency of this scrubbing system in the emission calculations.

Red Phosphorus Mix (Butyl Rubber Binder): For this type of mix, butyl rubber is used as a binder. The butyl rubber is granulated and mixed with a lubricant (silicon dioxide) and dissolved in methylene chloride. A gel is formed and mixed with RP and kneaded to the proper consistency. The mixture is then extruded into granules, placed in an oven for drying, screened for proper size, coated with silica, and pressed into pellets. The pellets can then be stored or sent to the munitions assembly operations for incorporation into the munition end item. Particulates are emitted from the mixing of the butyl rubber and silicon dioxide and are controlled by a dust collector. Methylene chloride, a hazardous air pollutant (HAP), is emitted from the blending, extruding, and drying steps and is controlled by a recovery system which allows the majority of the solvent to be reused. Particulates are also emitted from the coating of the granules prior to pelletizing and are controlled by a dust collector.

Munition Assembly

Another part of the ammunition operations is the assembly of components of the various munition items into a final or near final product. These operations are sometimes referred to as "Fill and Press" operations since, many of the pyrotechnic mixtures are "filled" into a munition body and "pressed" inside the body to compact the mix. These operations use an assembly-line production method with capabilities for production of end items ranging from 40 mm to 175 mm in size. In addition to assembling munitions using the mixes included in the pyrotechnic mixing process descriptions, PBA operates the only white phosphorus filling plant in the western hemisphere, produces munitions for infrared screening and illuminating, and assembles a "less-than-lethal" munition that can be described as a "rubber bullet."

Quality Assurance Testing

Ammunition operations also includes quality testing of the end items that are produced. These tests are performed in the open air and consist of functioning of the particular item and measuring various performance parameters. The quality tests are performed on pyrotechnic mix batches, where sample munitions are assembled and tested to approve each batch of mix, and on end items where a statistical sample of items are pulled from each production lot and tested.

Munitions Packout

The final step in the overall ammunition operations process is the munitions packout. In this area markings and labels are placed on each individual end item, the end items are packed into the appropriate type of shipping container, and the containers are marked and labeled for shipment. This portion of the ammunition operations is usually referred to as Load and Packout, or LAP, and is performed on each type of munition previously described. There can be some variation from this general ammunition operations process and, due to PBA' s product and process development activities, the facility frequently receives work on new items that may include only the assembling and packout processes. Other variations are that some of the marking and labeling of end items is done along with the assembly operations or some of the components are loaded into an end item at some of the packout operation locations.

Specific Conditions

Ammunitions Operations Bubble (SN-AMM-01)

1. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM_{10}	21.0	17.5
VOC	296.8	132.7

2. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM	21.0	17.5
Acetone	467.40	283.30
Methanol	72.00	31.50
Methyl Isobutyl Ketone	72.00	31.50
Toluene	72.00	31.50
Xylene	72.10	31.56
Ethyl Benzene	0.02	0.02
Hexane	4.2	2.1
Hydroquinone	0.0004	0.0006

Pollutant	lb/hr	tpy
Methylene Chloride	19.3	11.3
Methyl Methacrylate	0.004	0.006
Cyanide Compounds	0.04	0.06
Glycol Ethers	61.85	29.45
Hexachloroethane	0.07	0.07
Phthalic Anhydride	0.0004	0.0006
Phosphorous	0.04	0.01
Silica Compounds	0.36	0.08

3. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the opacity limits set forth in the following table.

Opacity Limits for Sources Within SN–AMM-01			
Process	Unit	Building	Opacity Limit
Acetone	Baghouse	31-520	5%
Jett-Air	6 HEPA Filters	34-640	5%
Glatt	2 HEPA Filters Pleated Paper Filters for Sifter	32-620	5% 5%
MIGRAD	Baghouse Liquid Ring Vacuum Pump	33-520	5% 5%
Red Phosphorous Mix (Epoxy Binder)	Scrubber	31-530	5%
Red Phosphorous Mix (Butyl Rubber Binder)	Baghouse Baghouse	34-630 34-650	5% 5%

Opacity Limits for Sources Within SN–AMM-01

Process	Unit	Building	Opacity Limit
Munition Assembly	Baghouse	31-630	5%
	Baghouse	33-530	5%
	Baghouse	33-630	5%
	Venturi Scrubber	34-196	20%

4. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the above listed sources with 5% opacity limits shall be conducted by a person familiar with emissions from each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

   Daily observations of the opacity at the Venturi Scrubber (Building 34-196) shall be conducted by a person familiar with emissions from this source. The facility shall maintain personnel trained in, but not necessarily certified in, EPA Reference Method 9, who shall train those observing the visible emissions at this source in order to ensure that a 20% maximum opacity limit is met. If visible emissions which appear to be in excess of the permitted opacity are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that excess visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

5. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-AMM-01.

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Dry Material	120,000 lb/day	35,000,000 lb/yr	N/A	N/A
Acetone	1440 gal/day	50,200 gal/yr	6.64 lb/gal	100% by weight
Acetone Binder	1800 lb/day	253,450 lb/yr	N/A	92% by weight
Paint	240 gal/day	10,000 gal/yr	15 lb/gal	80 wt % VOC 80 wt % Methanol 80 wt % MIBK 80 wt % Toluene 80 wt % Xylene 80 wt % Ethyl Benzene 80 wt % Hexane 80 wt % Methylene Chloride 16 wt % Glycol Ethers
Thinner	240 gal/day	10,000 gal/yr	12 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % MIBK 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Hexane 20 wt % Glycol Ethers
Ink	96 gal/day	1,000 gal/yr	12 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % MIBK 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Hexane 20 wt % Glycol Ethers
Cleaner	120 gal/day	10,000 gal/yr	8.5 lb/gal	10 wt % VOC 10 wt % Glycol Ethers

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Adhesive - Hexane	24 gal/day	1000 gal/yr	6.9 lb/gal	60 wt % VOC 60 wt % Hexane
Adhesive - Loctite	360 milliliters/day	52,560 ml/yr	1.1 g/ml	100 wt % VOC 10 wt % Polymethylmethacrylate 100 wt % Cyanide Compounds 1 wt % Phthalic Anydride 1 wt % Hydroquinone
Sealant	2.4 gallons/day	200 gal/yr	-	3.1 lb VOC/gallon 0.24 lb Ethyl Benzene/gallon 0.55 lb Xylene/gallon
Hexachloroethane	158,400 lb/day	10,000,000 lb/yr	N/A	100 wt % Hexachloroethane
Red Phosphorous	25,632 lb/day	345,000 lb/yr	N/A	100 wt % Red Phosphorous
Silicon Dioxide	960 lb/day	13,500 lb/yr	N/A	100 wt % Silicon Dioxide

6. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

7. Pursuant to §18.1104 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain the carbon bed filter system at the Red Phosphorous Mix (Butyl Rubber Binder) process in accordance with manufacturer's specification.

8. Pursuant to §18.1104 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records of all carbon regeneration and change-out at the carbon bed filter system. The records shall be kept on site, made available to Department personnel upon request.

Chemical and Biological Defense Operations
SN-32-230

Chemical and biological defense operations presently include three (3) commodities: protective masks, structure and vehicle filters, and skin decontamination kits. Charcoal filter manufacturing is the only current process which generates air emissions. There are two types of charcoal filters; one type for use on structures, such as buildings, and the other used on tanks or other types of fighting vehicles. The manufacturing process consists of the fabrication of metal frames, filling the frames with charcoal as the filter medium, performance testing, and painting the filters.

Performance testing with 1,1,1,2-tetrafluoroethane (HFC-134a) and di-octyl phthalate meets the requirements of Group A (5) of the Insignificant Activities list found in Appendix A of Regulation 19, dated February 15, 1999.

The painting of the filters produces air emissions that require permitting. The coatings to be used in this operation are Chemical Agent Resistant Compounds (CARC) which contain small quantities of VOC and HAPs. The other operations are the maintenance, repair and performance testing of various types of protective masks and the assembling of various components into kits used to decontaminate skin that has been exposed to chemical agent.

Specific Conditions
Chemical and Biological Defense Operations (SN-32-230)

9. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
VOC	15.8	0.2

10. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy

Pollutant	lb/hr	tpy
Chromium	0.016	0.00018
Cobalt	0.0029	0.000031
Hexamethylene Diisocyanate	0.0266	0.00029

11. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-32-230.

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Paint	24 gal/day	65 gal/yr	15 lb/gal	80 wt % VOC 80 wt % Methanol 80 wt % MIBK 80 wt % Toluene 80 wt % Xylene 16 wt % Glycol Ethers
Thinner	24 gal/day	65 gal/yr	12 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % MIBK 100 wt % Toluene 100 wt % Xylene 20 wt % Glycol Ethers

12. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Production Engineering Lab
SN-32-510, SN-32-520, SN-32-550, SN-32-720

Product and process development is performed at the Production Engineering Lab (PEL) Complex and consists of experimentation with various mix "recipes" and mixing methods for new pyrotechnic mixes and new and improved mixing processes. Operations in this area are similar to those in the Ammunition Operations areas, but on a much smaller scale.

Specific Conditions

Production Engineering Lab (SN-32-510, SN-32-520, SN-32-550, SN-32-720)

13. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM_{10}	0.1	0.1
VOC	24.0	0.30

14. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM	0.1	0.1
Acetone	50.0	0.50
Methanol	6.00	0.08
Methyl Isobutyl Ketone	6.00	0.08
Toluene	6.00	0.08
Xylene	6.00	0.08
Glycol Ethers	4.8	0.06

15. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the opacity limits set forth in the following table.

Opacity Limits for Production Engineering Lab			
Process	Unit	Building	Opacity Limit
Pilot Production Line	Baghouse 4 Dust Collectors Bowl Mixer HEPA Filter	32-520 32-520 32-520	5% 5% 5%
Pilot Glatt Process	Baghouse	32-720	5%

16. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the above listed sources shall be conducted by a person familiar with emissions from each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

17. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at the Production Engineering Laboratory (Buildings 32-510, 32-520, 32-550, and 32-570).

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Paint	24 gal/day	25 gal/yr	15 lb/gal	80 wt % VOC 80 wt % Methanol

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
				80 wt % MIBK 80 wt % Toluene 80 wt % Xylene 16 wt % Glycol Ethers
Thinner	24 gal/day	25 gal/yr	12 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % MIBK 100 wt % Toluene 100 wt % Xylene 20 wt % Glycol Ethers
Acetone	1000 lb/day	1000 lb/yr	6.64 lb/gal	100% by weight
Dry Materials	12,000 lb/day	25,000 lb/yr	N/A	N/A

18. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Central Incinerator Complex
SN-42-960(1), SN-42-960(4), SN-42-960-(5), SN-42-960(6), SN-42-960(7), SN-42-960(8)

The Central Incinerator Complex (CIC) was originally constructed as a hazardous waste incinerator. The Arsenal has since decided to utilize the CIC for industrial and other non-hazardous waste. The CIC consists of the following process units:

Rotary Deactivation Furnace (RDF) (installed 1979);
Car Bottom Furnace (CBF) (installed 1988);
1850 hp Diesel Emergency Generator (installed 1993);
Waste Volume Reduction Unit (WVRU) Sludge Dryer (installed 1993);
WVRU Shredder (installed 1993);
Two (2) natural gas fired boilers with rated capacity of 2.4 MMBTU/hr each; and
Bulk Dunnage Incinerator (BDI) (installed 2002).

Emissions from the CBF, the RDF, and the BDI are routed to a common Central Afterburner (CAB), quenched, scrubbed in a variable throat wet venturi scrubber, cyclonic entrainment separator, baffle tower absorber, and CHEAF aerosol collector and mist eliminator and then discharged through a stack. The RDF is equipped with a shroud that helps prevent heat loss into the building. Air which is circulated through the shroud is vented through a dust collection system consisting of a HEPA filter, carbon filter, and baghouse.

The WVRU Sludge Dryer emissions are controlled by a Venturi Scrubber. A baghouse controls emissions from the WVRU Shredder.

The Chain Grate Furnace and Munitions Test Chamber were removed from service in 1990. The Fluid Bed Incinerator was removed from service in 1999.

All combustion units at the CIC, except the Emergency Generator, are natural gas fired. Total rated heat input capacity for the CIC is 38.0 MMBTU/hr.

Rotary Deactivation Furnace

The RDF is a direct-fired, rotary kiln which is used to incinerate non-hazardous waste. The rotary kiln is designed with internal spiral flights which advance the feed through the furnace as the kiln rotates. Brass casings, lead, and other metals are recovered and sold as scrap metal. Munition casings which are contaminated or have no scrap metal value are shredded and the residues are collected in drums with any ash residue. Exhaust gases from the kiln are ducted to the Central Afterburner.

Car Bottom Furnace

The Car Bottom Furnace is a waste processing system designed to incinerate contaminated combustible material or to flash contaminated metal. This system consists of a natural gas fired furnace, batch and continuous feed systems, and an optional liquid feed system. The furnace is a single chamber, self-moving, car bottom type. Exhaust gases from the furnace are ducted to the Central Afterburner. Maximum operating temperature for the furnace is 1800 °F, with a normal operating range between 1050 °F and 1650 °F.

When the furnace is operated in batch mode, material is placed onto the car bottom which then moves into the furnace and the door is closed before the burner can be ignited. Once processed, the door is opened and the car bottom containing the material is removed.

Bulk Dunnage Incinerator

The Bulk Dunnage Incinerator (BDI) will be used to dispose of non-hazardous industrial waste at the rate of 1,000 pounds per hour. The primary chamber of the BDI is equipped with three (3) 1.5 MMBTU/hr burners.

The exhaust gases from the BDI will be routed through the existing afterburner and other control equipment associated with the CIC. The gas burners will remain in an "idling mode" when the BDI is not incinerating waste.

Waste Volume Reduction Unit

The WVRU is designed to reduce the volume of wastes (spent munitions, industrial sludges, and other non-hazardous wastes) and to separate non-hazardous and recyclable materials like scrap metal before disposing of the wastes in a permitted Pine Bluff Arsenal landfill.

The individual units that comprise the WVRU are the shredder, screen, sludge dryer, bin, mixer, slug press, and crusher. The purpose of each individual piece of equipment in the process is described below.

The shredder processes spent munitions and spent munition components such as canisters, smoke grenades, and smoke pots. The purpose of the shredder is to reduce the overall size of metal scraps and to sufficiently open the spent munitions to allow for separation of metal from ash residues. The shredder uses counter-rotating cutter blades and a high-torque, low RPM electric motor to reduce the shredding intensity and to reduce the evolution of dust from the shredding process. The shredder is equipped with a 2.5 cubic yard hopper to allow for continuous waste feed. The shredder is capable of processing 30-100 pounds of spent munitions per minute, depending on the size of the item and the thickness of the metal.

Wastes treated in the shredder either come from the incineration of reject munitions or from QA testing of munitions. Casings and/or other contaminated metals from the CIC have been incinerated at temperatures above 1000 °F , therefore there will be no unburned pyrotechnic residue present. Although there are residues from QA testing of munitions, these residues are not explosive; functioning munition fully expends the pyrotechnic nature of the mix contained in the munitions. Particulate emissions from the shredder are controlled by a baghouse.

All materials pass through a 24 inch wide vibratory screen with one (1) inch mesh to separate metal from ash and other residues. The screen is capable of processing 3000 pounds per hour at a density of 20 to 80 pounds per cubic foot. Metal scraps from this unit are taken directly to the crusher for compaction and preparation for sale.

The sludge dryer processes wet solids and sludges, primarily metal oxides, salts, and lime. The unit is operated on a batch basis and has a capacity of 10 cubic feet. Sludges are placed in the unit in bulk from containers and require approximately two (2) hours to process. Dried sludge is discharged from the unit at a rate of 24 cubic feet per hour in a single 20 minute cycle. A wet Venturi Scrubber controls emissions from the sludge dryer.

The bin is used for temporary accumulation of dry solids until sufficient material is available for processing in the sludge press. Materials are fed from the bin to the sludge press via a rotary airlock valve and screw feeder.

The mixer allows addition and mixing of pH adjusting additives and binders to produce good quality slugs from the slug press.

Solids are fed into the slug press or compactor from the bin into a five (5) cubic foot hopper at a rate of three (3) cubic feet per minute (approximately 2000 pounds per hour). The slug press compacts mix and loads slugs into 55 gallon drums. The press is equipped with a carousel which allows the filling and compacting of four (4) drums. Each drum is filled prior to the carousel advancing to the next drum.

Metal residues are compacted in a drum crusher. Spent munitions can be compacted at a maximum rate of 12 tons per hour.

Specific Conditions

CIC Complex

[SN-42-960(1), SN-42-960(4), SN-42-960(5), SN-42-960(6), SN-42-960(7), SN-42-960(8)]

19. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part

52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
42-960(1)	CIC Combustion Units	PM_{10}	1.1	4.6
		SO_2	0.5	1.4
		VOC	17.5	57.4
		CO	27.2	89.2
		NO_X	8.48	28.3
		Lead	0.23	0.74
42-960(4)	RDF Shroud	PM_{10}	0.1	0.1
42-960(5)	Waste Volume Reduction Unit Shredder	PM_{10}	0.1	0.2
42-960(6)	Waste Volume Reduction Unit Sludge Dryer	PM_{10}	1.0	3.3
42-960(7)	Emergency Generator	PM_{10}	0.3	0.1
		SO_2	3.2	0.2
		VOC	0.6	0.1
		CO	2.4	0.2
		NO_X	51.4	2.7
42-960(8)	2 Boilers 2.4 MM Btu/hr each	PM_{10}	0.1	0.2
		SO_2	0.1	0.1
		VOC	0.1	0.2
		CO	0.4	1.8
		NO_X	0.5	2.1

20. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and

§8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
42-960(1)	CIC Combustion Units	PM	1.1	4.6
		Dioxins and Furans	0.000002106	0.00006899
		Arsenic	0.004924	0.0171
		Cadmium	0.0127	0.042
		Chromium	0.011	0.036
		Nickel	0.011	0.037
		Hydrogen Chloride	0.078	0.2555
		Mercury	0.00872	0.029
42-960(4)	RDF Shroud	PM	0.1	0.1
42-960(5)	Waste Volume Reduction Unit Shredder	PM	0.1	0.2
42-960(6)	Waste Volume Reduction Unit Sludge Dryer	PM	1.0	3.3
42-960(7)	Emergency Generator	PM	0.3	0.1
42-960(8)	2 Boilers 2.4 MM Btu/hr each	PM	0.1	0.2

21. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the opacity limits set forth in the following table:

Opacity Limits for Central Incinerator Complex			
SN	Unit	Building	Opacity Limit

Opacity Limits for Central Incinerator Complex			
SN-42-960(1)	Common Stack	42-960	5%
SN-42-960(4)	RDF Shroud Baghouse	42-960	5%
SN-42-960(5)	WVRU Shredder Baghouse	42-960	5%
SN-42-960(6)	WVRU Sludge Dryer Scrubber	42-960	20%
SN-42-960(8)	2 Boilers	42-960	5%

22. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the opacity at SN-42-960(1), SN-42-960(4), and SN-42-960(5) shall be conducted by a person familiar with emissions from each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

    Daily observations of the opacity at SN-42-960(6) **shall be conducted by a person familiar with emissions from this source. The facility shall maintain personnel trained in, but not necessarily certified in, EPA Reference Method 9, who shall train those observing the visible emissions at this source in order to ensure that a 20% maximum opacity limit is met. If visible emissions which appear to be in excess of the permitted opacity are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that excess visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.**

23. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only process non-hazardous industrial waste at the Central Incinerator Complex.

24. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain daily records

of each waste burned in each unit at the Central Incinerator Complex. The records shall specifically identify the content and origin of each waste.

25. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only use pipeline natural gas as fuel for the combustion units at the Central Incinerator Complex. These units include the RDF, the CBF, the CAB, the WVRU Sludge Dryer, the two 2.4 MM Btu/hr Boilers, and the BDI. Total combined natural gas usage shall not exceed 303,150,000 standard cubic feet per year for the CIC combustion units.

26. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only combust diesel fuel in the Emergency Generator, SN-42-960(7). Diesel fuel usage for this source shall not exceed 8840 gallons per 12-month period.

27. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain records of natural gas and diesel usage for the CIC combustion units and the Emergency Generator. These records shall demonstrate compliance with throughput limits, shall be updated monthly, kept on site, and made available to Department personnel upon request.

28. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at the CIC:

Unit	Material (All Non-Hazardous)	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit
BDI	Industrial Waste	24,000 lb/day	6,552,000 lb/yr
RDF	Dry Materials	36,000 lb/day	9,828,000 lb/yr
CBF	Waste Feed	14,400 lb/day	3,931,200 lb/yr
WVRU Shredder	Waste Feed	24,000 lb/day	2,200,000 lb/yr
WVRU Sludge Dryer	Sludge	24,000 lb/day	6,552,000 lb/yr

29. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the

permittee shall maintain daily and monthly records of material throughput and supporting characterization data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

30. Pursuant to §19.703 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19), 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain optimal combustion temperatures as determined by test results for each combustion unit of the CIC. These units include the RDF, CBF, WVRU Sludge Dryer, and the BDI. Each unit's combustion zone temperature shall be measured at least once per operating hour and shall be recorded in a log. The combustion zone temperature records and temperature ranges determined by testing shall be kept on site and made available to Department personnel upon request.

31. Pursuant to §19.303 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall operate all control devices within manufacturer's specifications at all times, or as indicated by compliant stack testing results.

    For the BDI, CBF, and RDF, the control train includes the Central Afterburner (CAB), quench unit, variable throat wet venturi scrubber, cyclonic entrainment separator, the baffle tower absorber, and CHEAF aerosol collector and mist eliminator.

    Control for the RDF also includes a HEPA filter, carbon filter, and baghouse.

    The WVRU Sludge Dryer control system includes a venturi scrubber. The WVRU Shredder is controlled by a baghouse.

    All combustion zone temperatures shall be monitored and recorded at least once every hour of operation. Flow rates for scrubbers and absorbers shall be monitored and recorded at least once every hour of operation. All particulate control devices shall be inspected at least once per week. Records of parameter monitoring and inspection and maintenance of control devices shall be updated as performed, kept on site, and made available to Department personnel upon request.

32. Pursuant to §19.702 of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall stack test the CIC units according to the following schedule:

Unit	Pollutant	Test Method	Frequency	First Test
RDF	Particulate Matter Carbon Monoxide Nitrogen Oxides	5 10 7E	Annual. Tri-annual after 3 consecutive compliant events.	Within 180 days of permit issuance.
CBF	Particulate Matter Carbon Monoxide Nitrogen Oxides	5 10 7E	Annual. Tri-annual after 3 consecutive compliant events.	Within 180 days of permit issuance.
BDI	Particulate Matter Carbon Monoxide Nitrogen Oxides	5 10 7E	Annual. Tri-annual after 3 consecutive compliant events.	Within 180 days of permit issuance.

The test results for each pollutant at each unit shall be combined to determine compliance with the permitted emission rates at SN-42-960(1).

Alternatively, the permittee may perform one combined stack test annually for PM, CO and NO_X, provided that, at the time of each test, all three units are being operated simultaneously and at a minimum 90% throughput capacity.

Annual stack tests must be performed within 12 months of the initial stack test (or subsequent annual stack tests). When three consecutive annual stack tests have been conducted which demonstrate compliance with the permitted emission limit for a particular pollutant (i.e. PM, CO, or NOx) for this source, no stack test will be required for that pollutant for the following two years. A stack test for each pollutant must be conducted the third year, no more than 36 months following the previous stack test. The permittee may continue the tri-annual stack tests for each pollutant provided the tests continue to demonstrate compliance with the permitted emission limit for the specific pollutant from this source. If a stack test identifies that the facility emissions for a particular pollutant are in excess of the permitted limit, that pollutant must be retested annually until three consecutive annual tests are passed, then tri-annual testing may be resumed for that pollutant.

9. Pursuant to §19.705 of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall maintain a record of operational parameters for each combustion unit and control device based upon each compliant stack testing event. These records of shall be kept on site, and made available to Department personnel upon request.

10. Pursuant to §19.304 of Regulation 19 and 40 CFR §60.2500 through §60.2540, the CIC incinerators shall be subject to all applicable requirements of 40 CFR Part 60 Subpart DDDD, *Emission Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999.* The facility must be in compliance with the Arkansas State Plan required under this rule by the earlier of the following dates: December 1, 2005 or three years after the effective date of the State Plan approval.

Quality Assurance Testing
SN-32-690, SN-33-760, SN-44-212, SN-77-950

As part of PBA's munition production mission, end items must be tested for quality assurance/quality control purposes. End items are tested at the Bombing Mat (SN-77-950), Dilly Farm Test Site (SN-44-212), Grenade Test Basin (SN-33-760), and the Drop Tower (SN-32-690). The testing of end items is accomplished by functioning the munition. When functioned, the Arsenal's munitions release smoke for screening or signaling purposes. Examples of munitions tested include smoke grenades, smoke pots, and red phosphorous rounds.

Specific Conditions

11. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
32-690 33-760 44-212 77-950	Drop Tower Grenade Test Basin Dilly Farm Bombing Mat	PM_{10}	16.0	17.5
		SO_2	1.6	1.8
		VOC	1.6	1.8
		CO	9.4	10.3
		NO_X	1.6	1.8

12. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
32-690 33-760 44-212 77-950	Drop Tower Grenade Test Basin Dilly Farm Bombing Mat	PM	16.0	17.5
		Polycyclic Organic Matter (POM)	5.03	2.75
		Red Phosphorous	0.256	0.28
		Hexachloroethane	0.16	0.18

13. **Pursuant to '19.505(B) of Regulation 19 and 40 CFR Part 52 Subpart E, an exemption from the opacity limitation of '19.503(B) of Regulation 19 has been granted by the ADEQ Director for** SN-32-690, SN-33-760, SN-44-212, and SN-77-950**. The operation of these sources shall be conducted in such a manner as to cause no nuisance to the surrounding community. The Department reserves the right to rescind this exemption if, at any time, the emissions from the operations become a**

nuisance to the surrounding community. A copy of the approval letter for this exemption is included as Attachment 3 of this permit.

14. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-32-690, SN-33-760, SN-44-212, and SN-77-950:

SN	Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Content Limit(s)
32-690 Drop Tower	Pyrotechnic Mix	384 lb	70,000 lb	80 wt % Red Phosphorous 50 wt % Hexachloroethane 30 wt % Sugar
	Colored Smoke Grenades	123 grenades	44,895 grenades	0.06534 lb Total Organic Compounds per Grenade 0.06534 lb Polycyclic Organic Matter per Grenade
33-760 Grenade Test Basin	Pyrotechnic Mix	384 lb	70,000 lb	80 wt % Red Phosphorous 50 wt % Hexachloroethane 30 wt % Sugar
	Colored Smoke Grenades	123 grenades	44,895 grenades	0.06534 lb Total Organic Compounds per Grenade 0.06534 lb Polycyclic Organic Matter per Grenade
44-212 Dilly Farm	Pyrotechnic Mix	384 lb	70,000 lb	80 wt % Red Phosphorous 50 wt % Hexachloroethane 30 wt % Sugar
	Colored Smoke Grenades	231 grenades	84,315 grenades	0.06534 lb Total Organic Compounds per Grenade 0.06534 lb Polycyclic Organic Matter per Grenade
77-950 Bombing Mat	Pyrotechnic Mix	144 lb	52,560 lb	50 wt % Hexachloroethane 30 wt % Sugar
	Colored Smoke Grenades	36 grenades	13,140 grenades	0.06534 lb Total Organic Compounds per Grenade

SN	Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Content Limit(s)
				0.06534 lb Polycyclic Organic Matter per Grenade
	Red Phosphorous Mix	120 lb	43,800 lb	80 wt % Red Phosphorous

15. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

16. Pursuant to §19.705 of Regulation 19, §18.1004 of Regulation 18, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only conduct open air testing or detonation at the sites identified as the Bombing Mat (SN-77-950), Dilly Farm Test Site (SN-44-212), Grenade Test Basin (SN-33-760), and the Drop Tower (SN-32-690).

17. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall operate no more than one of the following sources per calendar day: SN-32-690, SN-33-760, SN-44-212, and SN-77-950. These sources shall only be operated between 6:00 a.m. and 6:00 p.m..

18. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily records to demonstrate compliance with the previous condition. The records shall be updated during each Quality Assurance Testing event.

19. Pursuant to §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall process grenades containing polycyclic organic matter (POM) at only one test site per calendar day. The permittee shall be limited to the throughput rates outlined below for each test site:

SN	Test Site	Maximum Hourly Limit	Maximum Daily Limit
77-950	Bombing Mat	12 grenades/hour during three 15-minute episodes.	36 grenades/day
33-760	Grenade Test Basin	41 grenades/hour during three 15-minute episodes.	123 grenades/day
32-690	Drop Tower	41 grenades/hour during three 15-minute episodes.	123 grenades/day
44-212	Dilly Farm	77 grenades/hour during three 15-minute episodes.	231 grenades/day

The permittee shall maintain hourly and daily records to demonstrate compliance with the requirements of this condition. The hourly records shall be updated with each testing event. The daily records shall be updated by noon of the following day. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Open Air Disposal of Military Munitions and Explosives
Building 77-950 (Bombing Mat)
SN-77-950

The disposal of pyrotechnic and explosive wastes is another mission of Pine Bluff Arsenal. PBA operates an incinerator complex for the disposal of many of these wastes, but some are not amenable to incineration, either because of their explosive nature or because they generate extreme temperatures. These wastes are open-burned or detonated at the Bombing Mat for safety reasons in accordance with the RCRA Part B Permit Application for Open Burning/Open Detonation on file at ADEQ.

Specific Conditions

20. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM_{10}	6.0	13.2
SO_2	3.0	6.6
VOC	3.0	6.6
CO	3.0	6.6
NO_X	3.0	6.6

21. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM	6.0	13.2

46. **Pursuant to '19.505(B) of Regulation 19 and 40 CFR Part 52 Subpart E, an exemption from the opacity limitation of '19.503(B) of Regulation 19 has been granted by the ADEQ Director for** SN-32-690, SN-33-760, SN-44-212, and SN-77-950**. The operation of these sources shall be conducted in such a manner as to cause**

no nuisance to the surrounding community. The Department reserves the right to rescind this exemption if, at any time, the emissions from the operations become a nuisance to the surrounding community. A copy of the approval letter for this exemption is included as Attachment 3 of this permit.

47. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-77-950 during Open Air Disposal:

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit
Pyrotechnic or Explosive Material	720 lb/day	262,800 lb/yr

48. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS or other characterization data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

49. Pursuant to §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, any emissions of hazardous air pollutants (HAPs) or other emissions not permitted at this source shall be reported as an upset condition pursuant to the requirements of General Provision 8.

50. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, Open Air Disposal processes at the Bombing Mat (SN-77-950) shall not be conducted while Quality Assurance Testing activities are being conducted at any of the following sources: SN-32-690, SN-33-760, SN-44-212, or SN-77-950. The Bombing Mat shall only be operated between 6:00 a.m. and 6:00 p.m..

51. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily records to demonstrate compliance with the previous condition. The records shall be updated during each Open Air Disposal event.

Boiler Complex
SN-32-060, SN-33-060, SN-34-125

The boiler complex consists of natural gas fired boilers which provide steam to power the various production area operations at PBA. These boilers are located in three (3) buildings, 32-060, 33-060, and 34-125 (originally 34-140).

Boiler 1 and Boiler 2 in Building 32-060 (SN-32-060) are rated at 25.1 MMBtu/hr each. They were both installed in 1996 and are both subject to 40 CFR Part 60 Subpart Dc.

Boiler 1 and Boiler 2 in Building 33-060 (SN-33-060) are rated at 30.0 MM Btu/hr each. They were both installed in 1964, and are thus not subject to Subpart Dc.

Boiler 1 and Boiler 2 in Building 34-125 (SN-34-125) are rated at 14.7 MMBtu/hr each. They were installed in 1997 and are both subject to Subpart Dc.

Specific Conditions
Boiler Complex (SN-32-060, SN-33-060, SN-34-125)

52. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-32-060	Boiler 1 25.1 MM Btu/hr	PM_{10}	0.4	1.6
		SO_2	0.1	0.1
		VOC	0.2	0.7
		CO	0.9	3.9
		NO_X	3.6	15.4
SN-32-060	Boiler 2 25.1 MM Btu/hr	PM_{10}	0.4	1.6
		SO_2	0.1	0.1
		VOC	0.2	0.7
		CO	0.9	3.9
		NO_X	3.6	15.4

SN	Description	Pollutant	lb/hr	tpy
SN-33-060	Boiler 1 30 MM Btu/hr	PM_{10}	0.5	1.8
		SO_2	0.1	0.1
		VOC	0.2	0.8
		CO	1.1	4.6
		NO_X	4.2	18.4
SN-33-060	Boiler 2 30 MM Btu/hr	PM_{10}	0.5	1.8
		SO_2	0.1	0.1
		VOC	0.2	0.8
		CO	1.1	4.6
		NO_X	4.2	18.4
SN-34-125	Boiler 1 14.7 MM Btu/hr	PM_{10}	0.2	0.9
		SO_2	0.1	0.1
		VOC	0.1	0.4
		CO	0.5	2.3
		NO_X	2.1	9.0
SN-34-125	Boiler 2 14.7 MM Btu/hr	PM_{10}	0.2	0.9
		SO_2	0.1	0.1
		VOC	0.1	0.4
		CO	0.5	2.3
		NO_X	2.1	9.0

53. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-32-060	Boiler 1 25.1 MM Btu/hr	PM	0.4	1.6
SN-32-060	Boiler 2 25.1 MM Btu/hr	PM	0.4	1.6
SN-33-060	Boiler 1 30 MM Btu/hr	PM	0.5	1.8
SN-33-060	Boiler 2 30 MM Btu/hr	PM	0.5	1.8
SN-34-125	Boiler 1 14.7 MM Btu/hr	PM	0.2	0.9
SN-34-125	Boiler 2 14.7 MM Btu/hr	PM	0.2	0.9

54. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity at Buildings SN-32-060, SN-33-060, SN-34-125. Compliance with this condition shall be demonstrated by the fuel use limit outlined in the following condition.

55. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, pipeline natural gas shall be the only fuel used at the boilers housed at Buildings SN-32-060, SN-33-060, and SN-34-125, except during periods of natural gas curtailment, when No. 2 fuel oil may be used. The fuel oil usage option may be exercised provided the Department is notified in advance, with sufficient justification of the curtailment condition, and provided the events are reported as upset conditions in accordance with General Provision 8 of this permit.

56. Pursuant to §19.304 of Regulation 19 and 40 CFR Part 60.48c(g), the permittee shall record and maintain the amounts of fuel combusted each day for Boiler #1 and Boiler #2 at SN-32-060 and for Boiler #1 and Boiler #2 at SN-34-125.

57. Pursuant to §19.304 of Regulation 19 and 40 CFR Part 60.48c(i), the fuel usage records for Boiler #1 and Boiler #2 at SN-32-060 and for Boiler #1 and Boiler #2 at SN-34-125 shall be maintained for a period of two years following the date of such records.

Central Waste Treatment (CWT) Feed/Storage System
SN-42-930(1), SN-42-930(2)

Lime and powdered activated carbon are received in bulk quantities. The dry materials are delivered by truck and are pneumatically transferred into the appropriate silo. The Bulk Carbon Feed/Storage silo is designated as SN-42-930 (1) and the Bulk Lime Feed/Storage silo is designated as SN-42-930 (2). The carbon is augered into a carbon slurry tank located in an enclosed area beneath the carbon storage silo as necessary. Likewise, the lime is augered into a lime slurry tank located in an enclosed area beneath the lime storage silo as needed. These slurries are delivered into the wastewater unit in the underground treatment tanks at the Central Waste Treatment (CWT) facility. A dust collector is located on each silo to control particulate emissions.

Specific Conditions
Central Waste Treatment (CWT) Feed/Storage System [SN-42-930(1), SN-42-930(2)]

58. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
42-930 (1)	Bulk Carbon Storage/Feed System	PM_{10}	0.2	0.9
42-930 (2)	Bulk Lime Storage/Feed System	PM_{10}	0.1	0.1

59. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
42-930 (1)	Bulk Carbon Storage/Feed System	PM	0.2	0.9
42-930 (2)	Bulk Lime Storage/Feed System	PM	0.1	0.1

60. Pursuant to §19.503 of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall not exceed 5% opacity at SN-42-930(1) or SN-42-930(2).

61. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the opacity at SN-42-930(1) and SN-42-930(2) shall be conducted by a person familiar with emissions from each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

62. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall be limited to the following throughput limits:

SN	Material	Maximum Rolling 12-month Throughput Limit
42-930 (1)	Carbon	16,312,000 lb/yr
42-930 (2)	Lime	1,305,240 lb/yr

63. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Parts Washers
SN-PW-01

Parts washers are located at various production and maintenance buildings located throughout the facility. These parts washers contain solvent that is 100% VOC but contains no HAPs.

Specific Conditions
Parts Washers (SN-PW-01)

64. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
VOC	2.6	2.6

65. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall be limited to a combined 12-month rolling total of 750 gallons per year of solvent usage at the Parts Washers (SN-PW-01). The solvent shall contain no Hazardous Air Pollutants (HAPs).

66. Pursuant to §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the preceding condition.

    The monthly material throughput records shall be based upon the following equation:

    Usage = Purchase + Inventory (start) - Inventory (end)

    The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Tanks
SN-TANKS-01

PBA stores #2 fuel oil in tanks to be used in the event of a natural gas curtailment. PBA also has two gasoline tanks and a diesel tank that are used to fill government vehicles. Tank locations, capacities, and contents are indicated below.

Location	Capacity	Contents
32-065	139,455	#2 Fuel Oil
33-065	139,455	#2 Fuel Oil
34-150	85,000	#2 Fuel Oil
13-120	Removed from service.	
44-121A	12,000	#2 Fuel Oil
44-121B	12,000	#2 Fuel Oil
44-121C	12,000	#2 Fuel Oil
42-980	100,000	#2 Fuel Oil
Tank Car 32-060	9,500	#2 Fuel Oil
34-140	85,000	#2 Fuel Oil
32-040	5,000 5,000	Used Oil Used Oil
Maintenance Areas 34-910 32-035	25,000 25,000 25,000	Gasoline Gasoline Diesel Fuel

The following tanks are subject to 40 CFR Part 60, Subpart Kb: 34-140, Maintenance Areas, 34-910, and 32-035.

Specific Conditions

Tanks (SN-TANKS-01)

67. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
VOC	319.7	2.9

68. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall be limited to the following throughput limits:

SN	Material	Maximum Rolling 12-month Throughput Limit
SN-TANKS-01	Gasoline	540,000 gal/yr
	Diesel	240,000 gal/yr
	#2 Fuel Oil	619,000 gal/yr

69. Pursuant to §19.705 of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall maintain monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

70. Pursuant to 40 CFR Part 60, Subpart Kb, the permittee shall comply with all applicable provisions of the Standards of Performance for Volatile Organic Liquid Storage Vessels relative to the following tanks: 34-140, Maintenance Areas, 34-910, and 32-035. These requirements include, but are not limited to, the following:

40 CFR	Item

§60.110b	Applicability
§60.116b(a) - (b)	Monitoring of Operations (includes record keeping)

71. Pursuant to 40 CFR 60.116 (b), the permittee shall maintain readily accessible records of the dimensions and capacity of the following storage vessels: 34-140, Maintenance Areas, 34-910, and 32-035. These records shall be maintained on site for the life of each source.

Motor Pool Paint Booths
SN-32-035

Painting operations pertaining to automotive repair and maintenance are performed in Building 32-035. The building contains two stand-alone paint booths. This process is not subject to NSPS Subpart MM, which applies to facilities that paint vehicles during manufacture.

A Chemical Agent Resistant Coating (CARC) will be used to paint military vehicles and equipment in the spray booth at the Motor Pool.

Specific Conditions
Motor Pool Paint Booths (SN-32-035)

72. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM_{10}	0.1	0.1
VOC	82.2	7.6

73. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

Pollutant	lb/hr	tpy
PM	0.1	0.1
Methanol	0.56	0.14
Methyl Isobutyl Ketone	5.8	1.02
Toluene	8.55	1.08
Xylene	10.55	1.09
Glycol Ethers	15.67	3.20
Ethyl Benzene	4.30	0.97

Pollutant	lb/hr	tpy
Methyl Ethyl Ketone	8.50	1.08
Chromium Compounds	0.0147	0.0023
Selenium	0.0017	0.0004
Lead and Lead Compounds	0.0780	0.0195
Cadmium and Compounds	0.0113	0.0028
Hexane	0.56	0.14
Methylene Chloride	0.56	0.14
Cyanide Compounds	2.57	0.104
Styrene	0.225	0.009
Cobalt	0.0014	0.0001
Hexamethylene Diisocyanate	0.0133	0.0013

74. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity at SN-32-035.

75. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the opacity at SN-32-035 shall be conducted by a person familiar with emissions from the source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from this source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

76. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-32-035.

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Wash Primer for CARC Process	36 gal/day	300 gal/yr	12.24 lb/gal	5.89 lb VOC/gal 0.81 wt % Cr
Wash Primer Catalyst for CARC Process	9 gal/day	75 gal/yr	7.7 lb/gal	5.95 lb VOC/gal No HAPs
Primer for CARC Process	36 gal/day	300 gal/yr	12.24 lb/gal	3.04 lb VOC/gal No HAPs
Polyurethane CARC	36 gal/day	300 gal/yr	11.94 lb/gal	1.11 lb VOC/gal 9.20 wt % Chromium 1.60 wt % Cobalt
Catalyst for CARC Process	18 gal/day	150 gal/yr	8.87 lb/gal	2.21 lb VOC/gal 0.2 wt % Hexamethylene Diisocyanate
Paints	24 gal/day	500 gal/yr	18 lb/gal	90 wt % VOC 90 wt % Methanol 90 wt % Methyl Isobutyl Ketone 90 wt % Toluene 90 wt % Xylene 90 wt % Ethyl Benzene 90 wt % Methyl Ethyl Ketone 90 wt % Hexane 90 wt % Methylene Chloride 58.5 wt % Glycol Ethers 58.5 wt % Chromium Compounds 58.5 wt % Cyanide Compounds 21.6 wt % Selenium 21.6 wt % Lead Compounds 21.6 wt % Cadmium

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
				Compounds
Thinners	12 gal/day	250 gal/yr	9 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % Methyl Isobutyl Ketone 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Methyl Ethyl Ketone 100 wt % Hexane 100 wt % Methylene Chloride 55 wt % Glycol Ethers 55 wt % Chromium Compounds 55 wt % Cyanide Compounds
Clear Coats	24 gal/day	40 gal/yr	9 lb/gal	90 wt % VOC 90 wt % Methanol 90 wt % Methyl Isobutyl Ketone 90 wt % Toluene 90 wt % Xylene 90 wt % Ethyl Benzene 90 wt % Methyl Ethyl Ketone 90 wt % Hexane 90 wt % Methylene Chloride 22.5 wt % Glycol Ethers 22.5 wt % Chromium Compounds 22.5 wt % Cyanide Compounds
Hardeners	6 gal/day	20 gal/yr	10 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % Methyl Isobutyl Ketone 100 wt % Toluene 100 wt % Xylene

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
				100 wt % Ethyl Benzene 100 wt % Methyl Ethyl Ketone 100 wt % Hexane 100 wt % Methylene Chloride 100 wt % Glycol Ethers 100 wt % Chromium Compounds 100 wt % Cyanide Compounds
Primers/Sealers	6 gal/day	30 gal/yr	14 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % Methyl Isobutyl Ketone 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Methyl Ethyl Ketone 100 wt % Hexane 100 wt % Methylene Chloride 60 wt % Glycol Ethers 60 wt % Chromium Compounds 60 wt % Cyanide Compounds
Putty Coat/Bondo	6 gal/day	20 gal/yr	15 lb/gal	20 wt % VOC 2.4 wt % Methanol 2.4 wt % Methyl Isobutyl Ketone 2.4 wt % Toluene 2.4 wt % Xylene 2.4 wt % Ethyl Benzene 2.4 wt % Methyl Ethyl Ketone 2.4 wt % Hexane 2.4 wt % Methylene Chloride 6 wt % Styrene
Rubbing Compounds	0.25 gal/day	0.25 gal/yr	12 lb/gal	90 wt % VOC No HAPs

Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
Fisheye Preventer (Silicone)	0.25 gal/day	0.25 gal/yr	8 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % Methyl Isobutyl Ketone 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Methyl Ethyl Ketone 100 wt % Hexane 100 wt % Methylene Chloride
Silicone Resin Solution	1 gal/day	1 gal/yr	8 lb/gal	100 wt % VOC No HAPs
Vinyl	1 gal/day	1 gal/yr	10 lb/gal	100 wt % VOC 100 wt % Methanol 100 wt % Methyl Isobutyl Ketone 100 wt % Toluene 100 wt % Xylene 100 wt % Ethyl Benzene 100 wt % Methyl Ethyl Ketone 100 wt % Hexane 100 wt % Methylene Chloride 10 wt % Glycol Ethers 10 wt % Chromium Compounds 10 wt % Cyanide Compounds

77. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records

shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Depot Support
SN-60-070, SN-74-100

Personal Protection Ensembles, also known as rubber goods, are used in the day-to-day operation of the Pine Bluff Arsenal. In the course of normal wear and tear, the rubber goods develop scrapes, cuts and tears. In order to preserve the protective qualities of the rubber goods, repairs must be made. The repair process is not automated and is done by hand. Emissions are ducted by hood to an emission point known as Building 60-070. A second rubber goods repair facility operates at Building 74-100 in support of the chemical agent demilitarization mission. There are no emission controls on these sources.

Rubber goods determined in need of repair are routed to Building 60-070 or 74-100 to the rubber goods repair area. The rubber goods are examined and then patched or repaired as necessary. Adhesives and glues which are used in the repair process are limited to 0.5 gallon usage per hour at each building. Annual usage is limited to 25 gallons of adhesives and glues per building.

Once the rubber goods have been repaired they are returned to service.

Specific Conditions
Depot Support (SN-60-070, SN-74-100)

53. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Pollutant	lb/hr	tpy
60-070	VOC	3.4	0.1
74-100	VOC	3.4	0.1

54. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Pollutant	lb/hr	tpy
60-070	Hexane	1.70	0.042
	Toluene	1.20	0.030

SN	Pollutant	lb/hr	tpy
	Methyl Ethyl Ketone	1.20	0.030
74-100	Hexane	1.70	0.042
	Toluene	1.20	0.030
	Methyl Ethyl Ketone	1.20	0.030

55. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and rolling 12-month material usage limits at SN-60-070 and SN-74-100.

SN	Material	Maximum Daily Throughput Limit	Maximum Rolling 12-month Throughput Limit	Maximum Total Density	Maximum Content Limit(s)
60-070	Adhesive	12 gal/day	25 gal/yr	6.8 lb/gal	100 wt % VOC 50 wt % Hexane 35 wt % Toluene 35 wt % MEK
74-100	Adhesive	12 gal/day	25 gal/yr	6.8 lb/gal	100 wt % VOC 50 wt % Hexane 35 wt % Toluene 35 wt % MEK

56. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly records of material throughput and supporting MSDS data to demonstrate compliance with the limits outlined in the table above. The daily records shall be updated by noon of the day following the recorded day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

Ton Container Decontamination Facility
SN-TC-01, SN-TC-02, SN-TC-03

Pine Bluff Arsenal is permitted to conduct a recycling operation for approximately 4,400 ton containers. These carbon steel containers have been manufactured since the 1930s for various industrial uses. Some of the containers were originally used for storage of various chemical warfare agents. The ton containers at PBA are not expected to contain any chemical agent, but the facility has committed to sampling and analyzing the interior contents of each container before processing. If any agent is found, the containers will be drained prior to transport.

The pollutant emissions from this process are comprised of particulate matter generated from the breakdown of the steel containers (i.e. sawing, sandblasting, etc). These emissions are controlled by a monitored filtration system of 1 pre-filter, 2 HEPA filters, and 2 activated charcoal adsorption filters.

A mobile chemical laboratory is used to supply necessary monitoring and sampling support for the recycling operation. The mobile lab is controlled to ensure that any vapors are treated by a monitored filtration system of 2 pre-filters, 2 HEPA filters, and 2 activated charcoal adsorption filters.

Specific Conditions
Ton Container Decontamination Facility
SN-TC-01, SN-TC-02, SN-TC-03

57. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
TC-01 TC-02	Environmentally Controlled Enclosure Filtration Systems 1 and 2	PM_{10}	0.4	1.8
TC-03	Mobile Chemical Laboratory Filtration System	PM_{10}	0.1	0.1

58. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
TC-01 TC-02	Environmentally Controlled Enclosure Filtration Systems 1 and 2	PM	0.4	1.8
TC-03	Mobile Chemical Laboratory Filtration System	PM	0.1	0.1

59. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity at SN-TC-01, SN-TC-02, or SN-TC-03.

60. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the opacity at SN-TC-01, SN-TC-02, and SN-TC-03. shall be conducted by a person familiar with emissions from each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

86. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19), **A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6,** the permittee shall sample and analyze the contents of each ton container to ensure that no liquid chemical warfare agent is present prior to processing.

87. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E, the permittee shall maintain a written record of each container's sampling and the results of each content analysis. This record shall be kept on site and made available to Department personnel upon request.**

88. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E, the permittee shall notify the Department within 24 hours of discovery of liquid chemical warfare agent in any ton container. This notification shall include a complete description of material characteristics and a detailed protocol for handling and storage of the discovered agent.**

89. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19), **A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall route all emissions from sampling, opening, rinsing, and drying processes through the pre-filters, HEPA filters, and activated charcoal filters as described in the permit application.**

90. Pursuant to §19.303 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain the emission control equipment as described in the application and according to manufacturer's specification. The pre-filters, HEPA filters, and activated charcoal filters shall be inspected no less than once per week in order to ensure good operating condition.

91. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E, the permittee shall maintain a written record of control equipment inspections and subsequent maintenance. This record shall be kept on site and made available to Department personnel upon request.**

Munitions Assessment System (PBMAS)

One of PBA's current tasks is to monitor and store non-stockpile munitions comprised of Recovered Chemical Warfare Materiel (RCWM). Non-intrusive assessment capabilities have been developed since much of the RCWM was placed in storage, making it desirable to perform an assessment of the RCWM.

To facilitate this assessment, PBA operates a Munitions Assessment System (PBMAS) inside the existing Building 50-720. A major component of the PBMAS is the Vapor Confinement Module (VCM). The VCM provides a safe and controlled atmosphere for personnel handling the munitions.

The assessment of the munitions begins at the BREA storage area, where overpacks that contain munitions are selected for transport to Building 50-720 where the RCWM is inspected and repacked. The assessment concludes with transportation back to the BREA storage area and returning the RCWM to storage in the igloos.

Prior to opening the igloo, monitoring for agent is conducted. If agent is detected, appropriate contingency plans are implemented. If no contamination is detected, the igloo is opened. An inventory and inspection of the contents is documented. The drums to be transported to the PBMAS are removed from the igloo, moved to the transport vehicle, and secured for transport. The vehicle is then driven to Building 50-720 where the PBMAS is located. At any time a leak is suspected during transportation of the RCWM to Building 50-720, monitoring procedures are implemented and appropriate action taken.

The vehicle is parked at the loading dock, the contents are visually inspected for any damage during transport, and monitoring procedures are implemented. The drums are removed from the transport vehicle and placed in the Inlet Airlock of the VCM.

Drums are moved from the Inlet Airlock to a drum lifting device in the Unpack/Repack Module. In the Unpack/Repack Module, the drums are opened and all operations are conducted under continuous agent monitoring. A munition is removed from the drum and placed on a transfer cradle for ease in working with the munition. Any packing material removed from the original drum is placed in a labeled waste drum. The munition is moved to the repacking end of the table where it is photographed and a description of the munition is recorded. The munition is individually packaged into a multiple round container (MRC) or other overpack container based on the type and condition of the munition. The MRC is moved to the Outlet Airlock where it is monitored for external contamination. This process is repeated until all munitions have been removed from the drum. Once monitoring is complete and no agent is detected, the MRCs are moved to the X-Ray Station.

Once all munitions have been removed from the drum, the Unpack/Repack Module is cleaned up and the waste container closed.

At the X-Ray Station, the MRC is placed in position for x-rays to be taken. Using the x-ray, the MRC is marked for portable isotopic neutron spectroscopy (PINS) alignment. PINS assessment is a nondestructive, nonintrusive method of evaluating the composition of the munition. Following PINS assessment the MRC is prepared for transportation to the BREA storage igloo.

At the end of each workday, the MRCs are loaded and secured in the transport vehicle. The vehicle returns the MRCs to the storage igloo. Prior to offloading the MRCs, the cargo is checked for evidence of any damage while in transport, and monitoring is performed. Upon confirmation of no damage, the MRCs are offloaded and moved into the igloo. The storage records are then updated. This final recording completes the assessment of RCWM for one day. This procedure is repeated until all RCWM is assessed.

The PBMAS operation includes the following insignificant emission sources:

282 horsepower (hp) diesel-powered emergency generator (Group A #13)
500-gallon above-ground diesel storage tank (Group A #13)
Breathing air compressor (Group A #13) (located at building 24-770)
Compressed Air Tank for Breathing Air (Group A #13)

The VCM is controlled by a series of five filters: one prefilter, two high efficiency particulate air (HEPA) filters, and two carbon filters. Calculations for this source indicate that any emissions of Mustard and Lewisite agents would be fully contained by the carbon filter system.

Specific Conditions
Munitions Assessment System (PBMAS)
(no permitted emissions)

92. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19), **A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6,** the permittee shall operate the MINICAMS continuous air monitors used to monitor the VCM, its associated ventilation system, and the five-filter control system on the VCM at all times during PBMAS activities.

93. Pursuant to §19.303 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain the emission control equipment as described in the application and according to manufacturer's specification. The pre-filter, HEPA filters, and two carbon filters shall be inspected no less than once per week in order to ensure good operating condition.

94. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E, the permittee shall**

maintain a written record of control equipment inspections and subsequent maintenance. This record shall be kept on site and made available to Department personnel upon request.

95. Pursuant to §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E, the permittee shall maintain a written record of any alarm conditions associated with the PBMAS process. This record shall be kept on site and made available to Department personnel upon request. Any confirmed agent releases shall be reported in accordance with upset condition requirements as outlined in Arkansas Regulation 19.**

LVOSS M90 LAP Line
SN-LVOSS-01, SN-LVOSS-02, SN-LVOSS-03

The M90 Grenade is a 66 mm diameter, soft launched, non-fragmenting pyrotechnic smoke dispenser. Smoke from the M90 obscures visibility in the visual and near-IR portions of the electromagnetic spectrum. The M90 grenade is part of the Light Vehicle Obscuration Smoke System (LVOSS), which is a self-defense smoke/obscurant device externally mounted on a vehicle.

PBA manufactures the M90 grenade, including the final Load Assembly and Pack (LAP) operations. The M90 is assembled and crimped to hold the components inside the grenade body, then the grenade is retouched with enamel paint as necessary.

Enamel paint is mixed with thinner to achieve the required consistency for use in automatic paint guns. The initial touch-up painting is done in a paint booth with Andrea paper filters to control particulate matter emissions. The retouched grenade is dried in a low temperature electric-fired chamber.

After the paint has cured, the round is stenciled with munition identification information using ink in a Kiwi automatic stencil machine in an open bay. Denatured alcohol is used as a clean-up solvent for the stencil machine. The wire-bound boxes that the ammo cans are packed in are also stenciled with ink in the open bay.

Before final packout in ammo cans, the rounds are inspected. If necessary, the rounds are again retouched using aerosol paint under a fume hood.

Specific Conditions
LVOSS M90 LAP Line (SN-LVOSS-01, SN-LVOSS-02, SN-LVOSS-03)

96. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Compound	lb/hr	ton/yr
SN-LVOSS-01	LVOSS Paint Booth	VOC	2.9	3.6
SN-LVOSS-02	LVOSS Fume Hood	VOC	0.8	0.2
SN-LVOSS-03	LVOSS Stencil/Clean-up	VOC	1.6	2.0

97. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Compound	lb/hr	ton/yr
SN-LVOSS-01	LVOSS Paint Booth	Xylene	0.283	0.35
		Methyl Isobutyl Ketone	0.283	0.35
		Ethyl Benzene	0.283	0.35
		Crystalline Silica	0.006	0.01
		Cumene	0.12	0.14
SN-LVOSS-02	LVOSS Fume Hood	Toluene	0.23	0.04
		Xylene	0.03	0.01
SN-LVOSS-03	LVOSS Stencil/Clean-up	Ethylene Glycol Monobutyl Ether	0.34	0.42
		Toluene	0.01	0.01
		Ethylene Glycol	0.04	0.05
		Methanol	0.02	0.02
		Glycol Ether	0.01	0.01
		Methyl Isobutyl Ketone	0.01	0.01

98. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall comply with the following daily and annual limits of paint, ink, or thinner used at the LVOSS M90 LAP Line.

Material	Daily Limit	Annual Limit
Enamel--alkyd, lusterless, low VOC	9.6 gal/day	1000 gal/year

High Solids Air Dry Green Enamel	9.6 gal/day	1000 gal/year
Water Emulsion Stencil Paint	4.8 gal/day	500 gal/year
Super High Flash Naphtha	1.2 gal/day	125 gal/year
Fume Hood Aerosol Retouch Paint	24 x 16 oz cans/day	350 x 16 oz cans/year
Ink—marking, stencil, Type I or III, Kiwi 4F	0.48 gal/day	50 gal/year
Ink—marking, stencil, Type I or III, Kiwi 44F	1.68 gal/day	167 gal/year
Ink—marking, stencil, Type II, III or IV	1.2 gal/day	125 gal/year
Kiwi Ink Conditioner and Thinner	0.05 gal/day	5 gal/year
Markem "E" Thinner	1.2 gal/day	125 gal/year
Denatured Alcohol	1.2 gal/day	125 gal/year

99. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain daily and monthly usage records of each paint, ink, or thinner used at the LVOSS M90 LAP Line. The daily records shall be updated by the end of the following day. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. The records shall be kept on site, and made available to Department personnel upon request.

100. Pursuant to §19.705 of Regulation 19, 40 CFR Part 70.6, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, materials used at the LVOSS M90 LAP Line shall conform to the following specifications.

Material	Maximum Content
Enamel--alkyd, lusterless, low VOC	6.26 lb VOC/gal 15 wt % xylene 5 wt % toluene 5 wt % Ethyl Benzene 5 wt % crystalline silica 4 wt % cumene

Material	Maximum Content
High Solids Air Dry Green Enamel	6.16 lb VOC/gal 10 wt % xylene 10 wt % Ethyl Benzene 10 wt % MIK 4 wt % cumene 0.21 wt % crystalline silica
Water Emulsion Stencil Paint	0.79 lb VOC/gal 2 wt % ethylene glycol 1 wt % glycol ether
Super High Flash Naphtha	7.26 lb VOC/gal
Fume Hood Aerosol Retouch Paint	74 wt % VOC 31 wt % toluene 3 wt % xylene
Ink—marking, stencil, Type I or III, Kiwi 4F	5.50 lb VOC/gal 8 wt % methanol
Ink—marking, stencil, Type I or III, Kiwi 44F	5.94 lbVOC/gal 8 wt % ethylene glycol 1 wt % methanol
Ink—marking, stencil, opaque, Type II, III or IV	3.48 lb VOC/gal 40 wt % ethylene glycol
Kiwi Ink Conditioner and Thinner	6.78 lb VOC/gal 4 wt % methanol 2 wt % methyl isobutyl ketone
Markem "E" Thinner	7.5 lb VOC/gal 70 wt % ethylene glycol monobutyl ether
Denatured Alcohol	6.61 lb VOC/gal 0.5 wt % toluene

101. Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain MSDS data or other documentation on site to show compliance

with the content limits in the previous condition. These records shall be made available to Department personnel upon request.

102. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19), A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall not exceed a total production limit of 500,000 rounds per rolling twelve-month period at the LVOSS M90 LAP Line.

103. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain monthly production records to show compliance with the previous twelve-month throughput condition. The records shall be kept on site, made available to Department personnel upon request, and submitted in accordance with the requirements of General Provision 7.

M295 Decontamination Kits
SN-M295-01

The M295 Decon Kit consists of a mitt with a sorbent-filled applicator on one side. The kit is used to neutralize chemical agents on exterior vehicle surfaces, rifle stocks, etc.

Sorbent powder, under a nitrogen blanket to prevent rapid decay upon exposure to air, is loaded into one of two hoppers. From the hoppers, the sorbent is fed into glove boxes, where the pad on each mitt is coated with approximately 25 grams of the sorbent powder. After filling, the mitts are sealed for distribution to soldiers.

A HEPA dust collection system, rated at 99.999% efficiency, is used to control particulate emissions from the process.

Specific Conditions
M295 Decontamination Kits (SN-M295-01)

104. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-M295-01	M295 Decontamination Kits	PM_{10}	0.1	0.1

105. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-M295-01	M295 Decontamination Kits	PM	0.1	0.1

106. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity at SN-M295-01.

107. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of the opacity at SN-M295-01 shall be conducted by a person familiar with emissions from the source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from this source shall be conducted in order to confirm that visible emissions are no longer present. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

108. Pursuant to §19.303 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) and **A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311,** the permittee shall operate the HEPA dust collection system at all times during M295 production, and shall maintain the system in accordance with manufacturer's specifications. A copy of the manufacturer's efficiency rating and recommended operating parameters shall be kept on site and made available to Department personnel upon request.

109. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall be limited to 78,000 pounds per year of sorbent material usage, based upon a 12-month rolling total. The monthly records shall be updated by the 15th day of the month following the last recorded month, and shall indicate a rolling 12-month total of each material type. These records shall be kept on site and made available to Department personnel upon request.

110. **Pursuant to** §19.705 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) **40 CFR Part 52, Subpart E,** the permittee shall keep an MSDS of the sorbent material on site and available to Department personnel upon request.

Binary Destruction Facility (BDF)
SN-BDF-01, SN-BDF-02

The Pine Bluff Arsenal (PBA) currently stores the largest portion of non-stockpile chemical materiel (NSCM), including canisters and drums containing the binary components **methylphosphonic difluoride (DF) and o-ethyl-o' (2-diisopropylaminoethyl) methylphosphonite (QL). The binary chemicals were developed to mix with other chemicals inside a munition to form the nerve agents sarin (GB) and O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothioate (VX).** The Binary Destruction Facility (BDF) is designed to treat the binary chemicals DF and QL currently in storage at PBA.

The BDF **process involves a neutralization process to treat binary components of non-stockpile chemical materiel (NSCM). This process includes the following steps: receiving containers of methylphosphonic difluoride (DF) and o-ethyl-o' (2-diisopropylaminoethyl) methylphosphonite (QL); unpacking and staging the containers; accessing the containers and draining the binary fills; treating the binary chemicals in tanks by hydrolysis at temperatures less than or equal to 210 °F; and mulching non-contaminated dunnage with a 475 Hp diesel-fired tub grinder (SN-BDF-02).**

Emissions from the BDF Common Stack will be routed through a control system (SN-BDF-01) which includes a process scrubber, an area scrubber, and a carbon bed adsorber.

Insignificant activities for this project include a 99 boiler Hp natural gas-fired boiler and a 60 boiler Hp natural gas-fired boiler. These two units meet the criteria of Group A-1, Appendix A, Arkansas Regulation 19.

Specific Conditions
BDF (SN-BDF-01, SN-BDF-02)

111. Pursuant to §19.501 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-BDF-01	BDF Combined Stack	VOC	1.20	0.1

SN	Description	Pollutant	lb/hr	tpy
SN-BDF-02	**BDF Tub Grinder (475 Hp diesel-fired)**	**PM_{10}**	**0.5**	**0.4**
		SO_2	**0.5**	**0.3**
		VOC	**0.6**	**0.4**
		CO	**1.5**	**1.0**
		NO_X	**6.7**	**4.5**

112. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
SN-BDF-01	**BDF Common Stack**	**Methylphosphonic Difluoride (DF)**	**0.0000153**	**0.00000975**
		O-ethyl-O' (2-diisopropylaminoethyl) Methylphosphonite (QL)	**0.00000861**	**0.00000155**
		2-(diisopropylamino)ethanol (KB)	**0.00012**	**0.0000003**
		Hydrogen Fluoride (HF)	**0.0000181**	**0.000000151**
		Ethanol Vapors (ZS)	**1.19**	**0.00329**
SN-BDF-02	**BDF Tub Grinder (475 Hp diesel-fired)**	**PM**	**0.5**	**0.4**

113. Pursuant to §18.801 of Regulation 18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the operation of SN-BDF-02 shall be conducted in such a manner as to cause no nuisance to the surrounding community.

114. Pursuant to **§18.1004 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the following throughput limits at the BDF process during any consecutive 12-month period.**

Throughput Material	**Consecutive 12-month Limit**
DF Canisters	**56,820.0 Canisters**
DF Drums/Containers	**385.0 Gallons**
QL Drums/Containers	**16,115.0 Gallons**

115. Pursuant to **§18.1004 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain monthly throughput records sufficient to demonstrate compliance with Specific Condition 114. These records shall be kept on site, updated by the 15th of each month, and made available to Department personnel upon request.**

116. Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the following throughput limits at the Tub Grinder (SN-BDF-02) during any consecutive 12-month period.

Throughput Material	**Consecutive 12-month Limit**
No. 2 Diesel Fuel	**11,980 Gallons**
Wood, Cardboard, Nylon Rope	**270,000 lb**

117. Pursuant to §19.705 of Regulation 19 and 40 CFR Part 52, the permittee shall maintain monthly throughput records sufficient to demonstrate compliance with Specific Condition 116. These records shall be kept on site, updated by the 15th of each month, and made available to Department personnel upon request.

118. **Pursuant to §18.1104 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall operate all control devices at SN-BDF-01 within manufacturer's specifications at all times, unless otherwise approved by the Department**.

The Process Vent Scrubber shall be maintained with a minimum 10 percent NaOH solution. The NaOH concentration shall be sampled, analyzed, and recorded at least once per 8 hours of BDF operation. The NaOH solution flow rate shall be monitored and recorded at least once every 3 hours of operation.

The Area Scrubber shall be maintained with a minimum 5 percent caustic circulating liquor. The caustic concentration shall be sampled, analyzed, and recorded at least once per 8 hours of BDF operation. The caustic solution flow rate shall be monitored and recorded at least once every 3 hours of operation.

The Granular Activated Carbon Adsorber shall be maintained with the manufacturer's carbon replacement schedule. The permittee shall maintain records of carbon bed inspection and change-out, as well as a log of any flow loss alarm events and the corrective action taken.

All control equipment records and manufacturer specifications shall be maintained on site and made available to Department personnel upon request.

U.S. Army, Pine Bluff Arsenal
Permit #: 1113-AOP-R0
AFIN #: 35-00116

CHEMICAL AGENT DEMILITARIZATION FACILITY

FACILITY DESCRIPTION

The PBCDF was constructed and is being operated by the Washington Demilitarization Company (WDC) under the authority of the Department of Defense (DOD) [U .S. Army] for the purpose of processing munitions containing the nerve agents VX and GB; ton containers containing mustard agents HD and HT; as well as propellants, dunnage (miscellaneous solids), explosives, and fuses. Chemical agents are contained in M55 rockets, M23 land mines, and ton containers and will be processed in three on-site incinerators.

Facility Location

The PBCDF is a part of the Pine Bluff Arsenal (PBA) located in Jefferson County, Arkansas. The PBA is located approximately 30 miles southeast of Little Rock and eight miles northwest of Pine Bluff. PBA is bordered on the west by the right-of-way for the Missouri-Pacific Railroad and on the east by the Arkansas River. Privately owned farmland and timberland adjoin PBA on the north, while the southern boundary is adjacent to the Mid-America Packaging Paper Mill and undeveloped industrial property. PBA is served by the Missouri-Pacific Railroad and the St. Louis Southwestern (Southern Pacific) Railroad. It is accessible from Interstate Highway 530 (U.S. Highway 65) and State Highway 365 by three gates along the western boundary, and from U .S. Highway 79 on the southern boundary.

The PBCDF is located approximately one mile inside the northern and eastern boundaries of PBA. PBCDF's location is summarily described as within the PBA off State Highway 365 in Jefferson
County, Arkansas at Latitude 34° 19' 14"North and Longitude of 92° 5' 54" West. The PBCDF will include the following buildings, systems, and facilities:

Container Handling Building (CHB);
Munitions Demilitarization Building (MDB);
    -Toxic Maintenance Area (TMA) within the MDB;
    -Three Process Incinerators within the MDB
        Deactivation Furnace System (DFS)
        Liquid Incinerator (LIC)
        Metal Parts Furnace (MPF);
Pollution Abatement System (PAS) Building;
PAS Filtration System (PFS);
Laboratory Building (LAB);
    -Laboratory Boiler
Process and Utility Building (PUB);
    -Residue Handling Area (RHA) within the PUB;

-Brine Reduction Area (BRA) within the PUB;
Brine Reduction Area (BRA) Pollution Abatement System (PAS) area;
Medical Maintenance Building (MMB);
Entry Control Facility (ECF);
Personnel Support Complex (PSC);
Emergency Generators;
Fuel Storage Tanks; and
Other ancillary support facilities

Facility Description

Chemical demilitarization will begin with the processing of munitions and ton containers and continue with the incineration of chemical agent or secondary waste. The destruction will be accomplished by separating the chemical agent munitions and ton containers into their basic components (i.e., energetics, chemical agent, and the metal munition or ton container body). Each munition type, except for ton containers, will be disassembled, or cut into segments by automatic, remote-controlled machinery designed specifically for the munition type. The ton containers will only have holes punched into them. The chemical agent will be drained from the munition body or ton container.

There will be three incinerator systems present at the PBCDF: one Deactivation Furnace System (DFS), one Liquid Incinerator (LIC), and one Metal Parts Furnace (MPF). The LIC will destroy chemical agents and other liquid chemical agent-contaminated waste. The DFS will process drained rockets and mines, fuses, explosives and propellants from munitions. The MPF will thermally treat drained ton containers, mine drums, other metal parts, and dunnage. Dunnage is a general term for a combination of wooden pallets, spent laboratory solids, cleanup materials, spent filter media, spent carbon from the Pollution Abatement System Filtration System (PFS), and miscellaneous solid wastes that are potentially contaminated with agents.

A separate Pollution Abatement System (PAS) will be associated with each of the three incineration systems. The PAS for the LIC, the DFS, and the MPF are designed to provide collection efficiencies of greater than 97 weight percent for acid gases and greater than 99 weight percent for particulates found in the stack emissions. The PAS of each incinerator will produce a brine solution. The brine solution will be subsequently dried to a brine salt at the Brine Reduction Area (BRA) and packaged for off-site disposal. In the event the Brine Reduction Area does not process PAS brines, then the solution may be shipped to an off-site treatment, storage, and disposal facility (TSDF). A PAS Filter System (PFS) has also been incorporated into each incinerator's PAS as further protection against chemical agent and trace organic emissions to areas outside of engineering control. The PAS for the LIC, the DFS and the MPF vent through the Common Stack (SN-PBCDF-01).

There will be five natural gas-fired boilers at the PBCDF. There are two process boilers for producing steam for evaporating the brine at the Brine Reduction Area, two boilers to produce hot water for heating the buildings, and a small skid-mounted boiler at the Laboratory Building to support the heating systems. Process Steam Boilers I and II (SN-PBCDF-03 and SN-PBCDF-04) will serve the Brine Reduction Area equipment. Hot Water Boilers I and II (SN-PBCDF-05 and SN-PBCDF-06) will serve various buildings located at the PBCDF. The Laboratory Boiler (SN-PBCDF-16) will supply hot water to support the laboratory hot water system. The Process Steam Boilers and Hot Water Boilers are package systems equipped with low NO_X burners.

Brine solution will be concentrated and dried in the Brine Reduction Area. The resultant dried salt will be packaged in the Residue Handling Area (RHA).

The heart of the facility will be the Munitions Demilitarization Building, a two-story building that houses the three incinerator systems and mechanical process equipment to be used to disassemble and drain the munitions and ton containers prior to incineration. Plant ventilation is an integral component in the control of agent emissions during the processing of munitions in the Munitions Demilitarization Building. Air from the process areas will be routed through a series of filter systems containing activated carbon. The activated carbon filters will prevent agent emissions from being emitted to the ambient air. The Laboratory Building will also be equipped with a similar system to collect the air from areas where chemical agents are handled.

The PBCDF electrical power system has both primary and secondary electrical power supply distribution networks with two emergency power generators backing up the local utility power supply. A third emergency power generator will supply power to the PBCDF Entry Control Facility (ECF) in the case of a power failure.

The PBCDF will contain several tank systems, but only the diesel fuel storage tanks have the potential to impact air emissions. The LIC will be fed by several tanks in the Munitions Demilitarization Building. These tanks include two agent holding tanks and three spent decontamination solution holding tanks. These hazardous waste tank systems may contain volatile organic compounds. However, these tanks are located inside the Munitions Demilitarization Building and any air emissions are controlled within the building by the ventilation system. A pressurized liquified petroleum gas tank will be used to store supplemental fuel for the facility. Other tank systems include brine storage tanks, a laboratory chemical waste collection tank, brine reduction operation tanks, and chemical storage tanks.

The RHA provides the equipment required to properly contain the facility's waste for storage.

The Medical and Maintenance Building (MMB) will house the PBCDF's medical facility. The Personnel Support Complex (PSC) will house the showers, lockers, offices and other administrative facilities, as well as a support area for personnel wearing demilitarization protective ensembles. The plant's communication facilities will be housed in an area of the former chemical agent BZ demilitarization facility around which the new PBCDF is constructed.

Stack gas emissions from the incinerators will be monitored using continuous emission monitoring systems (CEMS), which are defined in the CEMS Quality Assurance/Quality Control (QA/QC) Plan for the Common Stack, originally approved by ADEQ on November 22, 2002.

MUNITIONS AND TON CONTAINER PROCESSING

The PBCDF will demilitarize chemical agents (GB, VX, HD, and HT) contained in various munitions (rockets and land mines) and ton containers. Demilitarization will be accomplished by disassembling the munitions and/or draining the chemical agent. Sheared rockets, land mines, energetics removed from munitions (i.e., bursters, propellants, booster charges and fuses), land mine drums, and ton containers will be processed at the PBCDF. Munitions and containers selected for demilitarization will be removed from the PBA Chemical Storage Area and transported to the Container Handling Building in enhanced on-site transport containers (EONCs). The enhanced on-site transport container interior air space will be sampled to detect leaking munitions and/or ton containers before transportation and after arrival at the Container Handling Building. Enhanced on-site transport containers with leaking munitions or ton containers will be unpacked separately in the Toxic Maintenance Area (TMA) of the Munitions Demilitarization Building by operators wearing demilitarization protective ensembles. Leaking munitions and/or ton containers will be surface-decontaminated before they are processed along with non-leaking munitions and ton containers. Munition and container processing steps will be specific to each type of munition and container. Automatic system control software will track process inputs and outputs, monitor system operation and store operating data. Once initiated, processing systems will operate automatically.

Chemical Agents

The chemical agent inventory at PBA consists of nerve agents (VX and GB) and mustard agents (HD and HT). Nerve agents are stored in various configurations in M55/M56 warheads and M23 land mines. Mustard agents are stored in ton containers. These chemical agents were manufactured prior to 1969 for the exclusive use of the Army under procedures issued for chemical agent manufacture.

Nerve agent GB (also known as Sarin) is a rapid-acting nerve agent. The proper chemical name for this compound is isopropylmethylphosphonofluoridate ($C_4H_{10}FO_2P$). The action within the body is the inactivation of cholinesterase that can cause death within 15 minutes after a fatal dose is absorbed. The hazard from nerve agent GB is that of vapor absorption through the respiratory tract, although it can be absorbed through any part of the skin, through the eyes, and through the gastrointestinal tract by ingestion. The nerve agent absorption rate is accelerated through cuts and abrasions in the skin. When dispersed as large droplets, nerve agent GB is moderately persistent; it is nonpersistent when disseminated as a cloud of very fine particles.

VX is a quick acting military chemical nerve agent. The proper chemical name for VX is O-ethyl S- (2-diisopropylaminoethyl) methylphosphonothiolate and its molecular formula is $C_{11}H_{26}NO_2PS$. The action within the body is the inactivation of cholinesterase that can cause death within 15 minutes after a fatal dose is absorbed. The hazard from nerve agent VX is primarily that of liquid absorption through the skin, although it can be absorbed through the respiratory tract as a vapor or aerosol, and through the gastrointestinal tract by ingestion. Nerve agent VX is slow to evaporate and may persist as a liquid for several days.

Mustard HD [bis(2-chloroethyl) sulfide] and Mustard HT [bis(2-chloroethyl) sulfide with T Agent Bis[2(2-chloroethylthioethyl)] ether] are persistent and powerful blister agents. The chemical formula for Mustard H is $C_4H_8Cl_2S$. It acts principally by poisoning the cells in the surfaces contacted. Both liquid and vapor may cause intense inflammation of the skin, eyes, and mucous membranes of the respiratory tract, the onset of which is delayed from two to 24 hours following exposure. Mustard is only moderately volatile.

Mustard is designated H, HD, and HT. H is an abbreviation for mustard made by the Levinstein process. It contains up to 25 percent, by weight, of impurities, chiefly sulfur, organosulfur chlorides, and polysulfides. HD (distilled mustard) is mustard purified by washing and vacuum distillation, which reduces impurities to about five percent. The chemical characteristics of H and HD are very similar. HT is a 60:40 mixture by weight of HD and Bis[2(2-chloroethylthio)ethyl] ether (T). While both the HD and HT forms of mustard agent will be processed at PBCDF, HT is the primary form of mustard agent found in the PBCDF stockpile.

Agent Emissions at SN-PBCDF-01

Emission concentration limits, continuous near real-time monitoring, detection and verification methods, and other regulatory requirements concerning Nerve Agent VX, Nerve Agent GB, Mustard Agent HD, and Mustard Agent HT are governed by ADEQ Hazardous Waste Permit 29-H, which is based upon human health and ecological risk assessments performed for each agent destruction campaign. The Air Division reserves the right to independently evaluate agent emissions limits derived from site-specific risk assessments and to quantify in the air permit any revised emission limits deemed necessary to protect human health and the environment. Any violation of the provisions of Hazardous Waste Permit 29-H concerning chemical agent emissions is also considered a violation of this permit.

Explosives and Propellants

Various explosives, propellants, and other components are contained in the munitions to be demilitarized at PBCDF. All of the explosives and propellants in the demilitarization program are classified as Class A explosives. The explosives found in bursters (and supplementary charges) in M55 rockets and M23 land mines include tetryl (2,4,6-Trinitrophenyl-methylnitramine) and composition B. Composition B contains a mixture of RDX (Cyclotrimethylenetrinitramine) and TNT (2,4,6-Trinitrotoluene). Munitions contain other components, such as igniters, boosters, primers, bursters, fuses, and other energetic components, which contain small quantities of these explosives or their constituents. M28 is the primary propellant used in M55 Rockets and is a mixture of nitrocellulose (60.0%), nitroglycerine (23.8%), triacetin (9.9%), dimethylphthalate (2.6%), lead stearate (2.0%), and 2-nitrophenylamine (1.7%).

Rockets

The main rocket type to be demilitarized at PBCDF is the M55 rocket. An M55 rocket is an airborne military weapon used to disperse nerve agents GB or VX. Each rocket is 115 millimeters (mm) in diameter, 78 inches in length, and weighs approximately 58 pounds. The rocket contains approximately 10.7 pounds of agent that is dispersed upon impact with either an M34 or M36 Burster. Approximately 19 pounds of M28 propellant is used in M55 Rockets to achieve flight. Each rocket also contains a Model M417 fuse and an M62 primer. PBA also has a limited number of M56 rockets stored at the facility. The M56 warhead is very similar to the M55, but has a slightly different warhead configuration. The M56 warheads will be processed at the end of the M55 rocket campaign. Rockets are stored inside M441 shipping and firing containers. These containers are made of fiberglass and epoxy resin and will be processed through the DFS.

The rocket handling system is designed to prepare the GB and VX M55/M56 rockets for demilitarization. The rocket handling system will transport the rockets from the Munitions Demilitarization Building Unpack Area, through the Explosive Containment Vestibule, to the Explosive Containment Rooms. The outer shell of the rockets will be punched and the liquid agent will be drained. The chemical agent will be pumped to the Toxic Cubicle agent holding tanks. Drained rockets will then be sheared, and the pieces will be fed to the DFS. The drained chemical agent will be pumped from the agent holding tank to the LIC Primary Combustion Chamber for destruction.

Mines

An M23 land mine is a military weapon used to disperse nerve agent VX. It is an anti-personnel weapon that is usually buried to prevent detection. Each land mine is 13.5 inches in diameter, 5 inches in length, and weighs approximately 23 pounds. The land mine contains approximately 10.5 pounds of agent that is dispersed upon contact with an M38 Burster. Each land mine also contains a Model M603 fuse.

The mine handling system is designed to prepare the M23 mines for demilitarization. These mines, packed in steel drums, will be conveyed from the Unpack Area to an unpack glove box, where the mines will be removed from the drums. Mine bodies will be oriented and punched. The chemical agent will be drained to the agent holding tanks in the Toxic Cubicle. The mine arming plugs, mine fuses, and mine activators will be removed. The explosive components will be placed inside a fuse box, conveyed to the Explosive Containment Room, and inserted into the DFS chute. Drained mine bodies will also be inserted into the DFS chute for processing in the DFS. Mine drums (including the bottom piece of packing) and associated dunnage will be sent to the MPF. The drained chemical agent will be pumped from the agent holding tank to the Primary Combustion Chamber of the LIC for destruction.

Ton Containers

At PBCDF, all HD and HT chemical agents are stored in ton containers. Ton containers of chemical agent will be transported from the Unpack Area to the Bulk Drain Station Room. The ton container will be punched and the chemical agent will be drained and pumped to the agent holding tanks in the Toxic Cubicle. Empty ton containers will then be sent to the MPF for thermal decontamination. The drained chemical agent will be pumped from the agent holding tank to the Primary Combustion Chamber of the LIC for destruction.

Dunnage

Solid wastes will be treated in the MPF. These wastes may include spent carbon, spent filter media, wood, clean up materials, spent laboratory solids, and miscellaneous metal wastes. Many of the dunnage wastes may be contaminated with a chemical agent; therefore, these wastes will be managed as hazardous wastes in accordance with all applicable standards.

Contaminated wood dunnage will be processed in the MPF. The primary source of contaminated wood dunnage is the rocket campaigns. Rockets are loaded on pallets and some of the rockets may have developed pin-hole leaks. Wooden pallets and materials used to construct munitions packaging and over-packs may also be incinerated in the MPF.

Spent carbon is retrieved from filters on the incinerator filter systems, the HVAC system associated with the Munitions Demilitarization Building and laboratory, ventilation system, and Agent Collection Tank Vent. Spent carbon from the HVAC and PFS filters is estimated to account for approximately 77 % of the total contaminated dunnage. PBCDF plans to replace the activated carbon whenever indicated by the automatic continuous air monitoring system (ACAMS) or by agent change over.

Demilitarization Protective Ensemble (DPE) suits are estimated to be the second largest source of dunnage for the MPF. A DPE suit must be worn by personnel during entry into a hazardous area. The suits are single use and go through a decontamination process with the person wearing them. DPE suits will be processed directly or stored in drums before processing in the MPF.

Halogenated Plastics and Rubber (HLG-Plastics) and Non-Halogenated Plastics (Plastics) are additional materials that will be processed in the MPF. The primary source of these materials will be from operations in the Munitions Demilitarization Building.

Personal protective equipment (PPE) such as n-butyl rubber gloves and aprons is known as Toxicological Agent Protective (TAP) Gear. This type of equipment is used by the laboratory and operations whenever working with low agent levels. TAP Gear will be packaged in drums prior to disposal.

PPE carbon filter canisters are another source of spent carbon that will be processed in the MPF. Safety policies require all mask canisters to be discarded following any exposure above the permissible exposure level (PEL). Operations such as HVAC filter vestibule maintenance and glove box maintenance will generate waste mask canisters. All PPE canisters will be packaged in drums and processed through the MPF.

Pre-filters are part of the PFS that are used to remove coarse particles before the gas stream enters the PFS carbon filters. PBCDF contends that pre-filters will plug throughout the campaign and the majority of spent pre-filters will be generated during the changeover of agent campaigns. The pre-filters will be packaged in drums for disposal in the MPF.

High efficiency particulate air (HEPA) filters are part of the PFS system that are used to remove fine particles before the gas stream enters the carbon filters. The majority of spent HEPA filters will be generated during the changeover of agent campaigns, The HEPA filters will be packaged in drums for disposal in the MPF.

Laboratory solid waste is another material that will be processed in the MPF. Any solid lab waste that is contaminated with a chemical agent will be treated in the MPF. Lab waste will be packaged in drums prior to disposal.

There is potential to generate combustible and non-combustible waste in the Munitions Demilitarization Building after chemical agent processing begins. Potential examples of combustible wastes are solids containing spent lubrication oils. Non-combustible waste generated in the Munitions Demilitarization
Building includes sump residues and maintenance wastes. Any material from the Munitions Demilitarization Building will be presumed to be chemical-agent contaminated until demonstrated otherwise and will be managed accordingly. Munitions Demilitarization Building waste will be packaged in drums prior to disposal in the MPF.

The processing of metal parts in the MPF would include mine drums, ton containers, and associated metal parts that had the potential for exposure to agents. After thermal treatment in the MPF, all metal will be considered as decontaminated to a 5X level and then further processed as scrap metal or disposal as hazardous waste. The scrap metal will be stored for off-site recovery or disposal.

PBCDF will segregate and process dunnage separately to prevent mixing of non-compatible wastes. The processing rate through the MPF depends on the nature of the dunnage. Engineering estimates indicate that wood could be processed at the highest rate in the MPF. The maximum wood dunnage feed rate to the MPF would be 926 pounds per hour. DPE suits have a feed rate of approximately 440 pounds per hour. Drummed material such as TAP Gear, and plastics would be approximately 400 pounds per hour. The maximum feed rate to the MPF for spent carbon is 330 pounds per hour. The nominal feed rate of metal parts to the MPF is 430 pounds per hour. Non-carbon filter media and material contaminated with combustible materials can not be processed at a rate greater than 200 pounds per hour. PPE mask canisters have the slowest rate of processing in the MPF with a maximum rate of 52 pounds per hour. These are estimated maximum dunnage processing rates which will be confirmed during actual MPF operations.

Special Equipment Testing Hardware (SETH)

Special Equipment Testing Hardware (SETH) is inert and simulant filled replicas of actual chemical weapons. Cardboard rockets, fiberglass rockets, and cardboard land mines filled with 50% ethylene glycol/water will be used as SETH weapons. Current plans are to use SETH weapons in the testing and shakedown phases of incinerator startup. This will allow for safely testing the demilitarization equipment and training of operational personnel. SETHs will also be used to prove out equipment after repairs are made as required by the government.

Each SETH weapon will follow the same destruction path as the corresponding real weapon. SETH land mines and rockets will be processed through the DFS for the purpose of testing and training. It is assumed that a 5% simulant heel will remain in each SETH which corresponds to additional simulant to be processed through the DFS during testing and shakedown phases of startup. Each SETH will be drained of simulant and the simulant will be transferred to a holding tank before processing in the LIC. Additionally, a simulant mixture of ethylene glycol and water will be used to verify the integrity of level transmitters and switches. This material will also be processed through the LIC. SETH ton containers with a simulant heel will also be processed through the MPF for testing and training purposes.

COMMON STACK INCINERATION SYSTEMS [SN-PBCDF-01]

PBCDF will have three incineration systems (the DFS, the LIC, and the MPF) that vent to a Common Stack (SN-PBCDF-0l). The DFS will process drained rockets and mines, fuses, explosives, and propellants from munitions. The LIC will destroy chemical agents and other liquid chemical agent-contaminated waste. The MPF will thermally treat drained ton containers, empty mine drums, other metal parts, and miscellaneous solid waste (dunnage).

Deactivation Furnace System (DFS) [SN-PBCDF-01]

The DFS incinerates sheared rocket parts or land mines with residual chemical agent (GB or VX) and deactivates energetics separated from demilitarized rockets and land mines. The DFS consists of a rotary kiln, a Heated Discharge Conveyor (HDC), a Blast Attenuation Duct, a cyclone, an afterburner, and associated subsystems.

Purpose and Function of the DFS

Components processed by the DFS include sheared rockets and land mines. The furnace feedstock also includes fiberglass and fiberglass resin from processed rockets that were packed in fiberglass tubes with aluminum end caps. At any given time, the DFS processes components from only a single munition type and single agent, such as drained M55 rockets containing residual GB or VX, an undrained M55 rocket containing gelled GB or VX, or whole, drained M23 land mines containing residual VX. The undrained M55 rockets are filled with a stabilizer that has the capability of forming a lumpy gel under hydrolysis causing the agent in the munitions to become difficult to drain.

The rotary kiln thermally deactivates and incinerates energetics while destroying residual agent and other organic materials. The kiln is a countercurrent furnace in which munitions travel in the opposite direction of the combustion gas stream. Since the rotary kiln processes energetics that could result in a detonation, the combustion gas duct leading from the kiln is equipped with a Blast Attenuation Duct to prevent a blast shock wave from reaching the DFS PAS. The exhaust flow from the Blast Attenuation Duct enters a cyclone, where large particulates are separated from the gas stream. Then, the gases flow to the DFS afterburner where they are re-heated to ensure complete combustion of any residual gaseous organic materials. Exhaust gases from the afterburner flow to the PAS for removal of acid gases and particulate matter. The exhaust gas then flows to the PFS before being discharged through the Common Stack (SN-PBCDF-01) to the atmosphere. An Induced Draft (ID) Fan supplies the negative draft for the DFS. Scrap metal and ash from the DFS are transferred to the Heated Discharge Conveyor. The Heated Discharge Conveyor provides additional residence time at elevated temperatures, ensuring complete destruction of any remaining organic materials. The solid waste products are discharged through a chute into a portable waste bin located in the Heated Discharge Conveyor blast enclosure outside the DFS room wall.

Operational Summary of the DFS

The DFS feed comes from two Explosive Containment Rooms (ECRs) in which various munition processing activities take place. Rocket pieces and land mines are gravity fed from each Explosive Containment Room through a feed chute. Each feed chute has a built-in system of two blast gates in series to meter the munition pieces to the DFS rotary kiln and isolate the kiln from the Explosive Containment Room. The automatic admission of process water or a mixture of process water and decontamination solution controls the feed chute temperature. The waste feed rate limits for the DFS are 40 rockets per hour and 70 land mines per hour.

The charge-end subassembly, housing the charge-end seal, accepts munition components from the blast gates and feeds the DFS rotary kiln. The rotary kiln thermally deactivates and incinerates energetics, and destroys residual organic chemicals. An internal spiral in the rotary retort forces pieces to move from the furnace charge chute to the discharge chute as thermal processing occurs. The kiln is fabricated of Rolled Alloy 253 MA, which can withstand a maximum shell temperature of 1,600 ^{o}F. The inside temperature of the kiln is controlled by a single natural gas burner. The temperature inside of the kiln (1,100 ^{o}F for rockets and 1,050 ^{o}F for mines) also is affected by the nature of the materials being processed.

The fuel gas/air mixture is fired through a conventional, natural gas burner located in the discharge-end subassembly of the rotary kiln. Material exiting the rotary kiln will be received by a Heated Discharge Conveyor, which will provide a minimum of 15 minutes holding time at a temperature of 1,000 ^{o}F. The flue gas exiting the rotary kiln will pass through a Blast Attenuation

Duct followed by a cyclone where particulate from the gas stream will be separated and collected.

The DFS rotary kiln is driven by a five horsepower, variable-speed, reversible motor. The motor controller regulates the motor speed such that the kiln rotates between 0 and 2.25 revolutions per minute (rpm), and the controller can cycle the motor between forward and reverse. The normal operating speed of the kiln is between 1.7 and 1.8 rpm for rockets and one rpm for mines. The kiln speed only exceeds two rpm when testing the kiln high-speed alarm. The kiln drive gearbox has a bath-type lube oil system. Support for the kiln comes from two riding rings mounted on the outer circumference of the shell and floor-mounted trunnion bearings. A thrust bearing minimizes lateral movement. A separate lube oil system is provided to cool and lubricate the trunnion and thrust bearings. The DFS rotary kiln is equipped with an insulated shroud. Furnace room air is drawn into the shroud. Most of the shroud air volume flows toward the metal discharge end of the kiln. This cools the kiln metal shell to minimize heat loss to the room and provides heated combustion air. The remaining shroud air volume flows toward the feed end of the metal kiln. This also cools the kiln metal shell to help maintain the shell temperature below 1,600 ^{o}F. The shroud is insulated to further reduce furnace heat loss to the room.

The discharge-end subassembly directs scrap metal, ash, and residual glass fibers from the kiln to the Heated Discharge Conveyor. The discharge conveyor accepts the material from the DFS rotary kiln, conveys the material on a bucket conveyor, and provides a minimum residence time of 15 minutes at a minimum temperature of 1,000 ^{o}F, ensuring complete destruction of any residual agent to the 5X level of decontamination. The Heated Discharge Conveyor has an electrically heated steel enclosure containing a bucket-type chain conveyor. The conveyor buckets overlap to prevent molten material from jamming the conveyor. The Heated Discharge Conveyor discharges the scrap metal, ash, and residual glass fiber through a chute with dual blast gates to a portable residue bin that is enclosed in the Heated Discharge Conveyor blast enclosure. When full, the bin is transferred first to a cooling area and then to the Residue Handling Area.

The exhaust gases flow from the feed end of the kiln to the Blast Attenuation Duct. The metal duct and the Blast Attenuation Duct are designed to contain an explosive over pressure from 28.2 pounds of trinitrotoluene (TNT) equivalent. The Blast Attenuation Duct is designed to dissipate any pressure waves from the rotary kiln before reaching the PAS. Next, the gases enter a refractory-lined cyclone that causes them to spin, throwing the large particulates and fiberglass strands into the walls via centrifugal force. The inlet is on the side of the unit, and the outlet is directly on top of the cyclone.

A discharge from the cone-shaped cyclone bottom is provided to empty collected solids into a container at floor level. A slide gate is installed in the dropline just above the container for sealing purposes during container changes. The residue bin and the bottom section of the cyclone are enclosed in a ventilated enclosure to prevent emissions during bin change out.

The hot gases exiting the cyclone then flow into a vertical, refractory-lined cylindrical afterburner. The afterburner and associated ductwork provides a minimum overall gas residence time of 2.0 seconds at or above 2,000 ^{o}F. The afterburner has two natural gas-fired burners located at the top of the side wall. A combustion air blower supplies outside air that enters the chamber through these burners. The afterburner has internal refractory to minimize heat loss. from the afterburner, the exhaust gases flow to the DFS wet PAS for removal of acid gases and particulate matter. The exhaust then flows to the PFS before being discharged to the atmosphere through the Common Stack (SN-PBCDF-01). The furnace draft is supplied by Induced Draft fans, which consists of two independent adjustable-speed drive blowers.

Design Basis for the DFS

The DFS is designed to burn drained and sheared rockets, drained land mines, and energetics. The DFS is designed to operate automatically. All conveyors, gates, and furnace operations can be operated remotely from the Control Room. The complete DFS treatment process (i.e., rotary kiln and Heated Discharge Conveyor) is designed to deactivate energetics separated from demilitarized munitions, and to heat the munition components to a minimum of 1,000 ^{o}F and maintain this temperature for at least 15 minutes to attain 5X level of decontamination. The afterburner is designed to provide a minimum overall gas residence time of 2.0 seconds at or above 2,000 ^{o}F.

Liquid Incinerator (LIC) [SN-PBCDF-01]

The LIC disposes of agent and spent decontamination solution through high-temperature incineration. Agents collected from the demilitarization of munitions and bulk storage containers are stored in the Toxic Cubicle until treatment conditions exist in the LIC.

Purpose and Function of the LIC

The LIC consists of a refractory-lined, two-chamber furnace and associated subsystems. The LIC Primary Combustion Chamber destroys liquid nerve (GB and VX) and mustard (HD and HT) agents through high temperature incineration. The LIC Secondary Combustion Chamber provides additional residence time for Primary Combustion Chamber exhaust flue gases. It also evaporates spent decontamination solution and destroys any organic material contained in it. The LIC furnace exhaust flows to a dedicated wet PAS for cleansing acid gases prior to additional treatment in the PAS filter System. An Induced Draft fan provides a negative pressure to produce the flow of air through the LIC furnace system.

LIC operations are supported by two subsystems consisting of the LIC fuel oil/air purge system and the LIC slag removal system. The LIC fuel oil/air purge system removes residual agent from the Primary Combustion Chamber agent feed line, which is downstream of the second safety shutoff valve. The line is flushed with compressed air from the plant air system (PLA) and then with fuel oil at the end of agent-burning operations. The flush is performed while the Primary

Combustion Chamber is still at operating temperature to ensure that purged residual agent is burned.

The LIC slag removal system removes accumulated slag from the LIC. Slag is a mixture of liquid salts that results from the thermal destruction of spent decontamination solution. Slag produced in the LIC Secondary Combustion Chamber flows to the bottom of the chamber, where it collects in the slag extension. The Control Room (CON) operator removes the slag by using the LIC slag removal system. LIC slag removal system operation is supported by a dedicated air handling unit. The air handling unit cools sensors and provides cooling for barrels of slag removed in the slag removal system operation.

Operational Summary of the LIC

Liquid agent (i.e., GB, VX, HD, and HT) is pumped from the agent holding tanks in the Toxic Cubicle by an agent feed pump to the LIC Primary Combustion Chamber. Agent is pumped at an agent-specific, uniform, continuous rate to the Primary Combustion Chamber where the agent is dispersed into the burner with air-atomizing nozzles and mixed with combustion air. Natural gas is used to ensure a stable flame pattern within the primary burner and to control the chamber temperature. The operating temperature in the Primary Combustion Chamber is maintained at about 2,700 ^{o}F. Furnace draft for the LIC System is supplied by an Induced Draft Fan consisting of two independent, adjustable-speed drive blowers.

Exhaust gases from the LIC Primary Combustion Chamber are pulled by the Induced Draft fan through a refractory-lined crossover duct to the LIC Secondary Combustion Chamber. An excess of air is maintained in both LIC chambers to ensure complete agent destruction. A fuel oil/air purge system is provided to flush out any residual agent remaining in the LIC agent feed lines. Furnace operations are designed for remote operation from the Control Room. Spent decontamination solution is pumped from any of three spent decontamination solution holding tanks in the spent decontamination solution system and sprayed through an atomizing nozzle into the top of the LIC Secondary Combustion Chamber. If spent decontamination solution feed is not available, then water is sprayed into the Secondary Combustion Chamber to control the operating temperature. The operating temperature in the Secondary Combustion Chamber is maintained at a minimum of 2,000 ^{o}F by a natural-gas-fired burner. The atomized fluid stream mixes with exhaust gases that are flowing from the primary chamber to the Secondary Combustion Chamber. The water in the spent decontamination solution feed evaporates, any organic residue burns, and salts collect on the walls of the Secondary Combustion Chamber. The salts melt and flow to the bottom of the chamber as slag. Slag is removed periodically through an opening in the bottom of the Secondary Combustion Chamber, where it is collected by the LIC slag removal system. The exhaust gases flow to the LIC P AS for removal of acid gases and particulate matter. The exhaust gas then passes through the LIC PFS for final organic removal before being exhausted through the Common Stack (SN-PBCDF-01).

Design Basis for the LIC

Liquid agent and spent decontamination solution feed rates for the LIC Primary and Secondary Combustion Chambers are based on the munitions being processed and the amount of liquid agents. Natural gas and combustion air feed rates are controlled based on the temperature of the respective outlet streams. The Primary Combustion Chamber, crossover duct, and Secondary Combustion Chamber, including downstream ducting, are refractory-lined and designed to provide a minimum overall gas residence time of two seconds. The LIC Primary Combustion Chamber is designed to incinerate one agent at a time. The design agent flow rates are 1,050 lb/hr for GB, 700 lb/hr for VX, 1,330 lb/hr for HD, and 1,210 lb/hr for HT. The LIC Secondary Combustion Chamber is designed to process 2,000 pounds per hour of spent decontamination solution.

Metal Parts Furnace (MPF) [SN-PBCDF-01]

The MPF system thermally decontaminates drained GB, VX, HD, and HT munitions and bulk items. The munitions are thermally treated after all explosive charges installed in the munitions have been removed and the agent has been drained. The MPF is designed to process ton containers, mine drums, and scrap metal resulting from maintenance or closure of the facility. The MPF will also be used to incinerate a combination of wooden pallets, solid laboratory waste, spent activated carbon, HVAC filter media, cleanup materials, and miscellaneous combustible solid wastes which may be contaminated with chemical agent.

Purpose and Function of the MPF

The MPF system consists of a primary furnace and an afterburner. The MPF primary furnace is heated by 10 burners, and the afterburner is heated by two burners. The purpose of the MPF primary chamber is to decontaminate drained munitions and bulk items by heating the material between 1,000 ^{o}F and 1,550 ^{o}F, with a minimum residence time of 15 minutes. The primary chamber will also be used to incinerate solid wastes. The primary chamber exhaust gases flow to the afterburner. The afterburner ensures the destruction of the agent heel that is volatilized or partially combusted in the primary chamber. This is accomplished by heating the gases to 2,000 ^{o}F for a minimum residence time of 0.5 seconds.

Exhaust gases from the afterburner flow to the MPF PAS and PFS for removal of acid gases, particulate matter, and trace organics prior to discharge through the Common Stack (SN-PBCDF-0l) to the atmosphere. Negative pressure to produce air flow through the furnaces is provided by the Induced Draft Fan in the MPF PAS.

Decontaminated metal parts are transferred outside the Munitions Demilitarization Building through a discharge airlock to the discharge tray unloading conveyor. Then they are transported to the discharge cooling conveyor where they await shipment to a roll-off container for disposal. The processed munitions and bulk items go to the Residue Handling Area (RHA) for processing before disposal, and the Waste Incineration Containers (WIC) are returned to the Unpack Area (UPA).

Operational Summary of the MPF

The MPF system is designed to process ton containers, land mine drums, and bulk items that are not sent through the DFS. Solid wastes (dunnage) that have the potential to be contaminated with agent are also processed through the MPF.

The MPF three-zone roller hearth furnace and the afterburner must reach operating temperature before processing can commence. The MPF combustion air blower must be running to supply combustion air and dilution air for the MPF system. Based on the operational availability of the MPF, bulk items are placed on a Waste Incineration Container and then moved to a position where the tray can be conveyed into the MPF. The munition processing begins for the MPF system when a load is transferred into the MPF feed conveyor/airlock from the indexing hydraulic conveyor. When the load is in the proper position, both conveyors stop and the airlock inlet door lowers and clamps.

Zone 1 of the MPF burnout chamber is where the initial burn of residual agent occurs. Water is sprayed to Zone 1 to lower the temperature of the furnace as the agent volatilizes. While the load is in Zone 1, the conveyor oscillates to ensure even heating of the load and rollers. Heating of the load continues until a zone-specific cycle timer "times out". The timer is preset to a prescribed value for each munition campaign.

When the Zone 1 cycle timer times out, the Zone 1 and 2 conveyors start in the forward direction to transfer the load from Zone 1 to Zone 2. When the load is correctly positioned on the Zone 2 conveyor, the Zone 2 conveyor begins to oscillate and the Zone 2 cycle timer begins to count down. Heat is applied to Zone 2 to maintain the same operating temperature as Zone 1. Then, a new tray is transported to Zone 1, the Zone 1 conveyor begins to oscillate, and the Zone 1 cycle timer starts. The final burnout of agent in the ton containers and complete volatilization of agent occurs in Zone 2, which is equipped with four burners.

When the Zone 2 cycle timer times out, the Zones 2 and 3 conveyors start in the forward direction to transfer the load to Zone 3. When the load is in Zone 3, the Zone 3 conveyor begins to oscillate, and the Zone 3 cycle timer begins to count down. With Zone 2 empty, the tray in Zone 1 is transferred to Zone 2, as discussed above. A new tray is transferred to Zone 1 from the MPF feed conveyor/airlock, also as discussed above.

In Zone 3, two burners complete the decontamination process. The Zone 3 cycle timer starts timing out at a minimum of 1,000 ^{o}F for 15 minutes to ensure that the 5X requirements for the munition/bulk containers are met. At the completion of the Zone 3 "time out", the MPF discharge conveyor/airlock inlet door is raised. The Zone 3 conveyor and MPF discharge conveyor/airlock start in the forward direction and run until the load is positioned in the discharge airlock. The MPF discharge conveyor/airlock inlet door lowers and clamps to isolate the MPF discharge conveyor/airlock from the MPF.

After the MPF discharge conveyor/airlock inlet door is closed, the MPF discharge conveyor/airlock is purged with air from the MPF room. This air purge cools down the munition and tray in the airlock. The purged air goes to the MPF afterburner. Before the load can be transferred out of the MPF discharge conveyor/airlock, the load must be verified to be free of agent. The purged air is sampled for agent by an Automatic Continuous Air Monitoring System (ACAMS) to ensure that complete thermal decontamination has been achieved. Air flows from the MPF room through the MPF discharge conveyor/airlock to the ACAMS and is piped to the MPF afterburner. If the sample results are negative (i.e., no agent detected), the load is transferred out of the MPF discharge conveyor/airlock to the MPF discharge tray unloading conveyor. If agent contamination is detected, the tray must be transferred back into the MPF system for further processing. The load is then transferred to the MPF discharge cooling conveyor and moved toward the roll-off portion of the conveyor to clear the MPF discharge tray unloading conveyor. The cooling conveyor can hold numerous loads and acts as a buffer storage for decontaminated loads. The cooling conveyor also provides time for the loads to cool before they are either processed or discharged into roll-off containers that are transported by truck for disposal.

Combustion gases from the MPF burnout chamber exhaust through a refractory-lined crossover duct to the afterburner. The crossover duct taps into the top of Zone 1 in the MPF burnout chamber and the bottom of the horizontal cylindrical afterburner. The MPF afterburner, which has two natural gas burners, raises the temperature of the MPF exhaust gas to 2,000 °F, to ensure that any traces of agent carried over in the MPF flue gas are burned before reaching the MPF PAS. From the afterburner, the exhaust gases are drawn into the MPF PAS and PFS by the Induced Draft Fan before being exhausted through the Common Stack (SN-PBCDF-01).

Design Basis for the MPF

The MPF system is designed to thermally decontaminate drained ton containers and empty mine drums. The bulk item feed rates and processing times for the MPF are based on the bulk items being processed. The items that will be processed include VX M23 land mine drums at a maximum rate of 24 per hour and HD/HT ton containers at a rate of 1.72 per hour. Dunnage that will be processed in the MPF includes wood (926 lb/hr), spent activated carbon (330 lb/hr), DPE suits (440 lb/hr), HLG-plastics (400 lb/hr), plastics (400 lb/hr), TAP gear (400 lb/hr), PPE canisters (52 lb/hr), pre-filters (311 lb/hr), HEPA filters (235 lb/hr), lab waste (180 lb/hr), combustible waste (180 lb/hr), non-combustible waste (430 lb/hr), and metal parts (430 lb/hr). Only one type of dunnage will be processed at a time in the MPF. The dunnage rates shown above represent the maximum hourly limitations calculated from mass and energy balances.

The MPF system is designed to operate automatically. All powered roller conveyors, airlock doors, and furnace operations can be operated remotely from the Control Room (CON). The treatment process is designed to burn all residual agent and heat the metal components to a minimum of 1,000 °F for at least 15 minutes to attain the 5X level of decontamination. The MPF Afterburner is designed to provide a minimum overall gas residence time of 0.5 seconds at 2,000 °F.

The MPF design also provides for the incineration of contaminated combustible dunnage and decontamination to the 5X level, as may be required. The furnace can hold three tray assemblies at one time. Each zone of the furnace (three zones in all) has a capacity for centering one tray assembly of bulk container items or empty mine drums in each of the firing zones.

The airlocks are sized to accommodate one tray assembly containing one ton container. The airlock is designed to operate at a slight negative pressure when both doors are closed. The MPF discharge airlock is of steel construction and has thermal insulation to protect the metal shell from the heat given off by the tray assemblies. A tight-sealing door (i.e., maximum leakage rate of 2 standard cubic feet per minute at a differential pressure of 2.0 inches water column) between the burnout chamber and the exit airlock has internal refractory insulation to minimize heat losses to the airlock.

POLLUTION ABATEMENT SYSTEM (PAS) [SN-PBCDF-01]

The PAS is designed to meet environmental requirements for the control of gaseous emissions from the DFS, LIC, and MPF. The PFS has also been incorporated into each incinerator's PAS as further protection against chemical agent and trace organic emissions to areas outside of engineering control.

Purpose and Function of the PAS/PFS

Each of the furnace systems has a dedicated PAS/PFS which discharges to a Common Stack (SN-PBCDF-01). The PAS equipment includes a quench tower, venturi scrubber, packed-bed scrubber tower and mist eliminator vessel to cool and remove acid gases, particulates, and sulfur dioxide from the exhaust gas prior to being discharged to the atmosphere.

These PAS components are designed to:

Cool the exhaust gases to saturation temperature;
Remove criteria pollutants such as sulfur dioxide;
Neutralize acid gases such as hydrogen chloride (HCl); and

Remove particulates such as fiberglass, ash, and metal oxides.

The PFS components (gas reheater and carbon filter units) are inline between the mist eliminators and the furnace exhaust blowers. PFS equipment removes trace levels of organic compounds and particulates from the exhaust gas.

Operational Summary of the PAS/PFS

The PAS/PFS operates automatically in conjunction with the associated furnace to remove air pollutants from the exhaust gas emissions. High-temperature exhaust gas from the furnace and afterburner system enters the PAS. The first step in each PAS is treatment of furnace exhaust gases in a counter-flow quench tower. High temperature furnace exhaust gases enter near the bottom of the quench tower through a refractory-lined inlet nozzle. The exhaust gases flow up through the caustic mist created by the sprays and are cooled to their adiabatic saturation temperature (approximately 170 ^{o}F) as water is evaporated. Acids in the exhaust gases react with and are neutralized by the caustic spray inside the quench tower. Exhaust gases exit the top of the quench tower. Liquid brine falls to the bottom of the quench tower, where it is either recycled, sent to the Brine Reduction Area for processing, or transported to an off-site treatment, storage, and disposal facility.

The exhaust gases cooled in the quench tower flow down through the venturi scrubber where they encounter the radial and tangential sprays of caustic brine. The caustic brine droplets react to neutralize acid gases, and the moisture entraps fine solid particles. The exhaust gas and liquid streams combine and are accelerated to high velocity in the decreasing area of the throat of the venturi. The high velocity, combined with a 90-degree change in direction, causes the removal of particles from the gas stream. The venturi scrubber removes particulate matter and acid gases from the quenched furnace exhaust.

The exhaust gas then enters the bottom of the packed-bed scrubber and travels upward through the scrubber tower, where the exhaust gas again reacts with a caustic brine solution to further remove pollutant compounds. The exhaust gas is cooled and water is condensed in the packed bed section of the scrubber tower by using the clean liquor as a direct-contact, counterflow heat exchanger that lowers the scrubber tower exhaust gas to 125 ^{o}F. The clean liquor is cooled by pumping the clean liquor through air-cooled coolers and then returning the cooled clean liquor to the scrubber tower. Exhaust gases then flow from the scrubber tower through the mist eliminator vessel to remove additional “moisture droplets”, metal oxides, solid particles and other compounds entrained in the moisture droplets of the exhaust gases.

Process water is supplied to the quench tower brine spray lines and to the scrubber tower clean liquor loop to make up for water that is lost by evaporation and brine purge. Minimal makeup to the clean liquor loop will be required during normal operation since significant water vapor condenses in the scrubber tower packed bed, which causes continuous overflow of the chimney trays. Salts produced from the reaction of the caustic brine with the exhaust gases are removed from the system by bleeding brine to the Brine Reduction Area.

The exhaust gases flow from the mist eliminator vessel to the PFS gas reheater, which reduces the relative humidity of the gases to 55% by increasing the gas temperature from 125 ^{o}F to approximately 160 ^{o}F. Exhaust gas from the reheater passes through the PFS carbon filter units before exiting the Common Stack (SN-PBCDF-01). The PFS carbon filter unit consists of several filter banks in series. The exhaust gas is drawn through a series of pre-filters, HEPA filters, and carbon filters. The exhaust gas is drawn through the PAS and PFS by two adjustable-speed-drive Induced Draft exhaust blowers and discharged to the atmosphere through the Common Stack.

Process Design Basis Summary

The quench tower, venturi scrubber, packed scrubber tower, and mist eliminator components are designed to cool and chemically treat the exhaust gas from the DFS, MPF, and LIC. The PFS gas reheater unit and carbon filter unit components are designed to condition and filter the exhaust gas to remove residual particulates and organic compounds.

STEAM GENERATING SYSTEM (SGS) [SN-PBCDF-03 AND SN-PBCDF-04]

The purpose of the steam generation system [Process Steam Boilers I (SN-PBCDF-03) and II (SN-PBCDF-04)] is to provide the Brine Reduction Area with high-pressure steam for use in the drum dryers, the evaporator, and brine heating coils on the brine surge tanks. The two natural gas fired steam boilers are served by a single deaerator and by two boiler feed water pumps. The system is equipped with three chemical feed packages and one condensate return unit package having a condensate receiver and two condensate pumps. The operation is totally automatic from locally mounted instrumentation and control panels.

Each of the two process steam boilers is a natural gas fired unit rated at 850 horsepower and a duty of 28.4 million (MM) Btu/hr. Each boiler is sized to produce approximately 17,250 lb/hr of steam at 135 psig and 358 ^{o}F. Natural gas is burned in the boiler to vaporize the water into steam, which is sent to the Brine Reduction Area. Low-pressure condensate from the drum dryers is returned by the condensate return unit package that includes a condensate receiver operating at atmospheric pressure and two condensate pumps, directly to the deaerator. Low-pressure condensate from the evaporator and drip traps flow back to the deaerator. The deaerated condensate is returned to the boiler via the boiler feedwater pumps. Chemical additives that are required to condition the boiler feedwater and protect the boilers are added to the system through three chemical feed packages. Makeup water from the process water (PRW) header is introduced to the system through the deaerator.

The steam generation system also provides the phosphate from the phosphate chemical feed package to the HVAC hot water boilers. The steam generation system boiler blowdown is collected in the recovered water tank (PAS-TANK-103) for consumption in the PAS quench towers.

HOT WATER HEATING SYSTEM [SN-PBCDF-05 and SN-PBCDF-06]

The primary components in the hot water heating system [Hot Water Boilers I (SN-PBCDF-05) and II (SN-PBCDF-06)] are the hot water boilers, hot water pumps, valves, piping, and associated temperature, pressure and flow instrumentation. Each hot water heater has a rated heat capacity of 11.7 MM Btu/hr that corresponds to 350 boiler horsepower (bhp). The maximum rated capacity is 1,172 gallons per minute (gpm). In the manual mode, the boiler and the pump are manually started locally by a hand switch from the Boiler Room located in the Process Utility Building (PUB). In the auto mode, when the outside air temperature drops below the temperature controller set point, one pump is started and one boiler control automatically initiates the burner-ignition sequence. The other pump remains on standby. As the heating load demand increases, the firing rate rises until it reaches approximately 80% of full rate. At this point, the second boiler starts. Both boiler firing rates reach an equilibrium and modulate in unison to satisfy the heating load. A temperature controller in the boiler master control maintains the hot water supply temperature at the set point through the boiler controls. When the load drops, the boiler output reduces to about 25% of full capacity. At a further load reduction, one boiler is turned off. At no load, the lead pump and second boiler are turned off. A pressure switch, installed in the pump' s supply header, activates the lag pump whenever the hot water supply pressure drops below the set point. The lead-lag operation configuration for the boilers and pumps is performed manually.

BRINE REDUCTION AREA (BRA) [SN-PBCDF-07]

The function of the Brine Reduction Area is to process brine from the PAS associated with the incinerators. The Brine Reduction Area also processes water softener regeneration waste (i.e., wastewater) from the water treatment system (WTS). The brine is stored in the brine surge tanks, where it is sampled and checked for the presence of chemical agent. From there, it proceeds to the brine flash evaporator, where the moisture content is reduced prior to being sent to two drum dryers.

Purpose and Function of the BRA

The drum dryers reduce the brine to a dried salt and deposit the salt into containers for storage and transportation to an approved off site treatment, storage and disposal facility. Exhaust vapors exiting the Brine Reduction Area drum dryers and evaporator are drawn through a baghouse to remove any particulate matter from the exhaust stream.

Operational Summary of the BRA

The Brine Reduction Area system processes PAS brine and wastewater treatment system wastewater into water and dried salts. The complete Brine Reduction Area system consists of brine surge tanks and feed pumps, a flash evaporator, two drum dryers, a gas fired duct heater and forced draft fan for each of the two dryers, and the Brine Reduction Area PAS. The surge tanks, located outside the Process Utility Building (PUB), serve as holding tanks. Each brine surge tank is sampled for corrosivity (pH), chemical agent, and specific gravity before the brine is allowed into the evaporator or drum dryer packages.

The batch is treated, after verifying through sampling and analysis, that the brine is free of chemical agent. The batch can be pre-concentrated by circulating the brine through an evaporator package and returning it to the brine surge tank. Each brine surge tank is equipped with a pump recycle line through which brine can reenter the tank after exiting the feed pump. The batch can be fed through the evaporator package prior to being fed to the drum dryers to increase the solution's specific gravity. Each surge tank has a capacity of 40,000 gallons.

Brine is pumped from the brine surge tanks to the flash evaporator using a brine feed pump. The evaporator package consists of a circulation pump, a heat exchanger, a flash evaporator, and a desuperheater pump. The brine circulation pump sends the brine feed to the heat exchanger. The heat exchanger uses steam to heat the brine before it is sent to the flash evaporator. The desuperheater pump provides a constant source of condensate to the steam desuperheater spray nozzle. Upon entering the flash chamber, the hot brine partially flashes to steam, leaving the salts and metals behind in the liquid brine. This process removes water from the brine, increasing the density and reducing the volume. This process continues until the desired specific gravity is reached.

At this point, the concentrated brine either is sent to the drum dryers, or is returned to the brine surge tanks in order to control the evaporator feed rate. The drum dryer dries the concentrated brine solution to produce solid brine salts. The dryer package consists of two rotary drums, two salt product removal conveyors, and two salt collection containers, all encased in one housing. Concentrated brine from the evaporator package is fed onto the drums and collected in the nip between the two rotating drums. The drums rotate in opposite directions by electric motors.

Steam supplied to the interior of the drums heats the drum surfaces and dries the brine. Water from the concentrated brine evaporates on the drums, leaving salt cake behind on the rotating drums. As the drums rotate, knife blades remove the salt cake from the surface. The salts are collected on one of two conveyors and discharged into a collection container. Each collection container is supported on an aluminum pallet dolly and contains a disposable polypropylene sheet bag, inside a polypropylene fabric bag, that has a quick-opening bottom and lifting straps. Full collection containers are closed, moved to the Residue Handling Area (RHA), and replaced with an empty container. Full containers are staged in the Residue Handling Area to cool. After cooling, the fabric bag is lifted over a roll-off container and the quick-opening bottom is opened, allowing the sealed disposable interior bag to be released into the roll-off container.

Water vapor from the evaporator package and drum dryers is sent through the Brine Reduction Area PAS (baghouse system) before being discharged to the atmosphere through an exhaust stack (SN-PBCDF-07). The Brine Reduction Area PAS removes particulate from the vent exhausts. This system contains a knockout box, burner (10 MMBtu/hr), baghouses, exhaust blower, and elevated exhaust stack. Evaporated water from the drum dryers is combined with heated air at 120 °F from the drum dryer air heater package (2.47 MMBtu/hr) to maintain the drum dryer exhaust above its dew point. The heated exhaust exits the drum dryers and passes through the knockout box, where any heavy solids are knocked out by a stainless steel baffle. Then, the solids are discharged through a rotary valve into a salt container at the bottom of the knockout box. The exhaust passing through the knockout box is pulled through the system to the Brine Reduction Area PAS burner, where the temperature is elevated further to prevent condensation of liquid as the exhaust moves through the Brine Reduction Area PAS. After being heated by the Brine Reduction Area PAS gas burner, the exhaust flow from the drum dryers merges with the exhaust from the evaporator package. The combined flow is sent to the Brine Reduction Area PAS baghouses (three baghouses in parallel) where particulates are removed. An automatic, periodic blast of plant air flushes any accumulated material into a hopper at the bottom of each baghouse. An Induced Draft Fan provides the motive force to move the exhaust flow through the baghouses and out the elevated exhaust stack (SN-07).

Process Design Basis for the BRA

The brine surge tanks are designed to have a cumulative storage capacity sufficient for two days of facility operations. The steam generation system (SGS) supplies steam to the evaporator and the drum dryer packages. The steam generation system boilers generate saturated steam at approximately 135 pounds per square inch, gauge (psig). Steam to the evaporator package is regulated to 125 psig, and desuperheated to no more than five degrees. Steam to the drum dryers is superheated to approximately 100 psig by reduction of the supply steam pressure.

The incoming brine is maintained at a pH of 5.5 or greater. The combined brine recycle rate to each evaporator heat exchanger and back to the surge tank is 950 gallons per minute (gpm). Brine from the evaporator to the dryers has a 1.2 specific gravity limit in order to prevent salt precipitation. The dryers reduce the water content of the brine to approximately 5% moisture by weight in the mass and energy balances. The concentration of entrained particulates is assumed to be 0.036 grain per dry standard cubic foot (gr/dsct) for the evaporator exhaust, and 1.15 gr/dscf for the dryer exhausts. Particulate removal for the Brine Reduction Area PAS will be accomplished with baghouses. The designed particulate emissions for the Brine Reduction Area PAS will result in a particulate concentration of less than or equal to 0.01 gr/dscf.

HEATING, VENTILATION AND AIR CONDITIONING SYSTEM (HVAC) AND EXHAUST VENTS [SN-PBCDF-08 and SN-PBCDF-13]

The PBCDF will be equipped with building ventilation systems that will discharge to the atmosphere air from the Munitions Demilitarization Building (MDB) process area, the Laboratory Building, the Deactivation Furnace System Cyclone Enclosure, the Medical Maintenance Building, and the Personnel Support Complex. The Heating, Ventilation, and Air Conditioning (HVAC) systems of the facility maintain containment of chemical agent in the toxic areas which providing space heating and air conditioning for toxic and non-toxic areas. During normal operation only the MDB and the Laboratory will contain chemical agent.

Building HVAC Exhaust Vent and the Laboratory Exhaust Vent have been designated with source numbers SN-PBCDF-08 and SN-PBCDF-13, respectively.

The Laboratory ventilation system (SN-PBCDF-13) will undergo only intermittent exposure to low concentrations of chemical agents. The Laboratory ventilation system provides a safe, contamination-free, comfortable atmosphere for the laboratory personnel. A positive pressure is maintained in the office area and the laboratory areas are maintained at a negative pressure by the fume hoods. All ventilation air cascades from the clean areas to the potentially contaminated areas through the fume hoods and is then treated by the exhaust filters and discharged to the atmosphere. The Munitions Demilitarization Building is the area of greatest potential exposure and the most extensive HVAC system. The Munitions Demilitarization Building HVAC is reviewed in detail below.

Purpose and Function of the HVAC System and Exhaust Vents

The primary means of preventing the release or spread of agent contamination in the Munitions Demilitarization Building is through the use of cascaded pressure control. Essential to the control of agent within the facility is the movement of air from the least toxic areas to the most toxic areas in the Munitions Demilitarization Building and through the exhaust air filtration units.

Operational Summary of the HVAC System and Exhaust Vents

The Munitions Demilitarization Building HVAC system runs continuously to provide the necessary air volume and flows through the Munitions Demilitarization Building. Each room in the Munitions Demilitarization Building has a designated category rating of A, A/B, B, C, D, or E based upon the potential for agent contamination. Toxic process areas with a Category A rating classification have a high probability of either agent liquid or vapor contamination. Toxic process areas with a Category B rating have a high probability of agent vapor contamination resulting from routine operations. Categories A and B define high hazard areas. Toxic process areas with a Category C rating are subject to inadvertent agent vapor contamination. Rooms with a Category D rating have a very low probability of ever being contaminated by agent. Rooms with a Category E rating are maintained to be free from any chance of agent contamination at all times barring the possibility of a catastrophic event.

The cascade HVAC system is configured to provide a flow of air from the least toxic to the most toxic areas in the Munitions Demilitarization Building and provide containment within the Munitions Demilitarization Building. The amount of air changed in each room is higher for areas likely to be contaminated with agent. This minimizes the spread of agent contamination, and maintains the toxic boundaries. The cascade HVAC system maintains the Munitions Demilitarization Building rooms at the desired negative pressures by supplying and exhausting a constant volume of air to and from the building, and by having manually-adjusted balancing dampers set to achieve the desired air flow through the rooms. Incinerator rooms do not receive supply air from the Munitions Demilitarization Building Supply Air Handling Units. However, all incinerator rooms exhaust to the Munitions Demilitarization Building common discharge header. Thus, in addition to drawing HVAC air through the process rooms in the Munitions Demilitarization Building, the exhaust air filtration units provide the motive force to ventilate and cool the incinerator rooms. DFS room air is supplied directly from the outside through an inlet filter unit. Supply air for the MPF room and the LIC room is drawn in directly from the outside through inlet filter units by the negative pressure maintained in the rooms.

EMERGENCY GENERATOR SYSTEM
[SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12]

PBCDF receives electrical power from an external power network (Entergy) through a 115-kilovolt (kV) substation (Substation C) that provides 13.2-kV to the plant switchyard (13.2 and 4.16-kV switch gears) located outside of the PBCDF double fence. The electrical distribution and emergency power system consists of the 4.16-kV switch gear, primary and secondary power distribution systems, an emergency generator, and an uninterruptible power supply (UPS) system.

The PBCDF uses a tiered electrical power system (EPS) with redundant distribution. The PBCDF electrical power system has both primary and secondary electrical power supply distribution networks with two 4.16-kV emergency power generators backing up the local utility power supply. The 4.16-kV emergency generator ties into the plant power system.

The emergency generator system consists of three diesel power generators to supply electricity in the event of a power failure. Two 2,500-kilowatt generators (one would always serve as backup for the other) will be used to supply enough power to allow for safely shutting down the facility in the event of a power failure. The third generator with a 250 kilowatt power capacity is designed to provide emergency power to the Entry Control Facility to operate security systems in the event of a power failure.

The system consists of three diesel-powered generators and associated support equipment, including a fuel oil day tank, lube oil coolers, starting battery and charger, and control and indication equipment. The two large emergency generators are located outside of the Munitions Demilitarization Building in the emergency generator enclosures. The emergency controls and indicators for these generators are on the generator control panel in the Munitions Demilitarization Building switch gear room. The emergency generator automatically provides 4,160-volt alternating current power to PPS-SWGR-101 and PPS-SWGR-102 (by closing breakers 52-103 or 52-104 in PPS-SWGR-101 and PPS-SWGR-102, respectively, and tie-breaker 52-105) in the event of a total failure of incoming power from the power supply and distribution network. The small generator and its controls are located inside the Entry Control Facility.

The large emergency generator fuel oil day tanks and pumps receive fuel oil from the 4,000-gallon underground fuel oil storage tank. The fuel oil tank provides fuel to both of the emergency generators and to the LIC fuel oil purge system. The tank is sized to support one 2,500-kW generator for 24 hours of operation and the operation of the LIC fuel oil purge system. A 3,200-gallon reserve of fuel oil is required for the generator. The fuel oil level in the tank is monitored locally. If the level in the tank reaches 3,200 gallons, the LIC purge fuel oil pump will shut down and a low-level alarm will indicate locally and in the Control Room. The small emergency generator is supplied by the 1,000 gallon fuel oil tank which is located to the south of the Entry Control Facility.

TANK SYSTEMS

The PBCDF will have three separate hazardous waste tank systems, as well as three “less than 90 day” storage tank systems. In addition to the hazardous waste tank systems, there will also be other tank systems at the facility. These tanks include underground diesel tanks, a liquefied petroleum gas storage tank, recovered water tanks, sodium hydroxide (caustic) storage tanks, process water storage tank, a sodium hypochlorite (bleach) storage tank, decontamination supply storage tanks, regeneration wastewater tanks, a potable water hydropneumatic tank, a cooling medium supply tank, and boiler water chemical feed tanks. A summary of the tanks that have potential air concerns are discussed in further detail below.

Agent Collection Tank System

The Agent Collection Tank System will extend from the agent collection points in the Explosive Containment Room in the Munitions Demilitarization Building to the inlet of the LIC, located in the same building. The system will include a 660-gallon agent holding tank, a 1,300-gallon agent surge tank, small agent quantification system verification tanks, sumps, pumps, and associated piping. While these tanks will be used for agent storage, which could be classified as volatile organic compounds, the tanks are a closed loop system and all potential emissions from equipments leaks will be controlled by the HVAC system.

Spent Decontamination Solution Holding Tank System

The Spent Decontamination Solution Holding Tank System will extend from the sump pumps, sumps, and trenches on the first and second floors of the Munitions Demilitarization Building to the inlets of the LIC Secondary Combustion Chamber. It will include three 2,300-gallon spent decontamination solution (SDS) holding tanks, sumps, pumps, and associated piping. The tanks are used to collect SDS. The SDS will be incinerated in the LIC Secondary Combustion Chamber. One of the three tanks is designated as a contingency spill tank and will normally remain empty. This is primarily a water stream and any potential fugitive emissions would be controlled by the HVAC system.

Laboratory Chemical Waste Storage Tank System

The Laboratory Chemical Waste Storage Tank System will extend from the laboratory drains in the Laboratory Building to the Laboratory chemical waste storage tank. This system will include a 1,600-gallon chemical waste storage tank, vault, pumps, and associated piping, and is used to hold liquid laboratory waste prior to transfer to the SDS holding tanks from where it will be fed to the LIC Secondary Combustion Chamber. This is a closed system that is primarily a water stream and any potential fugitive emissions are vented to the carbon filters by the HVAC system.

Fuel Oil Storage Tanks (SN-PBCDF-11 and SN-PBCDF-14)

Two underground (fiberglass-reinforced plastic) storage tanks (4,000 and 1,000-gallon capacity each) will be used to store diesel fuel for the emergency power generators (SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12) at PBCDF. Both tanks will vent to the atmosphere. The 1 ,000-gallon diesel tank has been assigned source number SN-PBCDF-11 and the 4,000-gallon diesel tank has been assigned the source number SN-PBCDF-14.

Liquified Petroleum Gas Storage Tank

The PBCDF will include a 40,000-gallon liquified petroleum gas storage tank. The liquified petroleum gas will be used as backup fuel for the incinerators and boilers. This is a pressurized storage tank and was therefore not assigned a source number.

RESIDUE HANDLING AREA (RHA) [SN-PBCDF-15]

The Residue Handling Area (RHA) receives solid plant waste generated during process operations. The purpose of the Residue Handling Area is to provide the necessary equipment and controls required to properly contain the waste at the facility. The waste is transported to an off-site hazardous waste treatment, storage, and disposal facility designed to handle the types of process residues generated by the facility.

Residue from the DFS consists of char from sheared rocket casings with fiberglass residue, mine casings, and incinerated scrap from the miscellaneous explosive components removed from munitions during the demilitarization operations. Char is collected at the discharge end of the DFS in a waste bin and later containerized in the Residue Handling Area.

The DFS Cyclone Separator is used to remove fiberglass from the flue gas exiting the DFS. Fiberglass waste is contained in the reinforced rocket shipping containers that are incinerated in the DFS. Fiberglass waste is collected in a waste bin at the discharge of the DFS Cyclone Separator and transported to the MPF for incineration. After the residue is incinerated in the MPF, the waste is taken to the Residue Handling Area and containerized.

The MPF is used for the thermal decontamination of metal from the demilitarization processing and the processing of dunnage. The dunnage ash and metal char is discharged to conveyors at the discharge end of the MPF. The residual metal, ash, and char are allowed to cool before being placed in a roll-off container for shipment to a less-than-90-day storage area.

As the result of brine reduction operations, salts are discharged from the Brine Reduction Area System. Salts are temporarily contained in salt waste bins and containerized in the Residue Handling Area for eventual disposal. The Brine Reduction Area is the major source of solid waste at the facility.

The Residue Handling Area tilter provides a means of dumping full waste bins into roll-off containers. The waste bins are transferred from the collection points and loaded into the tilter by a forklift. The waste bins are then sealed and inverted by the tilter. The contents of the waste bins are transferred into roll-off containers. Particulate emissions that are generated during the dumping process are collected by a dust collection system, which is an integral part of the tilter system. The system vents through a baghouse that controls the particulate emissions. This collection system has been assigned a source number of SN-PBCDF-15. As the roll-off containers are filled, they are picked up by transport trucks and delivered to a less-than-90-day storage area.

LABORATORY BOILER [SN-PBCDF-16]

The PBCDF installed a skid-mounted Laboratory Boiler (SN-PBCDF-16) in December 2000. This combustion unit supplies hot water to the PBCDF Laboratory HVAC system to heat the Laboratory Building and keep employees comfortable during the winter months. The Laboratory Boiler is employed to support the central hot water system. The Laboratory HVAC was operational prior to the completion of the Process Utility Boilers [i.e., Natural Gas Fired Hot

Water Boilers I and ll, (SN-PBCDF-05 and SN-PBCDF-06)], which are the primary "central heating" arrangement.

The PBCDF Laboratory Boiler, which will only be fired with natural gas, has a maximum heat capacity of 1.4 MM Btu/hr.

FUGITIVE EMISSIONS [SN-PBCDF-17]

A primary source of fugitive emissions associated with operation of the proposed PBCDF is vehicular traffic. Vehicular traffic is expected to produce road dust and tailpipe exhaust emissions. Because the plant is designed with airtight processing areas, carbon filtration, and closed-loop storage systems, fugitive volatile organic compound emissions are not expected from actual PBCDF operations. Road dust is expected to be minimal, since all the munitions haul roads within PBA have been paved.

AGENT EMISSION PREVENTION [SN-PBCDF-01, SN-PBCDF-07, SN-PBCDF-08, and SN-PBCDF-13]

Emission concentration limits, continuous near real-time monitoring, detection and verification methods, and other regulatory requirements concerning Nerve Agent VX, Nerve Agent GB, Mustard Agent HD, and Mustard Agent HT are governed by ADEQ Hazardous Waste Permit 29-H, which is based upon human health and ecological risk assessments performed for each agent destruction campaign. The Air Division reserves the right to independently evaluate agent emissions limits derived from site-specific risk assessments and to quantify in the air permit any revised emission limits deemed necessary to protect human health and the environment. Any violation of the provisions of Hazardous Waste Permit 29-H concerning chemical agent emissions is also considered a violation of this permit.

Specific Conditions

119. Pursuant to §19.901 et seq of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation #19) effective February 15, 1999 and 40 CFR Part 52, Subpart E, the permittee shall not exceed the emission rates set forth in the following table.

SN	Description	Pollutant	lb/hr	tpy
PBCDF-01	Common Stack for DFS, LIC and MPF	PM_{10}	2.4	10.2
		SO_2	17.2	75.2

SN	Description	Pollutant	lb/hr	tpy
		VOC	0.7	3.0
		CO	12.7	55.6
		NO_X	81.6	357.4
		Lead	0.005486	0.008665
PBCDF-03	Process Steam Boiler I 28.4 MM Btu/hr	PM_{10}	0.3	1.0
		SO_2	0.1	0.1
		VOC	0.2	0.7
		CO	2.4	10.5
		NO_X	1.5	6.3
		Lead	0.0000142	0.0000623
PBCDF-04	Process Steam Boiler II 28.4 MM Btu/hr	PM_{10}	0.3	1.0
		SO_2	0.1	0.1
		VOC	0.2	0.7
		CO	2.4	10.5
		NO_X	1.5	6.3
		Lead	0.0000142	0.0000623
PBCDF-05	Hot Water Boiler I 11.71 MMBtu/hr	PM_{10}	0.1	0.4
		SO_2	0.1	0.1
		VOC	0.1	0.4
		CO	1.0	4.3
		NO_X	0.6	2.6
		Lead	0.00000585	0.0000256

SN	Description	Pollutant	lb/hr	tpy
PBCDF-06	Hot Water Boiler II 11.71 MMBtu/hr	PM_{10}	0.1	0.4
		SO_2	0.1	0.1
		VOC	0.1	0.4
		CO	1.0	4.3
		NO_X	0.6	2.6
		Lead	0.00000585	0.0000256
PBCDF-07	Brine Reduction Area 12.47 MM Btu/hr (total)	PM_{10}	1.4	5.8
		SO_2	0.1	0.1
		VOC	0.1	0.3
		CO	1.1	4.6
		NO_X	0.7	2.8
		Lead	0.00139	0.00605
PBCDF-09	Emergency Electrical Generator I 2,500 kW	PM_{10}	1.1	0.4
		SO_2	0.6	0.2
		VOC	1.0	0.3
		CO	9.0	2.7
		NO_X	33.9	10.2
PBCDF-10	Emergency Electrical Generator II 2,500 kW	PM_{10}	1.1	0.4
		SO_2	0.6	0.2
		VOC	1.0	0.3
		CO	9.0	2.7
		NO_X	33.9	10.2
PBCDF-11	Diesel Tank 1000 gallon	Insignificant source.		

SN	Description	Pollutant	lb/hr	tpy
PBCDF-12	Emergency Electrical Generator III 250 kW	PM_{10}	0.4	0.1
		SO_2	0.4	0.1
		VOC	0.4	0.1
		CO	1.0	0.3
		NO_X	4.7	1.2
PBCDF-14	Diesel Tank 4000 gallon	Insignificant source.		
PBCDF-15	Residue Handling Area	PM_{10}	0.1	0.1
PBCDF-16	Laboratory Boiler	PM_{10}	0.1	0.1
		SO_2	0.1	0.1
		VOC	0.1	0.1
		CO	0.2	0.6
		NO_X	0.2	0.7
PBCDF-17	PBCDF Fugitives	PM_{10}	0.2	0.6
		NO_X	0.3	1.3

120. Pursuant to §18.801 of the Arkansas Air Pollution Control Code (Regulation #18) effective February 15, 1999, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the emissions set forth in the following table. Initial compliance for the Common Stack (SN-PBCDF-01) LIC, DFS, MPF, and the Brine Reduction Area (BRA) (SN-PBCDF-07) emissions shall be determined by agent trial burn testing for each furnace, compliance with applicable requirements of 40 CFR Part 63 Subpart EEE, and performance testing for the BRA. The BRA testing shall be performed in accordance with the terms and conditions of ADEQ Hazardous Waste Permit 29-H.

Ongoing compliance with emission rates shall be demonstrated by the use of pipeline quality natural gas, by meeting the process rate limits set forth in Specific Condition #129, and by continued compliance with applicable requirements of MACT EEE.

> **Any emission rate exceeding the limits set forth in the following table shall be reviewed for acceptable risk by analysis through the RCRA Health Risk Assessment process. If the risk is deemed acceptable, the Department shall consider revising the appropriate emission limits, provided an air permit application to do so has been submitted within 30 days of submittal of an updated health risk assessment addenda. The provisions of this paragraph only apply to initial testing required for each unit or each agent campaign.**

The remaining emission rates for Process Steam Boiler I and II, (SN-PBCDF-03 and SN-PBCDF-04 respectively), Hot Water Boilers I and II (SN-PBCDF-05 and SN-PBCDF-06 respectively) and Emergency Generator I, II, and III (SN-PBCDF-09,

SN-PBCDF-10, and SN-PBCDF-12 respectively) are based on typical AP-42 emission factors.

SN	Description	Pollutant	lb/hr	tpy
PBCDF-01	Common Stack for DFS, LIC and MPF	PM	2.4	10.2
		Arsenic	0.002149	0.003867
		Beryllium	0.0004748	0.0009151
		Cadmium	0.0006249	0.001097
		Chromium	0.0009669	0.001515
		Cobalt	0.0009043	0.001497
		Manganese	0.08523	0.1622
		Mercury	0.0006330	0.001109
		Nickel	0.002339	0.005250
		Selenium	0.001275	0.002042
		Hydrogen Chloride	0.2828	0.5726
		Hydrogen Fluoride	0.7159	1.502
		Antimony	0.001812	0.002901
		Phosphorus	0.03544	0.06864
		Chlorine	0.1204	0.2208
		PCBs	0.000002398	0.000003063
		Benzene	0.005764	0.01025
		Bromoform	0.001097	0.001612
		Carbon Disulfide	0.0006779	0.001210
		Carbon Tetrachloride	0.001082	0.002671
		Chlorobenzene	0.0002199	0.0004417

SN	Description	Pollutant	lb/hr	tpy
		Chloroform	0.001378	0.002587
		1,1-Dichoroethane	0.001256	0.0004301
		1,2-Dichloropropane	0.007937	0.02153
		cis-1,3-Dichloropropene	0.006872	0.01862
		trans-1,3-Dichloropropene	0.0002101	0.0004287
		Ethyl Benzene	0.0003748	0.0006381
		Methylene Chloride	0.2511	0.5416
		Styrene	0.003771	0.007967
		1,1,2,2-Tetrachloroethane	0.0002214	0.0004594
		Tetrachloroethane	0.0002423	0.0005165
		Toluene	0.1364	0.2980
		1,1,1-Trichloroethane	0.001755	0.003207
		Vinyl Acetate	0.0002161	0.0004452
		Vinyl Chloride	0.0008148	0.001294
		Xylene	0.0004901	0.0009453
		Dimethyl Phthalate	0.008358	0.02088
		Naphthalene	0.001717	0.002706
		2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.000000005499	0.00000001318
		2-Butanone	0.01216	0.02223
		Chloromethane	0.02075	0.05615
		4-Methyl-2-Pentanone	0.0002817	0.0006246
		Di-n-Butyl Phthalate	0.001699	0.002687

SN	Description	Pollutant	lb/hr	tpy
		bis(2-Ethylhexyl)-phthalate	0.02080	0.03967
		2,4-Dinitrotoluene	0.0002868	0.0003664
		2-Methylphenol	0.02143	0.03131
		3-Methylphenol	0.006391	0.01529
		4-Methylphenol	0.003618	0.006839
		Ethylene Glycol	2.400	0.2500
PBCDF-03	Process Steam Boiler I	PM	0.3	1.0
		Arsenic	0.00000569	0.0000249
		Beryllium	0.000000341	0.00000149
		Cadmium	0.0000313	0.000137
		Chromium	0.0000398	0.000174
		Cobalt	0.00000239	0.0000105
		Manganese	0.0000108	0.0000473
		Mercury	0.00000739	0.0000324
		Nickel	0.0000569	0.000249
		Selenium	0.000000682	0.00000299
		Methane	0.0700	0.310
		Hexane	0.0512	0.224
		Formaldehyde	0.00213	0.00934
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000250	0.0000110
		Dichlorobenzene	0.0000341	0.000149
		Benzene	0.0000597	0.000261

SN	Description	Pollutant	lb/hr	tpy
		Toluene	0.0000967	0.000423
		Naphthalene	0.0000173	0.0000760
PBCDF-04	Process Steam Boiler II	PM	0.3	1.0
		Arsenic	0.00000569	0.0000249
		Beryllium	0.000000341	0.00000149
		Cadmium	0.0000313	0.000137
		Chromium	0.0000398	0.000174
		Cobalt	0.00000239	0.0000105
		Manganese	0.0000108	0.0000473
		Mercury	0.00000739	0.0000324
		Nickel	0.0000569	0.000249
		Selenium	0.000000682	0.00000299
		Methane	0.0700	0.310
		Hexane	0.0512	0.224
		Formaldehyde	0.00213	0.00934
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000250	0.0000110
		Dichlorobenzene	0.0000341	0.000149
		Benzene	0.0000597	0.000261
		Toluene	0.0000967	0.000423
		Naphthalene	0.0000173	0.0000760
PBCDF-05	Hot Water Boiler I	PM	0.1	0.4
		Arsenic	0.00000234	0.0000103

SN	Description	Pollutant	lb/hr	tpy
		Beryllium	0.000000140	0.000000615
		Cadmium	0.0000129	0.0000564
		Chromium	0.0000164	0.0000718
		Cobalt	0.000000983	0.00000431
		Manganese	0.00000445	0.0000195
		Mercury	0.00000304	0.0000133
		Nickel	0.0000234	0.000103
		Selenium	0.000000281	0.00000123
		Methane	0.0300	0.130
		Hexane	0.0211	0.0923
		Formaldehyde	0.000878	0.00385
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000103	0.00000451
		Dichlorobenzene	0.0000140	0.0000615
		Benzene	0.0000246	0.000108
		Toluene	0.0000398	0.000174
		Naphthalene	0.00000714	0.0000313
PBCDF-06	Hot Water Boiler II	PM	0.1	0.4
		Arsenic	0.00000234	0.0000103
		Beryllium	0.000000140	0.000000615
		Cadmium	0.0000129	0.0000564
		Chromium	0.0000164	0.0000718
		Cobalt	0.000000983	0.00000431

SN	Description	Pollutant	lb/hr	tpy
		Manganese	0.00000445	0.0000195
		Mercury	0.00000304	0.0000133
		Nickel	0.0000234	0.000103
		Selenium	0.000000281	0.00000123
		Methane	0.0300	0.130
		Hexane	0.0211	0.0923
		Formaldehyde	0.000878	0.00385
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000103	0.00000451
		Dichlorobenzene	0.0000140	0.0000615
		Benzene	0.0000246	0.000108
		Toluene	0.0000398	0.000174
		Naphthalene	0.00000714	0.0000313
PBCDF-07	Brine Reduction Area	PM	1.4	5.8
		Arsenic	0.000227	0.000992
		Beryllium	0.0000960	0.000420
		Cadmium	0.000189	0.000826
		Chromium	0.00104	0.00454
		Cobalt	0.000960	0.00419
		Manganese	0.000388	0.00170
		Mercury	0.000156	0.000680
		Nickel	0.000985	0.00430
		Selenium	0.0000962	0.000420

SN	Description	Pollutant	lb/hr	tpy
		Hydrogen Chloride	0.0174	0.0761
		Antimony	0.0000959	0.000419
		Phosphorus	0.00192	0.00838
		Methane	0.0300	0.130
		Hexane	0.0225	0.0983
		Formaldehyde	0.000935	0.00410
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00000110	0.00000482
		Dichlorobenzene	0.0000150	0.0000655
		Benzene	0.0000262	0.000115
		Toluene	0.0000424	0.000186
		Naphthalene	0.00000761	0.0000333
PBCDF-08	Demilitarization HVAC Exhaust Vent	Nerve Agent VX	ND	ND
		Nerve Agent GB	ND	ND
		Mustard Agent HD	ND	ND
		Mustard Agent HT	ND	ND
PBCDF-09	Emergency Electrical Generator I 2,500 kW	PM	1.1	0.4
		Formaldehyde	0.000834	0.000250
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00224	0.000672
		Benzene	0.00820	0.00246
		Toluene	0.00297	0.000891
		Naphthalene	0.00137	0.000412

SN	Description	Pollutant	lb/hr	tpy
		Xylene	0.00201	0.000603
		Acetaldehyde	0.000266	0.0000799
		Acrolein	0.0000833	0.0000250
PBCDF-10	Emergency Electrical Generator II 2,500 kW	PM	1.1	0.4
		Formaldehyde	0.000834	0.000250
		Polycyclic Aromatic Hydrocarbon (PAH)	0.00224	0.000672
		Benzene	0.00820	0.00246
		Toluene	0.00297	0.000891
		Naphthalene	0.00137	0.000412
		Xylene	0.00201	0.000603
		Acetaldehyde	0.000266	0.0000799
		Acrolein	0.0000833	0.0000250
PBCDF-12	Emergency Electrical Generator III 250 kW	PM	0.4	0.1
		Formaldehyde	0.00125	0.000312
		Polycyclic Aromatic Hydrocarbon (PAH)	0.000178	0.0000444
		Benzene	0.000989	0.000247
		Toluene	0.000434	0.000109
		Naphthalene	0.0000897	0.0000224
		Xylene	0.000302	0.0000755
		Acetaldehyde	0.000813	0.000203
		Acrolein	0.0000978	0.0000244

SN	Description	Pollutant	lb/hr	tpy
PBCDF-13	Laboratory Building HVAC Exhaust Vent	Nerve Agent VX	ND	ND
		Nerve Agent GB	ND	ND
		Mustard Agent HD	ND	ND
		Mustard Agent HT	ND	ND
PBCDF-15	Residue Handling Area	PM	0.1	0.1
PBCDF-16	Laboratory Boiler	PM	0.1	0.1
PBCDF-17	PBCDF Fugitives	PM	0.2	0.6

ND = Nondetectable. Emissions shall be below levels of detection using the monitoring protocols set forth in ADEQ Hazardous Waste Permit 29-H.

119. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity as measured by Environmental Protection Agency (EPA) Reference Method 9 for the DFS, LIC, and MPF Common Stack (SN-PBCDF-01), the Brine Reduction Area (BRA) baghouse (SN-PBCDF-07), and the Residue Handling System (RHA) baghouse (SN-PBCDF-15).

120. Pursuant to §18.1003 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, weekly observations of opacity from the DFS, LIC, and MPF Common Stack (SN-PBCDF-01), the Brine Reduction Area (BRA) baghouse (SN-PBCDF-07), and the Residue Handling System (RHA) baghouse (SN-PBCDF-15) shall be conducted by a person familiar with emission at each source. If any visible emissions are detected, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, another observation of the opacity from the affected source shall be conducted in order to confirm that visible emissions are no longer present. In the event a source is shut down for seven consecutive days, no opacity observation shall be required for that period. Records of all visible emissions observations and any corrective action taken shall be kept on site and made available to Department personnel upon request.

121. Pursuant to §18.501 of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed 5% opacity as measured by Environmental Protection Agency (EPA) Reference Method 9 for the following sources: Process Steam Boiler I (SN-PBDCF-03), Process Steam Boiler II (SN-PBDCF-04), Hot Water Boiler I (SN-PBDCF-05), Hot Water Boiler II

(SN-PBDCF-06), and the Laboratory Boiler (SN-PBDCF-16). Compliance with this condition shall be demonstrated by compliance with the fuel usage limitations prescribed by this permit.

122. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall use only pipeline natural gas to fire the Process Steam Boiler I (SN-PBCDF-03), and II (SN-PBCDF-04), except during natural gas curtailment, when liquid petroleum gas (LPG) may be used to fire the steam boilers.

123. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall use only pipeline natural gas to fire the Hot Water Boiler I (SN-PBCDF-05) and II (SN-PBCDF-06), except during natural gas curtailments, when LPG may be used to fire the hot water boilers.

124. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall use only pipeline natural gas to fire the Laboratory Boiler (SN-PBCDF-16), except during natural gas curtailments, when LPG may be used to fire the Laboratory Boiler.

125. Pursuant to §19.304 of Regulation 19 and 40 CFR Part 60.48c(g), the permittee shall record and maintain the amounts of fuel combusted each day for Process Boiler I (SN-PBCDF-03), Process Boiler II (SN-PBCDF-04), Hot Water Heater I (SN-PBCDF-05), and Hot Water Heater II (SN-PBCDF-06).

126. Pursuant to §19.304 of Regulation 19 and 40 CFR Part 60.48c(i), the fuel usage records for SN-PBCDF-03, SN-PBCDF-04, SN-PBCDF-05, and SN-PBCDF-06 shall be maintained for a period of two years following the date of such records.

127. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall not process more than 102,209 rockets in the DFS (SN-PBCDF-01); 7,262,400 pounds of agent in the LIC (SN-PBCDF-01); 319,253 pounds of agent in the MPF (SN-PBCDF-01); 3,228,060 pounds of waste material in the MPF (SN-PBCDF-0l); and 137,405 tons of feed to the BRA (SN-PBCDF-07) during any consecutive 12 month period.

128. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain records of the amount of the munitions, agent, and waste material processed through the units under SN-PBCDF-01, and of the BRA feed at SN-PBCDF-07. These records shall be used for compliance demonstration and may be used by the Department for enforcement purposes.

These records shall be updated no later than the fifteenth day of the month following the month which the records represent, shall be kept on-site, and shall be made available to Department personnel upon request. An annual total and each month' s individual data shall be submitted to the Department in accordance with General Provision 7.

129. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall not operate the Emergency Electrical Generator I (SN-PBCDF-09) and the Emergency Electrical Generator II (SN-PBCDF-10) more than 1,200 hours combined per any consecutive 12 month period, and the Emergency Electrical Generator III (SN-PBCDF-12) more than 500 hours in any consecutive 12 month period.

130. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain the operating hours for each of the electrical generators (SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12). These records shall be used for compliance demonstration and may be used by the Department for enforcement purposes. These records shall be updated no later than the fifteenth day of the month following the month which the records represent, shall be kept on-site, and shall be made available to Department personnel upon request. An annual total and each month' s individual data shall be submitted to the Department in accordance with General Provision 7.

131. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only burn diesel fuel with a sulfur content of less than 0.05% by weight in the electrical generators (SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12).

132. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain purchase records of the diesel fuel used at each of the electrical generators (SN-PBCDF-09, SN-PBCDF-10, and SN-PBCDF-12) and its sulfur content. These records shall be used for compliance demonstration and may be used by the Department for enforcement purposes. These records shall be updated no later than the fifteenth day of the month following the month which the records represent, shall be kept on-site, and shall be made available to Department personnel upon request. An annual total and each month' s individual data shall be submitted to the Department in accordance with General Provision 7.

133. Pursuant to §19.702 of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall perform an annual stack test for PM_{10} on the Common Stack for the DFS, LIC, and MPF (SN-PBCDF-01) using EPA Reference Method 5. The annual testing events shall be conducted by a third party while the tested unit is within 90% of its maximum processing capacity. The results of these testing events shall be maintained and shall include, but

shall not be limited to, the following: identification of the third party firm performing the testing event; the date(s) of the testing event; the EPA approved testing method used; the pollutant(s) being measured during the testing event; the rate measured during the test; and the processing rate during the testing event.

134. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the results from PM_{10} testing events shall be submitted to the Department on an annual basis. This information shall cover testing events from January 1 through December 31 of the previous year and shall be provided to the Department on or before February 1. The testing information shall be provided to the Department at the address displayed in General Provision 7.

135. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall operate the DFS, LIC, and MPF (SN-PBCDF-01) in accordance with all required parameters as outlined in the specific conditions of this permit and in accordance with all regulatory requirements to ensure that the munitions, agents, and secondary waste are completely processed, treated, and destroyed by the incinerator process.

136. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall process only chemical agent munitions (rockets, land mines, and ton containers), laboratory solid waste, and wastes generated at the facility as a by-product of the chemical agent demilitarization process in the DFS, LIC, and MPF.

137. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall only process one munition destruction campaign (GB rockets, VX rockets, VX mines, or HD/HT ton containers) at a time.

138. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, munitions processed through the DFS shall have a minimum retention time of 15 minutes on the HDC (SN-PBCDF-0l) at the temperature specified in the following condition. The permittee shall continuously monitor and record the velocity of the HDC during its operation to demonstrate compliance with this condition. These records shall be kept on-site and made available to the Department upon request. Any retention time outside this range shall be reported in accordance with Chapter 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

139. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the DFS Heated Discharge Conveyor (HDC) must be

maintained at a minimum temperature of 1,000 °F while processing munitions in the DFS. The permittee shall continuously monitor and record the HDC temperature during its operation. These records shall be kept on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Chapter 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

140. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the DFS Rotary Kiln (SN-PBCDF-01) shall be maintained between 750 °F and 1,900 °F while processing munitions in the DFS. The permittee shall continuously monitor and record the DFS combustion temperature during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control.

141. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the DFS Afterburner (SN-PBCDF-01) temperature shall be maintained between 1,950 °F and 2,500 °F while processing rockets in the DFS. The permittee shall continuously monitor and record the combustion temperature of the DFS Afterburner during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

142. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the DFS Afterburner (SN-PBCDF-01) temperature shall be maintained between 1,750 °F and 2,250 °F while processing munitions other than rockets in the DFS. The permittee shall continuously monitor and record the combustion temperature of the DFS Afterburner during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

143. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the LIC Primary Combustion Chamber (SN-PBCDF-01) shall be maintained between 2,300 °F and 3,000 °F while processing chemical agents in the LIC. The permittee shall continuously monitor and record the combustion temperature of the LIC during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside

this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

144. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the LIC Secondary Combustion Chamber (SN-PBCDF-01) temperature shall be maintained between 1,800 °F and 2,200 °F while processing chemical agents in the LIC. The permittee shall continuously monitor and record the combustion temperature of the LIC Secondary Combustion Chamber during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

145. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the MPF Primary (Burnout) Chamber (SN-PBCDF-01) shall be maintained between 1,000 °F and 2,150 °F while processing munitions in the MPF. The permittee shall continuously monitor and record the combustion temperature of the MPF during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

146. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the MPF Afterburner (SN-PBCDF-01) temperature shall be maintained between 1,800 °F and 2,200 °F while processing munitions in the MPF. The permittee shall continuously monitor and record the combustion temperature of the MPF Afterburner during its operation. These records shall be retained on-site and made available to the Department upon request. Any temperature measurement outside this range shall be reported in accordance with Section 19.6 of the Arkansas Plan of Implementation for Air Pollution Control (SIP).

147. Pursuant to §19.705 of Regulation 19, A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, and 40 CFR Part 70.6, the permittee shall not process munitions or other materials through any of the incinerators if the operating temperatures specified in the preceding conditions are not met.

148. Pursuant to §19.901 et seq of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall not emit more than 10.2 tons of particulate matter during any 12 consecutive month period from the processing of munitions through the DFS, LIC, and MPF (SN-PBCDF-01). Compliance with this condition shall be determined by compliance with the particulate matter standards required by 40 CFR Part 63 Subpart EEE and with other

throughput and record keeping provisions set forth in this permit. The records shall include a 12-month rolling total of particulate matter emissions, to be updated on a monthly basis.

149. Pursuant to §19.901 et seq of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall not emit more than 75.2 tons of sulfur dioxide during any 12 consecutive month period from the processing of munitions through the DFS, LIC, and MPF (SN-PBCDF-01). Compliance with this condition shall be determined by keeping records from the sulfur dioxide CEMS and flow monitor located in the Common Stack (SN-PBCDF-01) and with other throughput and record keeping provisions set forth in this permit. The records shall include a 12-month rolling total of sulfur dioxide emissions, to be updated on a monthly basis.

150. Pursuant to §19.901 et seq of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall not emit more than 55.6 tons of carbon monoxide during any 12 consecutive month period from the processing of munitions through the DFS, LIC, and MPF (SN-PBCDF-01). Compliance with this condition shall be determined through record keeping of the carbon monoxide CEMS and flow monitor located in the Common Stack (SN-PBCDF-01) and with other throughput and record keeping provisions set forth in this permit. The records shall include a 12-month rolling total of carbon monoxide emissions, to be updated on a monthly basis.

151. Pursuant to §19.901 et seq of Regulation 19 and 40 CFR Part 52, Subpart E, the permittee shall not emit more than 357.4 tons of nitrogen oxides during any 12 consecutive month period from the processing of munitions through the DFS, LIC, and MPF (SN-PBCDF-01). Compliance with this condition shall be determined by keeping records from the nitrogen oxides CEMS and flow monitor located in the Common Stack (SN-PBCDF-01) and with other throughput and record keeping provisions set forth in this permit. The records shall include a 12-month rolling total of nitrogen oxide emissions, to be updated on a monthly basis.

152. Pursuant to §19.702 of Regulation 19, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, a CEMS shall be installed, calibrated, maintained and operated to measure the emission levels of sulfur dioxide from the Common Stack (SN-PBCDF-01). The CEMS shall be installed, operated, maintained, and reports submitted per ADEQ CEMS Conditions.

153. Pursuant to §19.702 of Regulation 19, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, a CEMS shall be installed, calibrated, maintained and operated to measure the emission levels of carbon monoxide from the Common Stack (SN-PBCDF-01). The CEMS shall be installed, operated, maintained, and reports submitted per ADEQ CEMS Conditions.

154. Pursuant to §19.702 of Regulation 19, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, a CEMS shall be installed, calibrated, maintained and operated to measure the emission levels of nitrogen oxides from the Common Stack (SN-PBCDF-01). The CEMS shall be installed, operated, maintained, and reports submitted per ADEQ CEMS Conditions.

155. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee shall maintain all Common Stack CEMS data on-site for the duration of the chemical agent munitions destruction project.

156. **Pursuant to §19.702 of Regulation 19, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, within 30 calendar days of commencement of agent incineration, the permittee shall re-certify each CEMS associated with the PBCDF by performing a Relative Accuracy Test Audit (RATA) while agent is being processed at SN-PBCDF-01.**

157. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee is authorized to use Special Equipment Testing Hardware (SETH) during testing and shakedown periods of the demilitarization equipment (SN-PBCDF-01). The SETHs are inert and simulant-filled replicas of actual chemical weapons, consisting of cardboard rockets and land mines filled with a mixture of 50% ethylene glycol and 50% water.

158. Pursuant to §19.705 of the Arkansas State Implementation Plan for Air Pollution Control (Regulation 19) and 40 CFR Part 52 Subpart E, the permittee is authorized to incinerate dunnage material in the Metal Parts Furnace (MPF, SN-PBCDF-01).

159. Pursuant to §19.304 of Regulation 19 and 40 CFR §63.1200, this facility is subject to 40 CFR Part 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*. Applicable requirements include, but are not limited to, the following conditions:

Emission Limits

a. Pursuant to §63.1203(b)(1), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain dioxin and furans in excess of 0.2 ng TEQ/dscm, corrected to 7 percent oxygen.

b. Pursuant to §63.1203(b)(2), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain mercury (referred to as a HWC MACT volatile metal) in excess of 45 µg/dscm, corrected to 7 percent oxygen.

c. Pursuant to §63.1203(b)(3), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain lead and cadmium (referred to as HWC MACT semi-volatile metals) in excess of 120 µg/dscm, combined emissions, corrected to 7 percent oxygen.

d. Pursuant to §63.1203(b)(4), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain arsenic, beryllium, and chromium (referred to as HWC MACT low-volatile metals) in excess of 97µg/dscm, combined emissions, corrected to 7 percent oxygen.

e. Pursuant to §63.1203(b)(5)(i), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, and corrected to 7 percent oxygen and hydrocarbons in excess of 10 parts per million by volume over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, and corrected to 7 percent oxygen, and reported as propane, at any time during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by §63.1206(b)(7).

f. Pursuant to §63.1203(b)(6), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain hydrochloric acid and chlorine gas in excess of 21 parts per million by volume, combined emissions, expressed as hydrochloric acid equivalents, dry basis and corrected to 7 percent oxygen.

g. Pursuant to §63.1203(b)(7), the permittee shall not discharge or cause combustion gases to be emitted to the atmosphere that contain particulate matter in excess of 34 mg/dscm corrected to 7 percent oxygen.

Destruction and removal efficiency (DRE) standard.

h. Pursuant to §63.1203(c), the permittee shall maintain a 99.99% destruction and removal efficiency (DRE) for each principal organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. The DRE shall be calculated using the following equation:

$$DRE = [1-(W_{in} / W_{out})] \text{ H } 100\%$$

Where:
W_{in} = mass feedrate of one principal organic hazardous constituent (POHC) in a waste feed stream; and
W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

i. Pursuant to §63.1203(c)(3)(i), the permittee must treat the POHCs in the waste feed that are specified under paragraph (c)(3)(ii) of this section to the extent required by paragraphs 63.1203(c)(1) and (c)(2) (a DRE greater than or equal to 99.99% as stated in Specific Condition #161(h)).

j. Pursuant to §63.1203(c)(3)(ii), the permittee shall specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactum as provided by §63.60, for each waste to be burned. The permittee must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

Compliance Provisions

k. Pursuant to §63.1206(a)(3), the permittee shall comply with the standards of 40 CFR Part 63, Subpart EEE on the date each affected source starts operation, which for purposes of this permit is considered the initiation of PBCDF agent trial burns.

l. Pursuant to §63.1206(b)(1), the permittee shall comply with the emission standards (see §63.1203(b) and Specific Conditions #161a-g) and operating requirements (see §63.1206(c)) set forth in 40 CFR Part 63, Subpart EEE at all times when hazardous wastes are in the combustion chamber of the incinerator, except during periods of startup, shutdown, and malfunction.

m. Pursuant to §63.1206(b)(2), the permittee shall demonstrate compliance based on performance testing under operating conditions representative of the extreme range of normal conditions. The permittee must conduct a comprehensive performance test in accordance with 40 CFR §63.1207(b) consisting of a minimum of three successful test runs as required by 40 CFR §63.1206(b)(12) to demonstrate compliance with the HWC MACT emission standards (§63.1203(b), Specific Conditions #161a-g), establish operating parameter limits as required by

§63.1209, and demonstrate compliance with the continuous monitoring system performance standards.

n. Pursuant to §63.1206(b)(4), the permittee may petition the Administrator to grant an extension of compliance with the emission standards of this subpart as provided by §63.6(i) and §63.1213.

o. Pursuant to §63.1206(b)(5)(i), the permittee shall comply with the requirements of notification, performance testing, and waste-burning restrictions as outlined in §63.1206(b)(5)(i)(A) through (C) if the facility plans to make a change in design, operation, or maintenance that could adversely affect compliance.

p. Pursuant to §63.1206(b)(5)(ii), the permittee shall document any changes not affecting compliance with emission standards or operating requirements in the facility operating record. Revisions reflecting such changes shall also be made, as necessary, to the performance test plan, Documentation of Compliance, (required by §63.1211(d)) , Notification of Compliance (required by §63.1210(d)), and the HWC MACT Start-up, Shutdown, and Malfunction Plan (required by §63.6(e)(3) and §63.1206(c)(2)).

q. Pursuant to §63.1206(b)(6), the permittee shall ensure and document compliance with the CO emission standard (refer to §63.1203(b)(5)(i) and Specific Condition #161(e)) using a continuous emission monitoring system (CEMS). The permittee shall ensure and document compliance with the hydrocarbon emission standard by complying with the CO emission standard, and by demonstrating that the highest hourly rolling average hydrocarbon level emitted during the comprehensive performance test does not exceed the hydrocarbon emission limit.

r. Pursuant to §63.1206(b)(7), the permittee shall demonstrate destruction removal efficiency (DRE) of at least 99.99% (required by §63.1203(c) and Specific Condition #161(h)) during the comprehensive performance test conducted in compliance with the conditions of §63.1207(b)(1) of this subpart.

s. Pursuant to §63.1206(b)(8)(i) and (ii), any particulate matter and opacity standards or any permit or other emissions operating parameter limits or conditions, including any limitation on workplace practices, that are applicable to hazardous waste combustors to ensure compliance with any particulate matter or opacity standard of parts 60, 61, 63, 264, 265, and 266 of this chapter (i.e., any title 40 particulate or opacity standards) do not apply while the permittee conducts particulate matter continuous emissions monitoring system (CEMS) correlation tests. However, compliance with this condition is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to PM CEMS.

t. Pursuant to §63.1206(b)(8)(iii)(A) and (B), for provisions of this section to apply, the permittee must develop a particulate matter CEMS correlation test plan that includes the following information. This test plan may be included as part of the comprehensive performance test plan required under §63.1207(e) and (f):

1. Number of test conditions and number of runs for each test condition;
2. Target particulate matter emission level for each test condition;
3. How you plan to modify operations to attain the desired particulate matter emission levels; and
4. Anticipated normal emission levels.

The permittee shall submit the particulate CEMS correlation test plan to the Administrator for approval at least 90 calendar days before the correlation test is scheduled to be conducted. However, compliance with this condition is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to PM CEMS.

u. Pursuant to §63.1206(b)(8)(iv), if the Administrator fails to approve or disapprove the correlation test plan with the time period specified by §63.7(c)(3)(i), the plan is considered approved, unless the Administrator has requested additional information. However, compliance with this condition is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to particulate matter CEMS.

v. Pursuant to §63.1206(b)(8)(v), the particulate matter and associated operating limits and conditions will not be waived for more than 96 hours, in the aggregate, for a correlation test, including all runs of all test conditions, unless more time is approved by the Administrator. However, compliance with this condition is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to particulate matter CEMS.

w. Pursuant to §63.1206(b)(8)(vii), the permittee must return to operating conditions indicative of compliance with the applicable particulate matter and opacity standards as soon as possible after correlation testing is completed. However, compliance with this condition is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to particulate matter CEMS.

x. Pursuant to §63.1206(b)(11), the permittee must calculate the hazardous waste residence time for each incinerator unit and include the calculation in the

Comprehensive Performance Test Plan under §63.1207(f)(1) and the facility operating record. The permittee must also provide the hazardous waste residence time in the Documentation of Compliance under §63.1211(c) and the Notification of Compliance under §63.1207(j) and 63.1210(b).

y. Pursuant to §63.1206(b)(12)(i), the permittee must conduct a minimum of three runs of a comprehensive performance test required under §63.1207(b)(1) to document compliance with the HWC MACT emission standards (see §63.1203(b) and Specific Conditions #161a-g).

z. Pursuant to §63.1206(b)(12)(ii), the permittee must document compliance with the HWC MACT emission standards (see §63.1203(b) and Specific Conditions #161a-g) based on the arithmetic average of the emission results of each run, except that the permittee must document compliance with the destruction and removal efficiency standard (required by §63.1203(c) and Specific Conditions #161(h-j)) for each run of the comprehensive performance test individually.

General Operating Requirements

aa. Pursuant to §63.1206(c)(1)(i), the permittee must operate only under the operating requirements specified in the Documentation of Compliance under §63.1211(c) or the Notification of Compliance under §§63.1207(j) and 63.1210(b), except:

1. Pursuant to §63.1206(c)(1)(i)(A), during performance tests under approved Comprehensive Performance Test Plans in accordance with §63.1207(e), (f), and (g), and

2. Pursuant to §63.1206(c)(1)(i)(B), under the conditions of paragraph (b)(1)(i) or (ii) of this section:

    i. Pursuant to §63.1206(c)(1)(ii), the Documentation of Compliance and the Notification of Compliance must contain operating requirements including, but not limited to, the operating requirements of §63.1206 and §63.1209.
    ii. Pursuant to §63.1206(c)(1)(iii), failure to comply with the operating requirements is failure to ensure compliance with the HWC MACT emissions standards (see §63.1203(b) and Specific Conditions #161a-g).
    iii. Pursuant to §63.1206(c)(1)(iv), operating requirements in the Notification of Compliance are applicable requirements for purposes of 40 CFR Parts 70 and 71 of this chapter.

iv. Pursuant to §63.1206(c)(1)(v), the operating requirements specified in the Notification of Compliance will be incorporated in this Title V permit.

bb. Pursuant to §63.1206(c)(2)(i), the permittee is subject to the Startup, Shutdown, and Malfunction Plan requirements of §63.6(e)(3).

1. Pursuant to §63.1206(c)(2)(ii), if the permittee elects to comply with §§270.235(a)(1)(iii), 270.235(a)(2)(iii), or 270.235(b)(1)(ii) of this chapter to address RCRA concerns that you minimize emissions of toxic compounds from startup, shutdown, and malfunction events (including releases from emergency safety vents), the permittee must comply with the provisions of §63.1206(c)(2)(ii)(A) through (C).
2. Pursuant to §63.1206(c)(2)(iii), the permittee must identify in the HWC MACT Startup, Shutdown, and Malfunction Plan the projected oxygen correction factor based on normal operations to use during periods of startup and shutdown.
3. Pursuant to §63.1206(c)(2)(iv), the permittee must record the HWC MACT Startup, Shutdown, and Malfunction Plan in the facility operating record.

cc. Pursuant to §63.1206(c)(3)(i), upon the compliance date, the permittee must operate the combustor with a functioning system that immediately and automatically cuts off the hazardous waste feed, except as provided by §63.1206(c)(3)(viii) concerning the ramping down of pumpable hazardous waste feed over a period not to exceed one minute, when the following conditions apply:

1. Pursuant to §63.1206(c)(3)(i)(A), when HWC MACT operating parameter limits specified under §63.1209; an emission standard monitored by CEMS; and the allowable combustion chamber pressure;
2. Pursuant to §63.1206(c)(3)(i)(B), when the span value of any continuous monitoring systems (CMS) detector, except a CEMS, is met or exceeded;
3. Pursuant to §63.1206(c)(3)(i)(C), upon malfunction of a CMS monitoring a HWC MACT operating parameter limit specified under §63.1209 or a HWC MACT emission level; or
4. Pursuant to §63.1206(c)(3)(i)(D), when any component of the automatic waste feed cutoff system (AWFCO) fails.

dd. Pursuant to §63.1206(c)(3)(ii), during an AWFCO the permittee must continue to duct combustion gases to the air pollution control system while hazardous waste remains in the furnace combustion chamber.

ee. Pursuant to §63.1206(c)(3)(iii), the permittee must continue to monitor during the cutoff the operating parameters for which limits are established under §63.1209 and the HWC MACT emissions monitored by a CEMS, and the permittee shall not restart the hazardous waste feed until the operating parameters and emission levels are within specified limits.

ff. Pursuant to §63.1206(c)(3)(iv), if the AWFCO system fails to automatically and immediately cutoff the flow of hazardous waste upon exceedance of a parameter required to be interlocked with the AWFCO system under §63.1206(c)(3)(i) (see Specific Condition #161(cc)), the permittee has failed to comply with the AWFCO requirements of §63.1206(c)(3).

gg. Pursuant to §63.1206(c)(3)(v), if, after any AWFCO, there is an exceedance of any HWC MACT emission standard or operating requirement, irrespective of whether the exceedance occurred while hazardous waste remained in the combustion chamber, the permittee shall investigate the cause of the AWFCO, take appropriate corrective measures to minimize future AWFCOs and record the findings and corrective measures in the facility operating record.

hh. Pursuant to §63.1206(c)(3)(vi)(A), for each set of 10 exceedances of an emissions standard or operating requirement while hazardous waste remains in the combustion chamber during a 60-day block period, the permittee must submit to the Administrator a written report within 5 calendar days of the 10th exceedance documenting the exceedances and the results of the investigation and corrective measures taken.

ii. Pursuant to §63.1206(c)(3)(vi)(B), on a case-by-case basis, the Administrator may require excessive exceedance reporting when fewer than 10 exceedances occur during a 60-day block period.

jj. Pursuant to §63.1206(c)(3)(vii), the AWFCO system and associated alarms must be tested at least weekly to verify operability, unless the permittee documents in the facility operating record that weekly inspections will unduly restrict or upset operations and that less frequent inspection will be adequate. At a minimum, the permittee must conduct operability testing at least monthly. The permittee must document and record in the facility operating record AWFCO operability test procedures and results.

kk. Pursuant to §63.1206(c)(4), the permittee is subject to the emergency safety vent (ESV) operating and reporting requirements including:

(1) The development of a ESV Operating Plan, which must be included in the facility operating record. This plan must include procedures for rapidly stopping the hazardous waste feed, shutting down the combustion unit, and maintaining the temperature and negative pressure of the combustion chamber.

(2) If the permittee experiences an ESV opening that results in a failure to meet the HWC MACT emission standards (see §63.1203(b) and Specific Conditions #161a-g), then the cause of the opening will be reviewed, appropriate corrective action(s) will be implemented, and the findings from the opening will be included as part of the facility operating record. In addition the permittee must submit a written report to the Administrator within five days of this ESV opening documenting the investigation results and the corrective measures implemented.

ll. Pursuant to §63.1206(c)(5), the permittee must keep the combustion zone sealed to prevent hazardous air pollutant leaks and identify the method(s) used to control combustion system leaks in the facility operating record. The permittee may use, if approved by the Administrator, an alternative control means for combustion system leaks that is equivalent to maintenance of the combustion zone pressure being lower than the ambient pressure or other technique(s) that prevent fugitive emissions without use of instantaneous pressure limits. Pursuant to §63.1209(p), the permittee must also monitor the pressure instantaneously and the AWFCO system must be engaged when negative pressure is not maintained at any time.

mm. Pursuant to §63.1206(c)(6), the permittee is subject to the operator training and certification standards.

nn. Pursuant to §63.1206(c)(7), the permittee must prepare and at all times operate the combustor units (including associated pollution control equipment) in accordance with an Operation and Maintenance Plan which:

(1) Identifies procedures for operation, inspection, maintenance, and corrective measures of these units that could affect hazardous air pollutant emissions.
(2) Recognizes good air pollution control practices to minimize emissions to Comprehensive Performance Test levels.
(3) Ensures compliance with operation and maintenance requirements of §63.6(e) and minimizes hazardous air pollutant emissions, AWFCOs, and malfunctions.

The Operation and Maintenance Plan must be included as part of the facility operating record.

Performance Testing Requirements

oo. Pursuant to §63.1207, the permittee must conduct performance testing within the specified time periods to demonstrate compliance with HWC MACT emission standards (see §63.1203(b) and Specific Conditions #161a-g), establish appropriate HWC MACT operating parameters pursuant to §63.1209, and demonstrate compliance with CMS performance standards.

pp. Pursuant to §63.1207(c)(1), the permittee must commence the initial comprehensive performance test not later than six months after the compliance date.

The PBCDF has notified the Administrator that it will perform all HWC MACT comprehensive performance testing (including the CMS performance evaluation testing) during RCRA agent trial burn tests required by Permit 29-H. As stated in the PBCDF RCRA agent trial burn plans and as provided by §63.1207(j)(4), the permittee has requested the Administrator to extend the time period from 90 days to 120 days from completion of the comprehensive performance test to provide a Notification of Compliance documenting compliance or noncompliance encountered during the testing event.

qq. Pursuant to §63.1207(d)(1) through (3), the permittee must conduct testing periodically as described in paragraphs (d)(1) through (3) of this section. The date of commencement of the initial comprehensive performance test is the basis for establishing the deadline to commence the initial confirmatory performance test and the next comprehensive performance test. The permittee may conduct performance testing at any time prior to the required date. The deadline for commencing subsequent confirmatory and comprehensive performance testing is based on the date of commencement of the previous comprehensive performance test.

(1) The permittee must commence comprehensive performance testing no later than 61 months after the date of commencing the previous comprehensive performance test.
(2) The permittee must commence confirmatory performance testing no later than 31 months after the date of commencing the previous comprehensive performance test. To ensure that the confirmatory performance test is conducted approximately midway between comprehensive performance tests, the Administrator will not approve a confirmatory performance test plan that schedules testing within 18 months of commencing the previous comprehensive performance test.
(3) The permittee must complete performance testing within 60 days after the date of commencement, unless the Administrator determines that a time extension is warranted based on documentation in writing of factors beyond the permittee's control that prevent testing from being completed within 60 days.

rr. Pursuant to §63.1207(e)(i), the permittee must submit to the Administrator a notification of intent to conduct a comprehensive performance test and CMS performance evaluation and a site specific test plan and CMS performance evaluation plan at least one year before the performance test and CMS performance evaluation are scheduled to begin.

ss. Pursuant to §63.1207(e)(i)(B), the permittee must submit to the Administrator a notification of intent to conduct the comprehensive performance test at least 60 calendar days before the test is scheduled to begin.

tt. Pursuant to §63.1207(e)(ii), the permittee must submit to the Administrator a notification of intent to conduct a confirmatory performance test and CMS performance evaluation and a test plan and CMS performance evaluation plan at least 60 calendar days before the performance test is scheduled to begin.

Test Methods

uu. Pursuant to §63.1208, the permittee shall use the test methods contained in this section or applicable test methods approved by the Administrator to demonstrate compliance with the HWC MACT emissions standards (see §63.1203(b) and Specific Conditions #161a-g).

Monitoring Requirements

vv. Pursuant to §63.1209, the permittee is subject to the applicable continuous monitoring requirements contained in these sections.

ww. Pursuant to §63.1209(a)(1)(i), the permittee must either use a carbon monoxide or hydrocarbon CEMS to demonstrate compliance with either the carbon monoxide and hydrocarbon standards under this subpart. The permittee must also use an oxygen CEMS to continuously correct the carbon monoxide and hydrocarbon levels to 7 percent oxygen. The PBCDF has submitted notice that a carbon monoxide and oxygen CEMS will be used to fulfill these requirements.

xx. Pursuant to §63.1209(a)(1)(iii), the permittee must install, calibrate, maintain, and operate a particulate matter CEMS to demonstrate and monitor compliance with the particulate matter standards under this subpart. However, compliance with the requirements in this section to install, calibrate, maintain, and operate the particulate matter CEMS is not required until such time that the Agency promulgates all performance specifications and operational requirements applicable to particulate matter CEMS.

yy. Pursuant to §63.1209(a)(2), the permittee must install, calibrate, maintain, and continuously operate the carbon monoxide and oxygen CEMS in compliance with the quality assurance procedures provided in the appendix to this subpart and Performance Specifications 4B (carbon monoxide and oxygen) in Appendix B of 40 CFR Part 60.

zz. Pursuant to §63.1209(a)(3), the permittee must comply with the recording requirements **of §63.1209(a)(3)** in the event the high level span of the carbon monoxide CEMS is exceeded.

aaa. Pursuant to §63.1209(a)(5), the permittee may petition the Administrator to use CEMS for compliance monitoring for other standards (particulate matter, mercury, semivolatile metals, low volatile metals, and hydrochloric acid/chlorine gas) under §63.8(f) in lieu of compliance with the corresponding operating parameter limits under this section.

bbb. Pursuant to§63.1209(a)(6), the permittee will begin recording one-minute and hourly rolling average values for the carbon monoxide CEMS as necessary to ensure that 60 one-minute values will be available for calculating the initial hourly rolling average before the HWC MACT compliance date. The permittee will continue to use the CEMS to monitor carbon monoxide when the hazardous waste feed is cutoff while the source is operational. The permittee will not resume hazardous waste feeding activities until the carbon monoxide emission level is below §63.1203(b)(5)(i) [Specific Condition #161(e)].

ccc. Pursuant to §63.1209(a)(7), the permittee will use the Comprehensive Performance Test to demonstrate that the total hydrocarbons standard is met to establish operating parameters for DRE required in §63.1203(b)(5)(i) [Specific Condition #161(e)].

ddd. Pursuant to §63.1209(b), the permittee will use Continuous Monitoring Systems (e.g., thermocouples, pressure transducers, flow meters) where necessary to ensure compliance with operating parameters established in the Documentation of Compliance or the Notification of Compliance. The calibration of thermocouples must be verified at a frequency and in a manner consistent with manufacturer specifications no less frequent than once per year. Unless alternative monitoring requirements are in place, the permittee must continue monitoring operating parameter limits with a CMS during the stoppage of hazardous waste feed if the source is operational. The hazardous waste feed may not be resumed if the operating parameter exceeds its limit.

eee. Pursuant to §63.1209(c)(1), prior to feeding the material, the permittee must obtain an analysis of each feedstream that is sufficient to document compliance with applicable feedrate limits.

fff. Pursuant to §63.1209(c)(2), the permittee must develop and implement a Feedstream Analysis Plan and record it in the operating record. The plan must specify at least the following information:

(1) Each feedstream parameter to be analyzed for compliance with HWC MACT operating limits.
(2) Whether the stated parameters will be gathered by sampling and analysis of the feedstreams or through other methods (using analytical data from others or by using published or documented data or information).

(3) How the analysis will be used to document compliance with the applicable feedrate limits.
(4) Test methods to be used for the analyses.
(5) The sampling method to obtain a representative sample of each feedstream. (6) The frequency for reviewing and repeating the initial feedstream analysis to ensure the analysis is accurate and up-to-date.

ggg. Pursuant to §63.1209(c)(3), the permittee must submit the Feedstream Analysis Plan to the Administrator for review and approval, if requested.

hhh. Pursuant to §63.1209(c)(4), to comply with the applicable feedrate limits of this section, the permittee must monitor and record the feedrates as follows:
(20) Determine and record the value of the parameter for each feedstream by sampling and analysis or other method;
(21) Determine and record the mass or volume flowrate of each stream by a CMS. If the permittee determines flowrate of a feedstream by volume, the permittee must determine and record the density of the feedstream by sampling and analysis (unless the permittee reports the constituent concentration in units of weight per volume); and
(22) Calculate and record the mass feedrate of the parameter per unit time.

iii. Pursuant to §63.1209(d)(1), the requirements of §63.8(d) (Quality control program) and (e) (Performance evaluation of continuous monitoring systems) apply, except that the permittee must conduct performance evaluations components of the CMS under the frequency and procedures (for example, submittal of performance evaluation test plan for review and approval) applicable to performance tests as provided by §63.1207.

jjj. Pursuant to §63.1209(f), the permittee shall maintain and operate each CMS as specified in §63.8(c), except for §63.8(c)(3) and §63.8(c)(4)(ii). The permittee shall have the CMSs installed, calibrated, and operational on the compliance date. The permittee must also sample the regulated parameter without interruption, and evaluate the detector response at least once each 15 seconds, and compute and record the average values at least every 60 seconds.

kkk. **Pursuant to §63.1209(h), the permittee shall follow the requirements for the reduction of monitoring data as specified in 40 CFR §63.8(g).**

lll. Pursuant to §63.1209(i), when one HWC MACT operating parameter [see §63.1209(j)-(p) and Specific Conditions #161(mmm)-(bbbb)] is used to ensure compliance with one or more emission standards, the permittee must use the most stringent limit, determined during the comprehensive performance test, as the limit for that operating parameter.

mmm. Pursuant to §63.1209(j), to remain in compliance with the DRE standards, the permittee must establish operating limits during the comprehensive performance test (or during a previous DRE test under provisions of §63.1206(b)(7)) for the parameters listed in Specific Conditions #161(nnn)-(qqq), unless the limits are based on manufacturer specifications and comply with those limits at all times that hazardous waste remains in the combustion chamber (i.e., the hazardous waste residence time has not transpired since an AWFCO was activated).

nnn. Pursuant to §63.1209(j)(1), the permittee must measure the temperature of each combustion chamber at a locations that best represents, as practicable, the bulk gas temperature in the combustion zone. The permittee must document the temperature measurement location in the performance test plan submitted under §63.1207(e), and establish a minimum hourly rolling average limit as the average of the test run averages.

ooo. Pursuant to §63.1209(j)(2), as an indicator of gas residence time in the control device, the permittee must establish and comply with a limit on the maximum flue gas flowrate, the maximum production rate, or another parameter that is documented in the site-specific performance test plan as an appropriate surrogate for gas residence time on an hourly rolling average basis.

ppp. Pursuant to §63.1209(j)(3), the permittee must establish limits on the maximum pumpable and total (i.e., pumpable and nonpumpable) hazardous waste feedrate for each location where hazardous waste is fed. The established limits should be based on the average of the maximum hourly rolling averages for each performance test run. The feedrate limit(s) must be complied with on a hourly rolling average basis.

qqq. Pursuant to §63.1209(j)(4), the permittee must specify operating parameters and limits to ensure that good operation of each hazardous waste firing system is maintained.

rrr. Pursuant to §63.1209(k), the permittee must comply with the dioxin and furans emission standard by establishing and complying with the operating parameter limits listed in Specific Conditions #161(sss)-(uuu). The permittee must base the limits on operations during the comprehensive performance test, unless the limits are based on manufacturer specifications. Also, the permittee must monitor the performance of each carbon bed system pursuant to §63.1209(k)(7) to be consistent with manufacturer's specifications and recommendations to ensure the carbon bed (or bed segment for sources with multiple segments) has not reached the end of its useful life to minimize dioxin/furans and mercury emissions at least to the levels of the HWC MACT emission standards. These carbon bed monitoring procedures should be documented in the HWC MACT Operation and Maintenance Plan [see §63.1206(c)(7) and Specific Condition #161(nn)] while the performance monitoring results should be placed in the facility operating record. The bed or bed segment must be replaced before reaching the end of its useful life to minimize dioxin and mercury emissions to at a minimum the HWC MACT emission standards.

sss. Pursuant to §63.1209(k)(2), the permittee must measure the temperature of each combustion chamber at a location that best represents, as practicable, the bulk gas temperature in the combustion zone. The permittee must document the temperature measurement location in the performance test plan and establish a minimum hourly rolling average limit as the average of the performance test run averages.

ttt. Pursuant to §63.1209(k)(3), as an indicator of gas residence time in the control device, the permittee must establish and comply with a limit on the maximum flue gas flowrate, the maximum production rate, or another parameter which is an appropriate surrogate for residence time, as the average of the maximum hourly rolling averages for each run. Compliance with this limit is on an hourly rolling average basis.

uuu. Pursuant §63.1209(k)(4), the permittee must establish limits on the maximum pumpable and total (pumpable and nonpumpable) waste feedrate for each location where waste is fed and establish limits as the average of the maximum hourly rolling averages for each performance test run. Compliance shall be based on an hourly rolling average basis.

vvv. Pursuant to §63.1209(l), the permittee shall ensure compliance with the mercury emission standard by establishing a 12-hour rolling average limit for the total feedrate of mercury in all feedstreams as the average of the performance test run averages, unless the extrapolation methodology of this section is employed, and maintaining the wet scrubber operating parameters for hydrochloric acid and chlorine gas as described under 63.1209(o) [see Specific Conditions #161(zzz)-(bbbb)].

www. Pursuant to §63.1209(m), the permittee must comply with the particulate matter emission standard by establishing and complying with the following operating parameter limits found in §63.1209(m)(1)-(3):

(1) A minimum pressure drop should be established across the high energy (venturi) wet scrubbers as an hourly rolling average as the average of the performance test run averages [§63.1209(m)(1)(A)];

(2) For all wet scrubbers (venturi, spray towers, pack bed) the solids content of the scrubber liquid should not exceed the levels demonstrated during performance testing by either [§63.1209(m)(1)(B)]:

(a) Establishing a solids content limit on the scrubber liquid using a CMS or by performing hourly manual sampling and analysis unless an alternate monitoring frequency is provided and approved in the performance test plan. A maximum solids content monitored by a CMS must be established as a limit on a 12-hour rolling average as the average of the performance test run averages. A maximum solids content established through manual sampling must be an hourly limit based on the average of the manual measurement averages for each performance test run.; or

(b) Establish a minimum blowdown rate using a CMS and either a minimum scrubber tank volume or liquid level using a CMS as an hourly rolling average based on the average of the performance test run averages.

(3) For high energy (venturi) scrubbers an hourly rolling average limit must be established for the minimum scrubber tank volume or liquid level using a CMS based on the average of the performance test run averages [§63.1209(m)(1)(C)].

(4) Establish a gas residence time limit (either the maximum flue gas flowrate, the maximum production rate, or another parameter that serves as a surrogate for gas residence time) for the control device as the average of the maximum hourly rolling averages for each performance test run [§63.1209(m)(2)].

xxx. Pursuant to §63.1209(m)(3), the permittee must establish a maximum ash feedrate limit as the average of the performance test run averages.

yyy. Pursuant to §63.1209(n), the permittee must comply with the semivolatile metal (cadmium and lead) and low volatile metal (arsenic, beryllium, and chromium) emission standards [see §63.1203(b)(3) and (4) and Specific Conditions #161(c) and (d)] by establishing and complying with the following operating parameter limits based on operations encountered during the comprehensive performance test, unless the limits are based on manufacturer specifications:

(1) Pursuant to §63.1209(n)(2), the permittee must establish feed rate limits for semivolatile (cadmium and lead) metals and low volatile metals (arsenic, beryllium, and chromium) in all feedstreams, with compliance based on 12-hour rolling average limits as the average of the average

hourly rolling averages for each performance test run averages. The permittee is allowed to request as part of the performance test plan under §63.7(b) and §§63.1207(e) and (f) to use the semivolatile metal and low volatile metal feedrates and associated emission rates during the comprehensive performance test to extrapolate to higher allowable feedrate limits and emission rates. The extrapolation methodology must be reviewed and approved by the Administrator.

(2) Pursuant to §63.1209(n)(3), the permittee must establish operating parameter limits on the particulate matter control device as specified by §63.1209(m)(1) and Specific Condition #161(www)(1).

(3) Pursuant to §63.1209(n)(4), the permittee must establish a 12-hour rolling average limit for the feedrate of total chlorine and chloride in all feedstreams as **the average of the performance test run averages.**

(4) Pursuant to §63.1209(n)(5), the permittee must establish a gas residence time limit (either the maximum flue gas flowrate, the maximum production rate, or another parameter documented in the site-specific performance test plan as an appropriate surrogate for gas residence time)for the control device as the average of the maximum hourly rolling averages for each performance test run.

zzz. Pursuant to §63.1209(o)(1), the permittee must establish a 12-hour rolling average limit for the total feedrate of chlorine (organic and inorganic) in all feedstreams as the average of the average hourly rolling averages for each performance test run.

aaaa. Pursuant to §63.1209(o)(2), as an indicator of gas residence time in the control device, the permittee must establish a limit on the maximum flue gas flowrate, the maximum production rate, or another parameter documented in the site-specific performance test plan as an appropriate surrogate for gas residence time, as the average of the maximum hourly rolling averages for each performance test run. This limit must be maintained on an hourly rolling average basis.

bbbb. Pursuant to §63.1209(o)(3), the permittee must establish the following parameter limits for the wet scrubber:

1. *Minimum pressure drop*. The permittee must establish a limit on minimum pressure drop across the high energy (venturi) on an hourly rolling average as the average of the performance test run averages. For low energy (packed bed) wet scrubbers the minimum pressure drop is based on manufacturer's specifications and must be complied with on an hourly rolling average.
2. *Minimum pH.* The permittee must establish a limit on minimum pH on an hourly rolling average as the average of the test run averages.
3. *Minimum liquid to gas ratio or the minimum scrubber water flow rate and maximum flue gas flowrate.* The permittee must establish a minimum liquid to

gas ratio or the minimum scrubber water flow rate and maximum flue gas flowrate on an hourly rolling average as the average of the performance test run averages. If the permittee establishes limits on the maximum flue gas flowrate under this paragraph, then the limit on maximum flue gas flowrate under §63.1209(o)(2) [Specific Condition #161(aaaa)] does not need to be established.

Notification Requirements

cccc. Pursuant to §63.1210(a)(1), the permittee shall submit all of the applicable notifications to the Administrator prior to the deadlines established in this subpart.

dddd. Pursuant to §63.1210(a)(2), the permittee must submit the required notifications outlined in this section to the Administrator in order to request or elect to comply with the alternative requirements contained in this subpart.

eeee. Pursuant to §63.1210(b)(2), upon postmark of the Notification of Compliance, the operating parameter limits identified in the Notification of Compliance, as applicable, shall be complied with, the limits identified in the Document of Compliance or a previous Notification of Compliance are no longer applicable.

Recordkeeping and Reporting Requirements

ffff. Pursuant to §63.1211, the permittee shall submit the reports required by this subpart to the Administrator prior to the deadlines set forth in this subpart.

Procedure for Extending the Compliance Date

gggg. Pursuant to §63.1213, the permittee may request an extension of the compliance date to install pollution prevention or waste minimization controls provided that the conditions outlined in this section are met.

162. **Pursuant to §19.705 of Regulation 19, 40 CFR Part 52, Subpart E, §18.1004 of Regulation 18 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, in all instances where 40 CFR Part 63 Subpart EEE stipulates that notifications, records, or reports be submitted to the "Administrator", the permittee shall submit one copy to EPA Region VI and one copy to ADEQ. If portions of MACT EEE are subsequently delegated to ADEQ, the permittee may then submit one copy of the affected documentation to ADEQ only, unless a copy is requested by EPA Region VI.**

SECTION V: COMPLIANCE PLAN AND SCHEDULE

U.S. Army, Pine Bluff Arsenal is in compliance with the applicable regulations cited in the permit application. U.S. Army, Pine Bluff Arsenal will continue to operate in compliance with those identified regulatory provisions. The facility will examine and analyze future regulations that may apply and determine their applicability with any necessary action taken on a timely basis.

40 CFR Part 60 Subpart DDDD
Central Incineration Complex

Pursuant to §19.304 of Regulation 19 and 40 CFR §60.2500 through §60.2540, the CIC incineration units shall be subject to all applicable requirements of 40 CFR Part 60 Subpart DDDD, *Emission Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999.* The facility must be in compliance with the Arkansas State Plan required under this rule by the earlier of the following dates: December 1, 2005 or three years after the effective date of the State Plan approval.

SECTION VI: PLANTWIDE CONDITIONS

1. The permittee will notify the Director in writing within thirty (30) days after commencing construction, completing construction, first placing the equipment and/or facility in operation, and reaching the equipment and/or facility target production rate. [Regulation No. 19 '**19.704, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]**

2. **If the permittee fails to start construction within eighteen months or suspends construction for eighteen months or more, the Director may cancel all or part of this permit. [Regulation No.19 §19.410(B) and 40 CFR Part 52, Subpart E]**

3. **The permittee must test any equipment scheduled for testing, unless stated in the Specific Conditions of this permit or by any federally regulated requirements, within the following time frames: (1) New Equipment or newly modified equipment within sixty (60) days of achieving the maximum production rate, but no later than 180 days after initial start-up of the permitted source or (2) operating equipment according to the time frames set forth by the Department or within 180 days of permit issuance if no date is specified. The permittee must notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. The permittee will submit the compliance test results to the Department within thirty (30) days after completing the testing. [Regulation No.19 §19.702 and/or Regulation No. 18 §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]**

4. **The permittee must provide: [Regulation No.19 §19.702 and/or Regulation No.18 §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]**

    a. **Sampling ports adequate for applicable test methods;**

    b. **Safe sampling platforms;**

    c. **Safe access to sampling platforms; and**

    d. **Utilities for sampling and testing equipment.**

5. The permittee must operate the equipment, control apparatus and emission monitoring equipment within the design limitations. The permittee will maintain the equipment in good condition at all times. [Regulation No.19 §19.303 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

6. This permit subsumes and incorporates all previously issued air permits for this facility. [Regulation No. 26 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

7. The permittee must prepare and implement a Startup, Shutdown, and Malfunction Plan (SSM) for each MACT-affected source **under SN-PBCDF-01. If the Department requests a review of the SSM, the permittee will make the SSM available for review. The permittee must keep a copy of the SSM at the source's location and retain all previous versions of the SSM plan for five years. [Regulation No. 19 §19.304 and 40 CFR 63.6(e)(3)]**

Title VI Provisions

8. The permittee must comply with the standards for labeling of products using ozone-depleting substances. [40 CFR Part 82, Subpart E]

   a. All containers containing a class I or class II substance stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced to interstate commerce pursuant to §82.106.

   b. The placement of the required warning statement must comply with the requirements pursuant to §82.108.

   c. The form of the label bearing the required warning must comply with the requirements pursuant to §82.110.

   d. No person may modify, remove, or interfere with the required warning statement except as described in §82.112.

9. The permittee must comply with the standards for recycling and emissions reduction, except as provided for MVACs in Subpart B. [40 CFR Part 82, Subpart F]

   a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to §82.156.
   b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158.

   c. Persons performing maintenance, service repair, or disposal of appliances must be certified by an approved technician certification program pursuant to §82.161.

d. Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to §82.166. ("MVAC-like appliance" as defined at §82.152.)

e. Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to §82.156.

f. Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.

10. If the permittee manufactures, transforms, destroys, imports, or exports a class I or class II substance, the permittee is subject to all requirements as specified in 40 CFR Part 82, Subpart A, Production and Consumption Controls.

11. If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.

The term A**motor vehicle@ as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term** A**MVAC**@ as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

12. The permittee can switch from any ozone-depleting substance to any alternative listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, "Significant New Alternatives Policy Program".

Permit Shield

13. Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements, as of the date of permit issuance, included in and specifically identified in Table 7 - Applicable Regulations of this condition. The permit specifically identifies the following as applicable requirements based upon the information submitted by the permittee in an application dated June 1, 1999 and August 22, 2002.

Source (SN)	Regulation	Description

U.S. Army, Pine Bluff Arsenal
Permit #: 1113-AOP-R0
AFIN #: 35-00116

Source (SN)	Regulation	Description
CIC Incinerators SN-42-960	0 CFR Part 60 Subpart DDDD	Emission Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999
Boilers 1 and 2 SN-32-060 25.1 MM Btu/hr each	40 CFR Part 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
Boilers 1 and 2 SN-34-125 14.7 MM Btu/hr each	40 CFR Part 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
SN-TANKS: 34-140, Maintenance Areas, 34-910, 32-035	40 CFR Part 60 Subpart Kb	**tandards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984**
PBCDF Incinerators SN-PBCDF-01	40 CFR Part 63 Subpart EEE	ational Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors
rocess Steam Boilers I and II N-PBCDF-03 and SN-PBCDF-04 28.4 MM Btu/hr	40 CFR Part 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
ot Water Boilers I and II N-PBCDF-05 and SN-PBCDF-06 11.7 MM Btu/hr	40 CFR Part 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
Facility	Arkansas Regulation 19	Regulations of the Arkansas Plan of Implementation for Air Pollution Control
Facility	Arkansas Regulation 26	egulations of the Arkansas Operating Air Permit Program
Facility	40 CFR Part 52.21	Prevention of Significant Deterioration

Source (SN)	Regulation	Description
		(for NO_x, SO_2, PM, Beryllium)

SECTION VII: INSIGNIFICANT ACTIVITIES

The following sources are insignificant activities. Any activity that has a state or federal applicable requirement is a significant activity even if this activity meets the criteria of §304 of Regulation 26 or listed in the table below. Insignificant activity determinations rely upon the information submitted by the permittee in an application dated June 1, 1999 and August 22, 2002.

Description	Category
24 Emergency Generators	Group A #12
Emergency Generator - Product Engineering Laboratory (PEL)	Group A #12
Chemical and Biological Defense Performance Testing with 1,1,1,2-Tetrafluoroethane (HFC-134a) and Di-Octyl Phthalate	Group A #5
Pipe Shop Building 34-910	Group B #14
Machine Shop -Building 34-910	Group B #14
Carpenter Shops - Buildings 34-930, 31-670, 60-400	Group B #14
Laundry Room - Building 60-070	Group B #8
Laundry Steam Boiler - Building 60-070	Group A #1
Mask Test (Quality Control) - Building 60-070	Group A #5
Laundry Room - Building 74-100	Group B #8
Laundry Steam Boiler - Building 74-100	Group A #1
Emergency Generator - Building 74-100	Group A #12
Two Emergency Generators - Water Wells 6 and 11	Group A #12
Emergency Generator - Booster Pump Station	Group A #12
Emergency Generator - Ton Container Decontamination Facility	Group A #12
Two Storage Tanks - Spent Decon Solution	Group A #4
Storage Tank - Neutralized Cleanup Solution	Group A #4

Description	Category
Emergency Generator - Munitions Assessment System (PBMAS)	Group A #13
500-gallon Diesel Storage Tank - Munitions Assessment System (PBMAS)	Group A #13
Breathing Air Compressor - Munitions Assessment System (PBMAS)	Group A #13
Compressed Air Tank - Munitions Assessment System (PBMAS)	Group A #13
Diesel Storage Tank (1,000 gallons) (PBCDF)	Group A #3
Diesel Storage Tank (4,000 gallons) (PBCDF)	Group A #3
PBA 86 Landfill (150,000 cubic yards)	Group A #13
300 kW Maintenance Generator (PBCDF)	Group A #1
350 bhp Maintenance Compressor (PBCDF)	Group A #1
500 bhp Maintenance Compressor (PBCDF)	Group A #1

Pursuant to §26.304 of Regulation 26, the Department determined the emission units, operations, or activities contained in Regulation 19, Appendix A, Group B, to be insignificant activities. Activities included in this list are allowable under this permit and need not be specifically identified.

SECTION VIII: GENERAL PROVISIONS

1. Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation No. 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq*.) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq*.). Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 *et seq*.) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute.[40 CFR 70.6(b)(2)]

2. This permit shall be valid for a period of five (5) years beginning on the date this permit becomes effective and ending five (5) years later. [40 CFR 70.6(a)(2) and §26.701(B) of the Regulations of the Arkansas Operating Air Permit Program (Regulation 26), effective August 10, 2000]

3. The permittee must submit a complete application for permit renewal at least six (6) months before permit expiration. Permit expiration terminates the permittee's right to operate unless the permittee submitted a complete renewal application at least six (6) months before permit expiration. If the permittee submits a complete application, the existing permit will remain in effect until the Department takes final action on the renewal application. The Department will not necessarily notify the permittee when the permit renewal application is due. [Regulation No. 26 §26.406]

4. Where an applicable requirement of the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.* (Act) is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, the permit incorporates both provisions into the permit, and the Director or the Administrator can enforce both provisions. [40 CFR 70.6(a)(1)(ii) and Regulation No. 26 §26.701(A)(2)]

5. The permittee must maintain the following records of monitoring information as required by this permit. [40 CFR 70.6(a)(3)(ii)(A) and Regulation No. 26 §26.701(C)(2)]

    a. The date, place as defined in this permit, and time of sampling or measurements;

    b. The date(s) analyses performed;

    c. The company or entity performing the analyses;

    d. The analytical techniques or methods used;

    e. The results of such analyses; and

    f. The operating conditions existing at the time of sampling or measurement.

6. The permittee must retain the records of all required monitoring data and support information for at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [40 CFR 70.6(a)(3)(ii)(B) and Regulation No. 26 §26.701(C)(2)(b)]

7. The permittee must submit reports of all required monitoring every six (6) months. If permit establishes no other reporting period, the reporting period shall end on the last day of the anniversary month of the initial Title V permit. The report is due within thirty (30) days of the end of the reporting period. Although the reports are due every six months, each report shall contain a full year of data. The report must clearly identify all instances of deviations from permit requirements. A responsible official as defined in Regulation No. 26 §26.2 must certify all required reports. The permittee will send the reports to the address below: [40 C.F.R. 70.6(a)(3)(iii)(A) and §26.701(C)(3)(a) of Regulation #26]

    Arkansas Department of Environmental QualityAir DivisionATTN: Compliance Inspector SupervisorPost Office Box 8913Little Rock, AR 72219

8. The permittee will report to the Department all deviations from permit requirements, including those attributable to upset conditions as defined in the permit. The permittee will make an initial report to the Department by the next business day after the discovery of the occurrence. The initial report may be made by telephone and shall include: [40 CFR 70.6(a)(3)(iii)(B), Regulation #26 '**26.701(C)(3)(b), and Regulation #19 '19.601 and** '19.602]

    a. The facility name and location,

b. The process unit or emission source deviating from the permit limit,

c. The permit limit, including the identification of pollutants, from which deviation occurs,

d. The date and time the deviation started,

e. The duration of the deviation,

f. The average emissions during the deviation,

g. The probable cause of such deviations,

h. Any corrective actions or preventive measures taken or being taken to prevent such deviations in the future, and

i. The name of the person submitting the report.

The permittee will make a full report in writing to the Department within five (5) business days of discovery of the occurrence. The report must include, in addition to the information required by the initial report, a schedule of actions taken or planned to eliminate future occurrences and/or to minimize the amount the permit's limits were exceeded and to reduce the length of time the limits were exceeded. The permittee may submit a full report in writing (by facsimile, overnight courier, or other means) by the next business day after discovery of the occurrence, and the report will serve as both the initial report and full report. [40 CFR 70.6(a)(3)(iii)(B), Regulation No. 26 §26.701(C)(3)(b), Regulation No. 19 §19.601 and §19.602]

9. If any provision of the permit or the application thereof to any person or circumstance is held invalid, such invalidity will not affect other provisions or applications hereof which can be given effect without the invalid provision or application, and to this end, provisions of this Regulation are declared to be separable and severable. [40 CFR 70.6(a)(5), §26.701(E) of Regulation No. 26, and A.C.A. §8-4-203, as referenced by §8-4-304 and §8-4-311]

10. The permittee must comply with all conditions of this Part 70 permit. Any permit noncompliance with applicable requirements as defined in Regulation No. 26 constitutes a violation of the Clean Air Act, as amended, 42 U.S.C. §7401, *et seq.* and is grounds for enforcement action; for permit termination, revocation and reissuance, for permit

modification; or for denial of a permit renewal application. [40 CFR 70.6(a)(6)(i) and Regulation No. 26 §26.701(F)(1)]

11. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit. [40 CFR 70.6(a)(6)(ii) and Regulation No. 26 §26.701(F)(2)]

12. The Department may modify, revoke, reopen and reissue the permit or terminate the permit for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [40 CFR 70.6(a)(6)(iii) and Regulation No. 26 §26.701(F)(3)]

13. This permit does not convey any property rights of any sort, or any exclusive privilege. [40 CFR 70.6(a)(6)(iv) and Regulation No. 26 §26.701(F)(4)]

14. The permittee must furnish to the Director, within the time specified by the Director, any information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee must also furnish to the Director copies of records required by the permit. For information the permittee claims confidentiality, the Department may require the permittee to furnish such records directly to the Director along with a claim of confidentiality. [40 CFR 70.6(a)(6)(v) and Regulation No. 26 §26.701(F)(5)]

15. The permittee must pay all permit fees in accordance with the procedures established in Regulation No. 9. [40 CFR 70.6(a)(7) and Regulation No. 26 §26.701(G)]

16. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes provided for elsewhere in this permit. [40 CFR 70.6(a)(8) and Regulation No. 26 §26.701(H)]

17. If the permit allows different operating scenarios, the permittee will, contemporaneously with making a change from one operating scenario to another, record in a log at the permitted facility a record of the operational scenario. [40 CFR 70.6(a)(9)(i) and Regulation No. 26 §26.701(I)(1)]

18. The Administrator and citizens may enforce under the Act all terms and conditions in this permit, including any provisions designed to limit a source's potential to emit, unless the Department specifically designates terms and conditions of the permit as being federally

unenforceable under the Act or under any of its applicable requirements. [40 CFR 70.6(b) and Regulation No. 26 §26.702(A) and (B)]

19. Any document (including reports) required by this permit must contain a certification by a responsible official as defined in Regulation No. 26 §26.2. [40 CFR 70.6(c)(1) and Regulation No. 26 §26.703(A)]

20. The permittee must allow an authorized representative of the Department, upon presentation of credentials, to perform the following: [40 CFR 70.6(c)(2) and Regulation No. 26 §26.703(B)]

    a. Enter upon the permittee's premises where the permitted source is located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit;

    b. Have access to and copy, at reasonable times, any records required under the conditions of this permit;

    c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

    d. As authorized by the Act, sample or monitor at reasonable times substances or parameters for assuring compliance with this permit or applicable requirements.

21. The permittee will submit a compliance certification with the terms and conditions contained in the permit, including emission limitations, standards, or work practices. The permittee must submit the compliance certification annually within 30 days following the last day of the anniversary month of the initial Title V permit. The permittee must also submit the compliance certification to the Administrator as well as to the Department. All compliance certifications required by this permit must include the following: [40 CFR 70.6(c)(5) and Regulation No. 26 §26.703(E)(3)]

    a. The identification of each term or condition of the permit that is the basis of the certification;

    b. The compliance status;

    c. Whether compliance was continuous or intermittent;

d. The method(s) used for determining the compliance status of the source, currently and over the reporting period established by the monitoring requirements of this permit; and

e. Such other facts as the Department may require elsewhere in this permit or by §114(a)(3) and §504(b) of the Act.

22. Nothing in this permit will alter or affect the following: [Regulation No. 26 §26.704(C)]

a. The provisions of Section 303 of the Act (emergency orders), including the authority of the Administrator under that section;

b. The liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance;

c. The applicable requirements of the acid rain program, consistent with §408(a) of the Act or,

d. The ability of EPA to obtain information from a source pursuant to §114 of the Act.

23. This permit authorizes only those pollutant-emitting activities addressed in this permit. [A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

ATTACHMENT 1

Federal Regulations