West Virginia Department of Environmental Protection

Joe Manchin, III
Governor

Division of Air Quality

Randy C. Huffman
Cabinet Secretary

Permit to Operate Open Burning Grounds For The Treatment Of Energetic Hazardous Waste

R25- HW-X-2

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 25 – Control of Air Pollution from Hazardous Waste, Treatment, Storage, and Disposal Facilities
The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Orbital ATK- Alliant Techsystems Operations LLC
Allegany Ballistics Laboratory
057-00011

William F. Durham
Director

Issued: October 6, 2015 • Effective: October 6, 2015 • Expiration: March 30, 2025

This permit will supercede and replace Permit R25-HW-X-1.

Facility Location:	Rocket Center, Mineral County, West Virginia
Mailing Address:	210 State Route 956, Rocket Center, WV 26726-0210
Facility Description:	Open Burning Grounds for Treatment of Energetic Hazardous Waste
UTM Coordinates:	686.30 km Easting • 4381.45 km Northing • Zone 17
Permit Type:	Renewal

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

The source is subject to 45CSR30. Changes authorized by this permit must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

Table of Contents

1.0. General Conditions 5

1.1. Definitions 5
1.2. Acronyms 5
1.3. Authority 6
1.4. Term and Renewal 6
1.5. Duty to Comply 6
1.6. Duty to Provide Information 7
1.7. Duty to Mitigate 7
1.8. Duty to Supplement and Correct Information 7
1.9. Inspection and Entry 7
1.10 Need to Halt or Reduce Activitiy Not a Defense 8
1.11. Property Rights 8
1.12. Proper Operation and Maintenance 8
1.13. Severability 8
1.14. Transferability 8
1.15. Credible Evidence 8
1.16. Documents to be Maintained at the Facility Site 9
1.17. Monitoring and Records 9
1.18. Reporting Requirements 10
1.19. Twenty four (24) Hour Reporting 10
1.20 Information Repository 11

2.0. General Facility Conditions 12

2.1. Design and Operation of Facility 12
2.2. General Waste Analysis 12
2.3. Personnel Training 12
2.4. General Requirement for Ignitable, Reactive, or Incompatible Waste 12
2.5. Reports, Notifications, and Submissions to the Secretary 13
2.6. Closure 13

3.0. Treatment of Energetic Wastes 14

3.1. Permitted and Prohibited Waste Identification 14
3.2. Operating Requirements 14
3.3. Handling and Storage Requirements 15
3.4. Inspection Schedules and Procedures 15
3.5. Prevention of Unintended Ignition or Reaction of Wastess 15
3.6. Recordkeeping 15

4.0. Preventing Organic Air Emissions from Hazardous Waste Containers 15

Attachments

1. Consolidated Waste Analysis Plan for Burning Grounds and Container Storage Areas
2. Process Information
3. General Operating Procedure - Explosives Burning Grounds Operations
4. General Operating Procedure - Rules for Vehicles (Other than Forklifts) Transporting Explosives
5. General Operating Procedure - Waste Classification, Labeling, Storage, and Disposal Procedures to Prevent Hazards

1.0. General Conditions

1.1. Definitions

For the purpose of this permit, terms used herin shall have the same meaning as those in 45 CSR 25, Section 2, unless this permit specifically states otherwise. Where terms are not otherwise defined, the terms shall have the meaning as listed in a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* CFR	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* CSR	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NO_X	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5 μm in diameter
PM_{10}	Particulate Matter less than 10μm in diameter
Ppb	Pounds per Batch
Pph	Pounds per Hour
Ppm	Parts per Million
Ppm_V or ppmv	Parts per Million by Volume
PSD	Prevention of Significant Deterioration
Psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

1.3. Authority

This permit is issued in accordance with West Virginia air pollution control law W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

1.3.1. 45CSR25 –*Control of Air Pollution from Hazardous Waste Treatment, Storage, and Disposal Facilities*

1.3.2. This permit authorizes operation of open burning grounds and contains requirements for preventing and controlling organic air emissions associated with hazardous waste management utilizing containers. For the purposes of enforcement, compliance with this permit during its term constitutes compliance with requirements of 45 CSR 25. Permittee means both the Co-permittees ATK Tactical Systems Company LLC and U.S. Navy Naval Sea Systems Command.

1.4. Term and Renewal

1.4.1. This permit supersedes and replaces previously issued Permit R25-HW-X-1. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR25 or any other applicable legislative rule;

1.4.2. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. An application must be submitted at least one hundred eighty (180) days before this permit expires;

1.4.3 This permit may be modified, revoked, or reissued, or terminated for cause as specified in 45 CSR 25 Section 5.5. The filing of a request for a permit modification, revocation and reissuance, or termination or notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition;

1.4.4. This permit and all conditions therein will remain in effect beyond the permit expiration date if the permittee has submitted a timely, complete application for reissuance of a permit and through no fault of the permittee, the Secretary has not issued a new permit before the stated expiration date.

1.5. Duty to Comply

1.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in the Part A & Part B RCRA, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;

1.5.2. The permittee must comply with all conditions of this permit, except that the permittee need not comply with the conditions of this permit to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of this permit and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application;

1.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

1.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

1.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

1.7 Duty to Mitigate

In the event of noncompliance with this permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

1.8. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

1.9. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

1. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

4. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

1.10. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

1.11. Property Rights

Neither permit issuance nor permit possession conveys any property rights of any sort or any exclusive privilege. Neither permit issuance nor permit possession authorizes any injury to persons or property or invasion of other property rights, or any infringement of State or local law or regulation.

1.12. Proper Operation and Maintenance

Neither permit The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes, but is not necessarily limited to, effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

1.13. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

1.14. Transferability

This permit is transferable in accordance with the requirements outlined in 45CSR25.

1.15. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

1.16. Documents to be Maintained at the Facility Site

Unless otherwise specified by this permit or 45CSR25, the permittee shall maintain at the facility, until closure is completed and certified by an independent registered professional engineer, the following documents:

1. Current waste analysis plan.

2. Personnel training documents and records (maintain three years after employment for former employees).

3. The facility operating record.

4. All other documents required by this permit

1.17. Monitoring and Records

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Laboratory methods to support the Waste Analysis Plan must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846, Third Edition, as amended) or an equivalent method approved by the EPA Administrator.

2. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period at least three (3) years from the date of the sample, measurement, report, or application. This periods may be extended at the request of the Director at any time and are automatically extended during the course of any unresolved hazardous waste management enforcement action regarding this facility.).

3. Records of monitoring information shall include:

   (a) The date, exact place, and the time of sampling or measurements;

   (b) The sampling techniques or methods used;

   (c) The name(s) of individual(s) who performed the sampling or measurements;

   (d) The date(s) analyses were performed;

   (e) The name(s) of individual(s) who performed the analyses;

   (f) The analytical techniques or methods used; and

   (g) The results of such analyses.

1.18. Reporting Requirements

1. Planned Changes. The permittee shall give written notice to the Secretary as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated Noncompliance. The permittee shall give advance written notice to the Secretary of any planned changes in this permitted facility or activity which may result in noncompliance with the requirements of this permit.

3. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information or previously omitted information in the permit application, the permittee shall promptly submit such facts or information and a written explanation of the circumstances of the incomplete or inaccurate submittal to the Secretary.

4. Noncompliance. The permittee shall report to the Secretary all instances of permit noncompliance, for which records must be kept pursuant to Section 3.6 of this permit, within thirty (30) days following the end of each calendar quarter during which the noncompliance occurred. The reports shall contain the information listed in Section 1.19 of this permit.

5. The permittee shall promptly notify the Director or a duly authorized representative of any unplanned or accidental release of hazardous substances to the atmosphere that are in excess of the Reportable Quantity under Title III.

6. Other monitoring results related to the scope of this permit shall be reported at the request of the Director.

1.19. Twenty-four (24) Hour Reporting

The permittee shall report any noncompliance which may endanger human health or the environment orally within 24 hours from the time the permittee becomes aware of the circumstances, including:

1. Information concerning release or discharge of any air emissions that may cause an endangerment to human health or the environment; and

2. Information concerning the release or discharge of hazardous waste or constituents thereof or of a fire or explosion which could threaten the environment or human health.

3. Any such report shall include a description of the occurrence and its cause, if known, including:

   (a) Name, address, and telephone number of the owner or operator;

   (b) Name, address, and telephone number of the facility;

   (c) Date, time, and type of incident;

   (d) Name and quantity of material(s), hazardous waste(s), or pollutant(s) involved.

(e) The extent of injuries, if any;

(f) An assessment of actual or potential hazard(s) to the environment and human health; and

(g) Estimated quantity and disposition of recovered material that resulted from the incident.

(h) Within five (5) days of such occurrence, a written report shall be provided to the Director. This written report shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Director may waive the five (5) days written notice requirement in favor of a written report within fifteen (15) days. Compliance with this provision does not relieve the permittee from all other applicable requirements of this permit.

1.20. Information Repository

The Director may require the permittee to establish and maintain an information repository at any time, based on the factors set forth in 40 CFR 124.33(b). The information repository will be governed by the provisionsin 40 CFR 124.33(c) through (f).

2.0. General Facility Conditions

2.1. Design and Operation of Facility

2.1.1. The permittee shall maintain records of all information (including monitoring data, support information, reports, and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation.

2.1.2. This permit authorizes the permittee to operate the Burning Grounds and hazardous waste management activities subject to RCRA Subpart CC at Allegany Ballistics Laboratory, subject to all conditions and requirements contained in this permit.

2.2. General Waste Analysis

The permittee shall follow the waste analysis plan included as Permit Attachment 1 or the most recent revision of the facility waste analysis plan. The permittee shall verify its waste analysis as part of its quality assurance program, in accordance with current EPA practices (Test Methods for Evaluating Solid Waste: Physical /Chemical Methods, SW-846) or equivalent methods approved by the EPA Administrator; and at a minimum maintain proper functional instruments, use approved sampling and analytical methods, verify the validity of sampling and analytical procedures, and perform correct calculations.

2.3. Personnel Training

The permittee shall implement a personnel training program as required by 45CSR25. This training program shall include classroom instruction and/or on-the-job training for new facility personnel and an annual review of such training by all waste disposal personnel. The permittee's personnel training program, as included in the permit application, may be amended upon written approval of the Secretary, provided the change is minor.

2.4. General Requirement For Ignitable, Reactive, or Incompatible Waste

The permittee shall take precautions to prevent reactions which:

2.4.1. Produce uncontrolled toxic mists, fumes, dust, or gases in sufficient quantities to threaten human health or the environment; and

2.4.2. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion.

2.5. Reports, Notifications, and Submissions to the Secretary

2.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit and 45 CSR 25 to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible corporate officer or a duly authorized representative that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. "Responsible corporate officer" and "duly authorized representative" shall have the meanings assigned in 40 CFR 270.11.

2.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of 45 CSR 5.15.

2.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class with postage prepaid to the address(es) set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:
Director
WVDEP
Division of Air Quality
601 57th Street
Charleston, WV 25304-2345
Attention: Hazardous & Solid Waste Program

If to the US EPA:
Associate Director
Office of Enforcement and Permits Review
(3AP12)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

2.6. Closure (RCRA Subpart O, 40 CFR 264.351)

2.6.1. A statutory provision of the West Virginia Hazardous Waste Management Act charges the Department of Environmental Protection, Division of Water and Waste Management (DWWM) with administering those parts of the hazardous waste management regulatory program that pertain to closure.

2.6.2. The absence of specific conditions for closure in this permit shall not be considered by the Permittee as a shield from complying with the specific rules of DWWM related to closure.

3.0. Treatment of Energetic Wastes

3.1. Permitted and Prohibited Waste Identification

3.1.1. The permittee may open burn the following wastes subject to the terms of this permit and as described below:

Waste Description	Hazardous Waste Code	Allowed Quantity		
		Pounds/Event	Pounds/Day	Pounds/Year
Aluminized Composite Propellant	D003	1,630[3]	14,670	500,000
Non-Aluminized Composite Propellant	D003	1,630[3]	14,670	500,000
Double-Base Propellant	D003, D008	1,630[3]	14,670	500,000
Plastic-Bonded Explosives (PBX)	D003	1,630[3]	14,670	500,000
Type 1 P/E Waste[1]	D003, D008, F003	1,630[3]	14,670	500,000
Type 2 P/E Waste[2]	D003, F003	1,630[3]	14,670	500,000
MAXIMUM TOTAL		1,630[3]	14,670	500,000

[1]Type 1 wastes include double-base propellant (DBP) components with acetone and sawdust as an absorbent and stabilizer.
[2]Type 2 wastes include Plastic-Bonded Explosives (PBE) components, composite-propellant components, and miscellaneous materials (with acetone and sawdust as an absorbent and stabilizer). Miscellaneous materials in Type 2 waste are materials such as stir sticks that may contain energetic materials.
[3]The quantity/distance calculations for the current pan configuration limits pounds/event to 1355 pounds.

3.1.2. The permittee is prohibited from treating hazardous waste that is not identified in Permit Condition 3.1.1

3.2. Operating Requirements

3.2.1. The permittee shall construct, operate and maintain Pans A, B, C, D, E, and F at the Burning Grounds in accordance with the procedures contained in Permit Attachment 2 or the most recent revision of the facility process information.

3.2.2. The permittee shall operate and maintain a precipitation cover in accordance with the procedures contained in Permit Attachment 2 or the most recent revision of the facility process information.

3.2.3. The permittee shall operate and maintain the Burning Grounds in order to minimize air emissions or exposure of people (onsite or offsite) to toxic or hazardous emissions in accordance with Permit Attachments 2 and 3, or the most recent revisions to these process information and general operating procedures as follows:

3.2.3.1. No open burning shall commence without certification by the Plant Manager's authorized representative that the conditions allow for ignition to occur;

3.2.3.2 Open burning activities shall not occur when wind velocity exceeds fifteen (15) miles per hour, when electrical storms are in progress or imminent, or during rain events.

3.2.4. Ash/residue from the open burning shall be managed in accordance with Permit Attachment 3 or the most recent revision of the facility general operating procedures.

3.3. Handling and Storage Requirements

3.3.1. The permittee shall handle, manage, and store energetic wastes in accordance with Permit Attachments 4 and 5 or the most recent revisions to these general operating procedures.

3.4. Inspection Schedules and Procedures

3.4.1. The permittee shall inspect the open burning unit in accordance with the Inspection Schedule and Procedures in Permit Attachment 3 and 6 or the most recent revisions to these general operating procedures.

3.5. Prevention of Unintended Ignition or Reaction of Wastes

3.5.1. The permittee shall follow the procedures, contained in Permit Attachment 3 or the most recent revision to the general operating procedures, designed to prevent unintended ignition or reaction of wastes.

3.6. Recordkeeping

3.6.1. The permittee shall develop and maintain all records to comply with 40 CFR 264.73, 40 CFR 264.602, and Permit Attachment 3 or the most recent revision to the general operating procedure.

4.0. Preventing Organic Air Emissions from the Management of Hazardous Waste Containers Treatment of Energetic

The permittee shall comply with RCRA Subpart CC- Air Emission Standards for Tanks, Surface Impoundments, and Containers (40 CFR 264.1080 et. seq.), as incorporated by reference in 45 CSR 25, with respect to containers to manage hazardous waste at the permittee's plant site.

ATK Tactical Systems LLC
Permit HW-X-2

Permit Attachment 1

Consolidated Waste Analysis Plan for Burning Grounds and Container Storage Areas

Consolidated Waste Analysis Plan

for

The ABL Miscellaneous Treatment Unit ('Burning Grounds')

and

Container Storage Areas

Allegany Ballistics Laboratory

Alliant Techsystems Operations LLC

Allegany Ballistics Laboratory Facility Description and Overview of Manufacturing, Waste Generation, and Waste Management Processes

Alliant Techsystems Operations LLC manufactures solid-fuel rocket motors and explosive warheads as well as other products not directed toward the manufacture of warheads and rocket motors at ABL. Raw materials for solid fuels are mixed to produce propellants that are either cast inside the motor casing (or otherwise fitted into the motor casing) to produce the finished unit. Motor casings may be manufactured on site or received from offsite sources. Wastes may be generated in the propellant preparation, motor casing preparation or motor assembly steps. Explosive warheads are manufactured in a similar process involving explosives preparation, warhead casing manufacture and warhead finishing operations. Operations for other products from the metal fabrication and composites areas generate wastes that are similar to materials from propellant/explosive products manufacture. An overview of manufacturing and waste management is provided in Figure 1. For facility details, see Sections B and C of the RCRA Part B permit application for the Burning Grounds.

Waste from the propellant operations are explosive and are treated on-site via burning in pans. The propellant wastes consist of the propellant and solvents associated with removal of the propellant from the mixing and casting equipment. Wastes from finished motor-assembly operations are also explosive and managed onsite via burning in aboveground pans. The wastes from warhead manufacture are explosive and treated onsite via burning on aboveground pans. Further information on wastes treated in the Burning Ground is provided in Section 1.

Wastes from motor casing preparation are typical of those associated with metals machining and surface preparation. These materials are segregated, containerized and transported offsite for treatment and/or disposal at properly permitted facilities. Miscellaneous articles such as contaminated personnel protective equipment (PPE), spatulas, rags, etc. are containerized and sent offsite for treatment and/or disposal in permitted facilities. Additional information on containerized wastes is found in Section 2.

Section 1—Wastes for Treatment and Treatment Residuals at Burning Grounds

(RCRA Category: Generator Treating Reactive Hazardous Wastes to meet LDRs)

Processes and activities that generate wastes or are used to manage wastes at the facility:

Propellant preparation is closely controlled for safety and to ensure product ballistic performance. Some propellants are incompatible with others. Propellants and their associated wastes are segregated by propellant type to ensure safe handling. Batch processing systems of various sizes are available to produce batches to meet motor production needs while minimizing wastes. The mixing and casting equipment may be utilized for more than one type of propellant necessitating proper cleaning to ensure there is not cross contamination of propellant types. The cleaning typically consists of a mechanical cleaning step followed by a solvent-cleaning step.

Propellants and explosives are grouped by their ingredients into categories. The categories are:

- Aluminized Composite Propellants
- Non-Aluminized Composite
- Hybrid Propellants
- Double Base Propellants
- PBX (plastic-bonded explosives)

The waste materials are also grouped in these categories plus waste propellant, warhead explosives and the associated equipment clean up materials are designated D003 for reactivity per RCRA regulations. The presence of lead in some products adds D008 designation to the wastes. Acetone (F003) and heptane (D001) used for equipment cleaning is distilled and recycled. The still bottoms are D003. The mix bowl cleaning wastes from propellant manufacturing are collected in plastic bags termed "diapers" as the materials are generated. For other manufacturing steps (mold disassembly, final assembly, etc.) wastes are collected in anti-static plastic bags. The materials are segregated, bagged and tagged for housing in less than 90 day storage sheds near each propellant mixing/casting building. The materials are transported from these staging areas to the Burning Grounds as necessary for proper waste management.

Wastes from finished motor assembly are typically solid propellants machined from a cast propellant. Machining of double-base propellants results in water wet propellant wastes. Burlap bags are used to collect this waste. Both the bag and the excess propellant are sent to the Burning Grounds for treatment.

Warheads processed at the facility contain polymer bound explosives. The explosives are primarily RDX and HMX. In some cases, metal-containing catalysts are used to effect the polymerization. The warhead wastes are RCRA hazardous for reactivity. The RCRA code is D003.

The conceptual treatment process is to deactivate the explosive characteristic D003 by open burning as depicted in Figure 2. Burn Pan Ash and Burn Pan Water are the combustion residuals that are subject to Treatment Standards for Hazardous Wastes (§ 268.40 particularly (d) and (e)) and Universal Treatment Standards (UTS) for underlying hazardous constituents (UHC)(§ 268.48).

Waste Analysis Parameters

Information on the sources of wastes to be burned and treatment residues is provided in Table 1-1. This table reflects in excess of 99.9 percent of the materials handled in the Burning Grounds.

Applicable test methods relevant for the wastes shown in Table 1-1 include:

Parameters	Test Method
TC Leaching Procedure	SW-846 1311
Lead	SW-846 6010, SW-846 7420, or SW-846 7421
Acetone	SW-846 8260B
Lead	SW-846 6010, SW-846 7420, or SW-846 7421

Figure 1 MANUFACTURING & WASTE HANDLING OVERVIEW

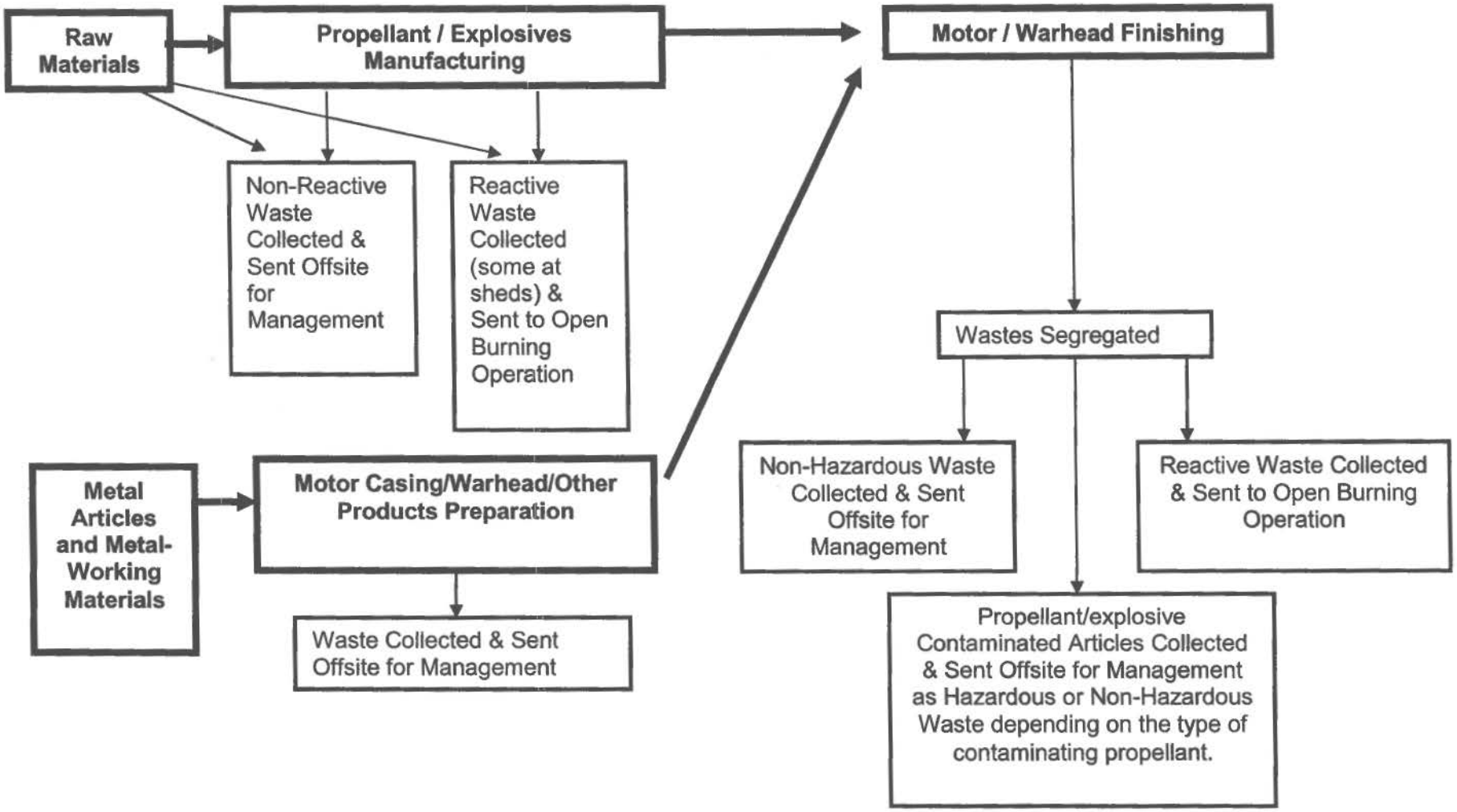
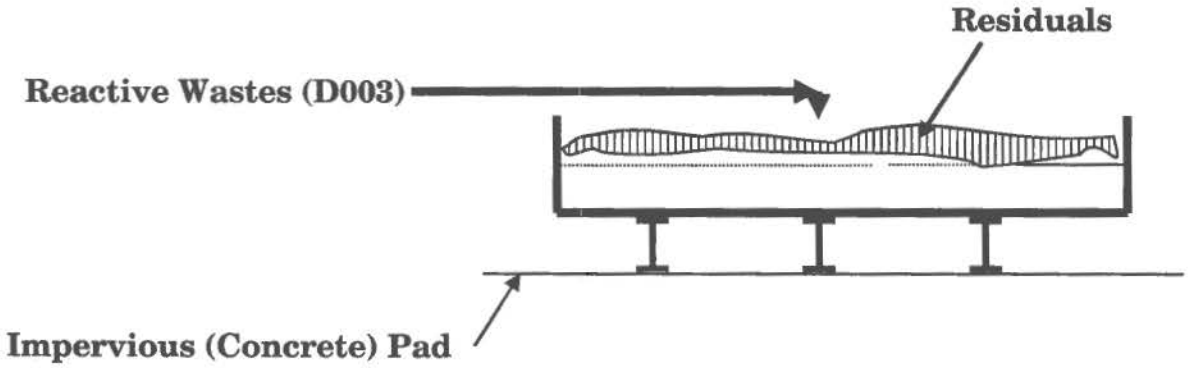


Figure 2 BURNING GROUNDS PROCESS



Conceptual Unit
(Cover removed for illustrative purposes)

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Bulk Waste – Aluminized Composite Propellants** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale D003 – reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation and meet section §268.48 standards for underlying hazardous constituents
Waste Name: **P/E Bulk Waste – Non-Aluminized Composite** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale D003 – reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above
Waste Name: **P/E Bulk Waste –Hybrid** Waste Description: Bulk propellant or explosive materials that go to the Burning Grounds (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale D003—reactive (yellow waste ticket); per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Bulk Waste – Double Base Propellants** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket), D008 – lead; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003, D008	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Lead: 0.11 mg/kg. Toxicity characteristic leaching procedure (TCLP) for Nonwastewater and 0.69 mg/l for Wastewater and meet section 268.48 standards for underlying hazardous constituents
Waste Name: **P/E Bulk Waste – PBX Explosives** Waste Description: Bulk propellant or explosive materials that go to the Burning Ground (such as propellant heels, propellant samples, or neat explosive material) Waste Code Rationale: D003 – reactive (yellow waste ticket) lead; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and cannot be forced out of the mix bowl as well as residual materials that were used in the mix. These materials meet the definition of reactivity. Classification as Class 1.1 or 1.3 propellants is sufficient to determine reactivity.	D003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	As above

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Waste Name: **P/E Acetone Squares** Waste Description: Sawdust mixed with acetone containing double base propellant from cleanup operations Waste Code Rationale: D003 - reactive (yellow waste ticket), D008—lead, per process knowledge (acetone squares are generated from the cleanup of double-base propellants containing lead);F003 - acetone; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Equipment used for mixing and casting double base waste is soaked in acetone for cleaning. The acetone is reused as long as possible before being emptied into sawdust for disposal. Waste is soaked in sawdust to minimize likelihood of detonation during handling. Previous Sensitivity Data for these acetone squares indicate they are reactive, particularly if solvent is allowed to evaporate from the material.	D003, D008 F003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Acetone: 160 mg/kg Non Wastewater, 0.28 mg/l for Wastewater and meet section §268.48 standards for underlying hazardous constituents
Waste Name: **P/E Lacquer Squares** Waste Description: Sawdust squares containing nitrate ester lacquers, acetone, and triacetin Waste Code Rationale: D003 - reactive (yellow waste ticket), F003 – acetone; per process knowledge Container Type: Conductive or anti-static plastic bags Management: These materials are treated by open burning Waste liquid explosives are soaked in sawdust to minimize likelihood of detonation during handling. Previous Sensitivity data for these sawdust squares indicate they are reactive, particularly if solvent is allowed to evaporate from the material.	D003, F003	NWW	None. Code established based on process knowledge. Re-evaluate only when manufacturing process changes.	Burning	Deactivation plus Acetone: 160 mg/kg Non Wastewater, 0.28 mg/l for Wastewater and meet section §268.48 standards for underlying hazardous constituents

TABLE 1-1
Burning Ground Wastes, Codes, Waste Analysis Parameters, LDR Requirements, and Re-evaluation Frequency

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Physical & Chemical Analyses + Frequency	Treatment	LDR Treatment Standards and Test Results
Treatment Residuals					
Waste Name: **Burning Ground (BG) Pan Ash** Waste Description: Ash and other residue from the open burning of waste propellants and explosives at the Burning Grounds Waste Code Rationale D008 – lead; per testing Container Type: Open-head drum Management: Do not combine with other wastes Waste from the production of rocket motors, gas generators, and warheads exhibits the characteristic of reactivity. This material is treated by open burning at the Burning Grounds. Some propellants contain lead as a burn rate modifier. Therefore, the ash remaining after a burn may fail the TCLP for lead. The ash is removed from the pans periodically, placed in drums, and shipped offsite to a permitted treatment, storage, and disposal facility (TSDF).	D008	NWW	Code established based on testing. TCLP metals, dioxins, furans (no pesticides). Sample (representative grab) and re-evaluate only when material containerized for offsite disposal.	None. Containerized for occasional Offsite Disposal	Meet section §268.48 standards for underlying hazardous constituents. Test results above LDRs: TCLP Lead (60 mg/l); 2378 TCDF, 123478 HxCDF, 234678 HxCDF, 1234678 HpCDF, 1234678 HpCDD, OCDD, OCDF

NWW (Non-Wastewater)

UHCs: Analysis for selected waste streams is required for the underlying hazardous constituents found in 40 CFR 268.48. Analysis for dioxins, furans, and/or pesticides is excluded for selected wastes as indicated. Analysis for the solvent list (below) is required for selected waste streams in lieu of full UHC analysis.

Solvent List: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorobenzene, o-, m-, and p-cresol, cyclohexanone, o-dichlorobenzene, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, MEK, MIBK, nitrobenzene, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichlorofluoromethane, xylenes.

Sampling

Propellant/explosive wastes that are reactive (D003) and are managed based on process knowledge. No sampling will be performed.

Treatment residues such as burn pan ash be grab sampled.

Waste Reevaluation Frequencies

Waste parameters for P/E wastes treated at the Burning Ground and treatment residuals will be re-evaluated when:

- Process changes or other factors affecting waste identification have occurred.
- Regulations affecting the definition of hazardous wastes are promulgated that may result in an increase in the number or types of hazardous wastes managed at the facility, or regulations are promulgated affecting the management of existing wastes at the facility.

Special Procedure Requirements

Propellant wastes and explosive wastes are segregated by propellant or explosive types to ensure safe handling. Material segregation procedures are established by the site Safety Department. Additional special handling information, such as ticketing and container type, etc., is noted in Table 1-1.

Chain of Custody Procedure

Standardized Chain of Custody procedures will be employed.

Section 2—Containerized Wastes for Offsite Treatment and/or Disposal (Generator Only)

Processes and activities that generate wastes or are used to manage wastes at the facility

Wastes that are not viewed as RCRA reactive and articles contaminated with low levels of propellants or warhead materials are containerized and sent offsite for proper management. These non-D003 wastes include out of date lab chemicals, unused raw materials, paints, used oil, spent solvents, etc.

The manufacturing process is operated in a campaign mode. Specific products are not necessarily made throughout the year. Not all wastes are available on site at any given time.

As noted in Table 2-1, some wastes are subject to the Treatment Standards (§ 268.40, particularly (d) and (e)) and to UTS for UHC (§ 268.48).

Facility Physical Layout

Containers are stored in the existing Container Storage Buildings 366 and 810. Key information includes:

Building 366: Approx. 150 ft long by 50 ft wide by 20 ft at peak of roof. (All dimensions are approximate.) Open sided. Laid out in rows of separate bays each with secondary containment.

Building 810: Approx. 10 ft long by 12 ft wide by 10 ft at peak of roof. (All dimensions are approximate.) Totally enclosed. Double door front entry. Secondary containment. Insulated, ventilated, heated.

Waste Analysis Parameters

Table 2-1 contains information on the sources, applicable RCRA codes, and LDR category for containerized wastes. The physical and chemical parameters needed to support the waste code determination are noted in the column headed "Hazardous Waste Parameters." Waste codes for solvents are used to indicate the groups of the chemical species to analyze. Analyses needed to ascertain if there are Underlying Hazardous Constituents in the waste stream are identified in the column "UHCs to be analyzed." Streams for which testing is needed to confirm LDR requirements are noted with the term "Required" followed by the type of information needed. The chemicals to be included in the Solvent List are noted at the end of Table 2-1. Where testing data have indicated, the last column titled "Constituents Above LDRs", lists wastes exceeding the LDR Standards.

Analysis methods include those identified in Table 2-2.

Sampling

Grab sampling techniques will be used.

Waste Reevaluation Frequencies

Waste parameters will be re-evaluated when:

- Process changes or other factors affecting waste identification have occurred.
- Regulations affecting the definition of hazardous wastes are promulgated that may result in an increase in the number or types of hazardous wastes managed at the facility, or regulations are promulgated affecting the management of existing wastes at the facility.

To ensure the availability of a complete LDR baseline assessment, RCRA wastes will be analyzed for UHCs once when the waste is available from the manufacturing operations. Additional sampling and characterization will occur only if triggered by the process change or regulatory change provisions noted above.

Special Procedure Requirements

Material segregation procedures to avoid incompatibilities are established by the site Safety Department. Additional special handling information, such as ticketing and container type, etc., is noted in Table 2-1.

Chain of Custody Procedure

Standardized Chain of Custody procedures and documentation will be employed.

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Acetone** Waste Description: Waste acetone only Waste Code: D001 – ignitable, F003 – listed solvents Container Type: Closed-head drum Management: Acetone may also be added to Waste Flammable or Paint Related Waste as appropriate Acetone is used in the Composite Structures area parts cleaning in 5-gallon pails or smaller containers. Some parts are degreased while others are cleaned to remove uncured, non-regulated resins. No other solvents are added and the only materials that may be in the acetone are the non-regulated resins.	D001, F003, F005	NWW	Flash Point, F003, F005, TCLP metals	Solvent list (high total organic carbon (TOC))	Acetone, Toluene
Waste Name: **Actrel** Waste Description: Waste actrel only Waste Code: None Container Type: Closed-head drum Management: Actrel may also be added to Waste Flammable as appropriate Process knowledge may be used for the general waste stream. However, TCLP for heavy metals should be run since cases are grit blasted prior to being degreased. Actrel is used to degrease empty rocket motor cases after they have been grit blasted. The degreased cases then move on for surface coating. The Actrel is recycled in order to be reused for further degreasing rather than disposal after a single pass. When the material can no longer be cleaned for further use, it is drummed for disposal. No other solvents or materials are added to Waste Actrel drums.	None	NWW	Flash Point, Total metals	Total metals	None
Waste Name: **Alodine Liquid** Waste Description: Alodine rinsewater, possibly with concentrated alodine powder or liquid Waste Code: D007 – chromium Container Type: Closed-head drum Management: Do not combine with other wastes Aluminum rocket motor cases are sprayed with a concentrated solution (pH of ~2) of distilled water and Alodine Powder. The units then undergo a double rinse with distilled water to remove residue. The rinsewater which is collected for disposal has a pH between 5 and 7. Only Alodine rinsewater or small quantities of concentrated solution are added to drums. Alodine powder is known to contain hexavalent chromium and previous analytical testing has shown the solution to be above TCLP limit for chromium.	D007	NWW	Total metals	Required – 268.48 list (no dioxins / furans / pesticides)	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Alodine Solids** Waste Description: Rags, gloves, etc. contaminated with alodine solution Waste Code: D007 – chromium Container Type: Open-head drum Management: Do not combine with other wastes The alodine process described above also generates rags, gloves, and other solid debris contaminated with alodine solution. This is the only waste that is added to drums. Material is known from previous analytical testing to be above TCLP limit for chromium.	D007	NWW	TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Ammonium Perchlorate (AP) Water** Waste Description: Water contaminated with AP from hopper cleaning, building cleaning etc Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Water is used to clean AP contaminated hoppers, grinding equipment and building surfaces in the AP grinding area. Only AP, ammonium nitrate or ammonium sulfate may be processed in this building and equipment. Therefore, any water used for cleaning would contain only AP, AN, or AS and ordinary building contamination (soil, grass, etc.). This water is kept separate from any machining wastewaters that may contain NG or other materials. Material does not contain any RCRA listed chemicals nor does it exhibit any characteristics of RCRA waste.	None	NA	None	None	None
Waste Name: **Asbestos** Waste Description: Double bagged, water wet asbestos only Waste Code: Not regulated Container Type: Open-head drum Management: Do not combine with other wastes Process generating the material is asbestos abatement projects. According to approved work plans, only asbestos and asbestos containing or contaminated items are added to bags or drums. Material is non-RCRA regulated.	None	NA	None	None	None
Waste Name: **Bondliner** Waste Description: Mixtures of any bondliner formulations containing organic or halogenated solvents (toluene, MEK, MIBK, ethyl acetate, xylene, etc.) Waste Code: D001 - ignitable; F003 & F005 - listed solvents Container Type: Closed-head drum Management: Do not combine with other wastes Process consists of mixing above solvents with rubber compounds to form an adhesive solution. The solution is then	F003, F005, D001, D007	NWW	Flash Point, F003, F005, Total metals	Solvent list (high TOC)	Toluene, MEK, Isobutanol

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
sprayed on the interior surface of empty rocket motor cases. Waste material consists of remaining solution and solvent used to cleanup spray equipment (toluene/ethanol solution and n-propyl bromide). Waste accumulation sheets that indicate the materials added to the drums are also maintained on this material.					
Waste Name: **Cadmium Liquid** Waste Description: Coolant contaminated with cadmium (from special operations) Waste Code: D006 - cadmium Container Type: Closed-head drum Management: Do not combine with other wastes The machining of cadmium-plated motor cases creates cadmium-contaminated coolant. Such machining is not routinely conducted. Any coolant from these machining operations is segregated from other waste streams and drummed to avoid cross-contamination of waste streams.	D006	NWW	pH, Flash Point, Total metals	Required – 268.48 list (no dioxins/ furans / pesticides)	-
Waste Name: **Cadmium Solids** Waste Description: Rags, gloves, etc. contaminated with cadmium (from special operations) Waste Code: D006 - cadmium Container Type: Open-head drum Management: Do not combine with other wastes Special operations such as machining or hand buffing of cadmium-plated motor cases creates cadmium contaminated solid debris (rags, personal protective equipment (PPE), etc.). Such special operations are not routinely conducted. Any wastes from these operations is segregated from other waste streams and drummed to avoid cross-contamination of waste streams.	D006	NWW	TCLP metals	Required – 268.48 list (no dioxins/furans/ pesticides)	-
Waste Name: **Chemlok/Water** Waste Description: Water based Chemloks only (805, 855, 8560) which may or may not be diluted with water Waste Code: Not regulated Container Type: Open-head drum Management: Do not combine with other wastes. ***Do NOT add solvent based Chemloks to this drum (they should go in Bondliner, Waste Flammable, or Paint Related Waste drums).*** Material is no longer disposed individually and is combined with bondliner and solvent-based Chemloks. Process knowledge will be used to determine the constituents when waste accumulation records are kept. Otherwise, testing of the waste will be conducted. Process involves spraying water based Chemlok material (adhesive solution) on the interior of empty rocket motor cases to improve the bond between the case and the propellant, which will be cast later. Waste material includes residuals from spraying, water from cleaning spray equipment, and out of shelf-life material.	None	NWW	Flash Point, F002, F003, F005, TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, Acetone, Methylene Chloride

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Coolant** Waste Description: Machining or maintenance coolants such as Cimcool, propylene glycol, etc. Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Water based coolants (non-regulated) are used during metal machining processes. The liquid may contain leachable levels of heavy metals depending on the particle size of the machining waste. Valenite VNT Valcool coolant must be kept segregated from other coolants due to metals content.	None	NWW	Flash Point, total metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Corrosives (Miscellaneous)** Waste Description: Oakite 32, 33, 132, acids, photo developing solutions, certain boiler chemicals Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization	D002	NWW	pH, total metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Cured Resins** Waste Description: Resins and plasticizer materials (such as Epon products or other epoxy type materials that contain no regulated chemicals) which have cured and hardened Waste Code: Not regulated Container Type: Open-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Material has enough contact with moisture to begin curing and hardening to form a solid during consolidation and storage. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	-
Waste Name: **Curing Agents** Waste Description: Materials used to cure resins or epoxies (such as DBTDA, DBTDL, Ethacure, ECA 100, Anchor 1115, Epon curatives (DETDA), etc.). Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	Total metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **ECA 100** Waste Description: ECA 100 only	None	NWW if RCRA	None	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Code: Not regulated Container Type: Closed-head drum Management: May be added to Curing Agents as appropriate. Material is unused and in its original container. Material Safety Data Sheet may be used to determine hazards.		trig-gered.			
Waste Name: Flammable Liquids (Miscellaneous) Waste Description: Various flammable liquids Waste Code: D001 – ignitable, F002, F003 & F005 - listed solvents Container Type: Closed-head drum Management: Large quantities of any specific material should be in drums for specific wastes (such as acetone). This should be used for small quantities of various solvents, solvent based Chemloks, etc. Process knowledge may be used to determine the constituents when the drum contains only one material from a specific process. However, material should be tested for organic compounds in order to determine which F listed wastes are contained in it. Wastes from individual buildings are known to contain fewer "D" codes and are characterized separately.	F002, F003, F005, D001, D006, D007, D010	NWW	Flash Point, F002, F003, F005, Total metals	Required - Solvent list (high TOC)	-
Waste Name: Flyash Waste Description: Ash from combustion of coal in boilers Waste Code: Not regulated Container Type: Roll-off Management: Shipment offsite for disposal Ash from the combustion of coal in the steam-generating boilers is accumulated in a roll-off to be shipped offsite for disposal.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: Heptane Waste Description: Waste heptane only Waste Code: D001 – ignitable Container Type: Closed-head drum Management: Do not combine with other wastes Spent heptane is generated from the cleaning of composite propellant-contaminated mixing and casting equipment.	D001	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: HP990/Water Waste Description: Solution of water and HPS 990 Sealant from Bldg 368. Waste Code: Not regulated Container Type: Closed-head drum Management: Do not combine with other wastes Process involves the use of an ultraviolet cure epoxy resin. Composite wound units are placed in a pressurized resin	None	NWW if RCRA trig-gered.	pH, TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
bath. The resin is used to seal the porous surface of the unit. The unit is then placed in a water bath under ultraviolet lights to cure. This water is drummed after a specific number of units have been cured to maximize curing efficiency. The only materials that may be present in the solution are water and a mix of the cured and uncured resin that would present no hazards.					
Waste Name: **Isocyanates** Waste Description: Waste isocyanates that are not part of a bondliner system, paint system, etc. This usually consists of off-spec materials for disposal. Most isocyanates are nonhazardous Waste Code: D001 – ignitable, F002 – chlorinated solvents Container Type: Closed-head drum Management: Do not combine with other wastes Materials are unused (residuals and expired shelf life) and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards and constituents. Waste accumulation sheets are also maintained for drums of this waste.	D001, F002	NWW	Flash Point, F002, F003, F005, TOTAL metals	Required - Solvent list (high TOC); TCLP Metals	-
Waste Name: **Isopropanol/Water Solution** Waste Description: Mixture of IPA and water from RDX drying operations Waste Code: D001 – ignitable or not regulated, depending on alcohol concentration Container Type: Closed-head drum Management: Do not combine with other wastes Process involves preparation of RDX for use. RDX is packaged wet with a water/isopropanol mixture (isopropanol is used as an anti-freeze agent). RDX must be dried and ground to the proper size prior to being mixed in propellant. The liquid is removed prior to grinding and drummed for disposal. RDX content of the liquid is too low to create the characteristic of reactivity.	D001 or None (See text to left)	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: **Lab Solvents** Waste Description: Mixed solvents from lab operations Waste Code: D001 - ignitable; F002, F003 & F005 - listed solvents Container Type: Closed-head drum Management: Solvents and acids/bases should be kept separate. Materials are residuals from analytical or research procedures. Material Safety Data Sheets may be used to determine hazards and constituents. Waste accumulation sheets are also maintained for drums of this waste.	F002, F003, F005, D001	NWW	Flash Point, F002, F003, F005	Solvent list (high TOC)	Toluene, Acetone, Isobutanol, Methylene Chloride

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Lacquer Premix with Methylene Chloride** Waste Description: Mixture of all materials for lacquers with other methylene chloride or nitrate esters Waste Code: F002 Container Type: Closed-head drum Management: Do not combine with other wastes In order to safely transport nitroglycerin (NG), a stabilizer mixture must be added. This mixture consists of a plasticizer and antioxidant compounds. None of the materials are regulated under RCRA. The mixture is added to dessicators (NG containers) prior to adding methylene chloride. The dessicators are then shipped to the NG manufacturing facility where the NG is added and the dessicators are returned to ABL. Premix may be made ahead of time and stored prior to adding the methylene chloride. Waste is generated from mix residuals or off spec batches. Any materials that contain methylene chloride or NG are segregated and treated separately.	D001, F002	NWW	Flash Point, F002, TCLP metals	Solvent list	Toluene, MEK, Methylene Chloride
Waste Name: **Lacquer Premix without Methylene Chloride** Waste Description: Mixture of all materials for lacquers other than methylene chloride or nitrate esters Waste Code: Not regulated Container Type: Closed-head drum Management: Small quantities of this material may be added to Uncured Resins drums. In order to safely transport nitroglycerin (NG), a stabilizer mixture must be added. This mixture consists of a plasticizer and antioxidant compounds. None of the materials are regulated under RCRA. The mixture is added to dessicators (NG containers) prior to adding methylene chloride. The dessicators are then shipped to the NG manufacturing facility where the NG is added and the dessicators are returned to ABL. Premix may be made ahead of time and stored prior to adding the methylene chloride. Waste is generated from mix residuals or off spec batches. Any materials that contain methylene chloride or NG are segregated and treated separately.	None	NWW if RCRA trig-gered.	Flash Point, F002, TOTAL metals	Required – 268.48 list (no dioxins / furans / pesticides)	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Lead Solids** Waste Description: Rags, gloves, bags, freezettes, etc. contaminated with lead salts or lead salt paste Waste Code: D008 - lead Container Type: Open-head drum Management: Large quantities of lead salts or lead salt paste should be drummed separately from the contaminated materials. Lead citrate powder is used to change the burn rate properties of NG based propellants. In order to use the material, it must be ground to the proper size and then incorporated into a paste, which is used during propellant mixing. A paste is utilized in order to obtain a homogenous mixture without lumps. The primary generation of this waste is from the lead citrate processing building (384). The dried lead citrate is added to a grinding unit and heptane is added. The material is then ground to correct particle size and the heptane is evaporated off and recovered for reuse. The dried material is then mixed with a plasticizer (polyglycol adipate, or PGA) and carbon black. The mixed material is run through a roll mill to remove any lumps. Additional waste is generated in the propellant mixing areas when paste containers are emptied into propellant mixes. Waste materials include rags, paint paddles, PPE, tape, containers, etc. that become contaminated with the lead or lead paste during the process.	D008	NWW	None	Required – 268.48 list (no dioxins / furans / pesticides)	UHC: Bis (2-ethyl hexyl) phthalate
Waste Name: **Methylene Chloride** Waste Description: Waste methylene chloride only. Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Methylene chloride that is reclaimed from Bldg 352 should be stored in poly lined closed-head drums in case of water contamination from the recovery system Bldg 352 Process - NG with methylene chloride is received in dessicators. The methylene chloride must be stripped from the NG before it can be used to manufacture propellant. Air is bubbled through the liquid in the dessicators to drive off the methylene chloride, which is much more volatile than NG. The methylene chloride vapor is captured and condensed to control air emissions. The solvent that is condensed is collected and reused in empty dessicators that are returned to the NG supplier for the next shipment. Solvent may be recirculated through the system to remove moisture. If moisture level is too high and cannot be reduced, the material is disposed of.	F002	NWW	None	Solvent list	Methylene Chloride
Waste Name: **Mold Release Agents (MS143/MS145)** Waste Description: Waste halogenated solvent-based mold release agents only. Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Waste accumulation sheets are also maintained for drums of this waste.	F002	NW W	None	Required - Solvent list	-
Waste Name: **Oakite Solution - Acidic** Waste Description: Oakite 32, 33, 132 solutions with a pH of 1 to 6	D002	NWW		Required – 268.48 list	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization Pipe shop and mechanics use acidic solution to clean parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.					
Waste Name: Oakite Solution – Alkaline Waste Description: Oakite Enprox and Inpro-Tect solutions with a pH of 8-14 Waste Code: D002 – corrosive Container Type: Closed-head poly-lined drum Management: Do not mix products without authorization Metal fabrication area uses alkaline solution to clean parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.	D002	NWW	None	Required – 268.48 list	-
Waste Name: Oil Waste Description: Waste motor oil, fuel oil, and hydraulic oils Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested for solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: Oil Cleanup Debris Waste Description: Rags, pads, coveralls, soil, absorbent, etc. which is collected from any oil spills Waste Code: Not regulated Container Type: Open-head drum Management: Do not mix products without authorization Waste is generated when fuel oil or hydraulic oil spills are cleaned up. The only materials introduced into the oil stream are adsorbents (kitty litter, etc.), rags, PPE, and other cleanup materials.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Oil Sludge** Waste Description: Thick residual oil material that settles out of oil in tanks, etc. Usually has to be physically cleaned out (doesn't drain) Waste Code: not regulated Container Type: Open-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested for solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	TCLP metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Oil/Coolant** Waste Description: Mixture of waste oil and coolant Waste Code: not regulated Container Type: Closed-head drum Management: Preferred method is to keep oils and coolants separate if possible Because shops also use kerosene, varsol, or other solvents, material should be for tested solvents that may be inadvertently added to the drum with the oils.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes	Evaluate if RCRA triggered.	-
Waste Name: **Oil/Solvent** Waste Description: Waste oil of any type that may have been mixed with cleanup solvents such as varsol, kerosene, etc. (solvent may make material flammable) Waste Code: not regulated but potentially D001 - ignitable Container Type: Closed-head drum Management: Do not mix products without authorization Because shops also use kerosene, varsol, or other solvents, material should be tested at least annually to detect solvents that may be inadvertently added to the drum with the oils.	D001	NWW if RCRA trig-gered.	Flash Point, TOTAL metals, if triggered by process or regulatory changes	Evaluate if RCRA triggered.	Flash Point tested at 140 °F
Waste Name: **Oily Water** Waste Description: Aqueous solution with oil or oily machine coolants Waste Code: not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Material is generated primarily from oil/water separator systems for compressors. No other materials should be introduced into the wastestream.	None	NWW if RCRA trig-gered.	Flash Point, TOTAL metals if triggered by process or regulatory changes	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **P/E Contaminated Waste - Composite** Waste Description: Rags, spatulas, material containers, etc. that are contaminated with composite propellant or explosives, but the total quantity of P/E does not exceed approximately 10%, by weight. (Includes heptane contaminated sawdust) Waste Code: Not regulated (blue waste ticket) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Composite propellant does not contain any RCRA listed wastes, nor is the heptane used for cleaning listed. Waste logs are maintained for each bag and box of waste generated.	None	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	UHC: TCLP metals below UTS
Waste Name: **P/E Contaminated Waste - Double Base** Waste Description: Rags, spatulas, material containers, etc. which are contaminated with double base propellant or explosives, but the total quantity of P/E does not exceed approximately 10% by weight. Waste Code: D008 – lead, F003 - acetone (yellow waste ticket), F005 (Toluene and MEK may be used for cleanup of these propellants) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Double base propellant contains lead compounds (D008) and uses acetone (F003 listed) for cleanup. Waste logs are maintained for each bag and box of waste generated.	D008, F003, F005	NWW	None	268.48 list (no dioxins / furans / pesticides)	Acetone, MEK
Waste Name: **P/E Contaminated Waste - Hybrid** Waste Description: Rags, spatulas, material containers, etc. that are contaminated with hybrid propellant or explosives, but the total quantity of P/E does not exceed approximately 10% by weight Waste Code: F003 - acetone (yellow waste ticket for nitrate ester based hybrids) or not regulated (blue waste ticket for AP-based hybrids), F005 (Toluene and MEK may be used for cleanup of these propellants) Container Type: Conductive or anti-static plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Mixing and casting propellant results in a specific quantity of the mix that adheres to the equipment and must be cleaned out before the mixer may be used again. These materials do not contain enough propellant contamination to meet the definition of reactivity. Hybrid propellant does not contain any RCRA listed wastes. Composite based hybrids use heptane (which is unlisted) for cleaning. Double base hybrids use acetone (F003 listed) for cleaning. Waste logs are maintained for each bag and box of waste generated.	F003 F005	NWW	None	Required – 268.48 list (no dioxins / furans / pesticides)	

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Paint Related Waste Material (liquid)** Waste Description: Paints (1 or 2 part types, including epoxies, polyurethanes, and other topcoats, primers, etc.), thinners (including solvents used for thinning which may not be a trade name thinner product) Waste Code: D001 - ignitable; D007 & D008 - chromium or lead ; F003 & F005 - listed solvents Container Type: Closed-head drum Management: Paint is mixed and sprayed on exterior surface of either empty or propellant containing rocket motor cases. Waste consists of either residual paint that was mixed and not needed and off-spec or out of shelf-life paints. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets that indicate the materials added to the drums are also maintained on this material.	F003, F005, D001, D007, D008	NWW	Flash Point, F003, F005, TOTAL metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, Acetone, MEK TCLP metals not tested.
Waste Name: **Paint Related Waste Material (solid)** Waste Description: Paint booth filters, rags, other solid items such as mixing cups, etc. which are contaminated with paint Waste Code: D007 & D008 - chromium or lead ; F003 & F005 - listed solvents Container Type: Open-head drum Management: Mixing cups which have been wiped clean or rinsed clean with solvent may be disposed of in ordinary trash Paint is mixed and sprayed on exterior surface of either empty or propellant containing rocket motor cases. Waste consists of rags, PPE, containers, and used paint booth filters contaminated with paint. The debris would be contaminated with the same materials that have been added to the liquid paint waste drums. Material Safety Data Sheets may be used to determine hazards.	F003, F005, D007, D008	NWW	F003, F005, TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	Toluene, MEK, Ethylbenzene, Xylenes, 1,2-Dichloro-ethane, Naphthalene, Di-n-butyl phthalate,. TCLP for Cr needed.
Waste Name: **Solvent-Contaminated Rags** Description: Rags contaminated with solvents from composite structure clean-up Waste Code: F003 & F005 – solvents Container Type: Plastic bags that are loaded into cubic yard boxes Management: These materials must be shipped offsite for treatment and disposal Rags are generated from hand cleaning operations of winding equipment and solvents may include isopropyl alcohol, toluene, MEK, acetone, or other F003, F005, or non-listed solvents.	F003, F005	NWW	F003, F005, TCLP metals if triggered by process or regulatory changes	Required – Solvent List	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Styrene & Inhibitors** Waste Description: Waste styrene monomer, or styrene mixed with cobalt octoate, Santoflex, and MEKP Waste Code: Not regulated Container Type: Closed-head drum Management: Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are maintained for drums of this waste.	D001	NWW if RCRA trig-gered.	None	Evaluate if RCRA triggered.	-
Waste Name: **Trichloroethylene** Waste Description: Waste trichloroethylene only Waste Code: F002 - chlorinated solvent Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Waste accumulation sheets are also maintained for drums of this waste.	F002	NWW	Flash Point, F003, F005, TOTAL metals	Required - Solvent list	-
Waste Name: **Tumbler Water** Waste Description: Water containing detergent, cutting oils, and sediment from aluminum deburring operations Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Material consists of an aqueous detergent solution that is used in tumbling machines to de-burr metal parts. Used tumbler water is accumulated in a vertical 3000-gallon polyethylene tank or drums dependent upon production needs. The waste is removed from the tank or drums by vacuum truck to be transported to an industrial wastewater pre-treatment facility.	None	NWW if RCRA trig-gered.	TOTAL metals if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-
Waste Name: **Uncured Resins** Waste Description: Plasticizer or resinous materials such as R45M, Rucoflex, etc. that are still in a liquid form Waste Code: Not regulated Container Type: Closed-head drum Management: Do not mix products without authorization Materials are unused and consolidated from their original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards. Material may have had enough contact with moisture to begin curing and hardening to form a solid during consolidation and storage. Waste accumulation sheets are also maintained for drums of this waste.	None	NWW if RCRA trig-gered.	Flash Point if triggered by process or regulatory changes.	Evaluate if RCRA triggered.	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Used Grit** Waste Description: Used grit-blasting material Waste Code: Not regulated or D006, D007, D008 Container Type: Open-head drum Management: If any special blasting is conducted (such as stripping cad-plated cases, etc.) grit is held, sampled, and analyzed prior to disposal. Various types of metal cases are grit-blasted in different areas on site. Previous analysis of grit has not shown any metals levels close to the limits.	D006, D007, D008	NWW	TCLP metals	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Valenite VNT Valcool Coolant** Waste Description: Used Valcool coolant from broaching machine operations Waste Code: D007– chromium, D008- lead; F003-acetone; D001 (due to acetone) Container Type: Closed-head drum Management: Segregate from other coolants in closed head drums Valcool coolant from broaching machines picks up chromium and lead from machining operations and must be segregated from other coolants and treated separately. Drums are sent offsite from disposal.	D001, D007, D008, F003	NWW	nONE	Required – 268.48 list (no dioxins / furans / pesticides)	-
Waste Name: **Varsol** Waste Description: Waste varsol only Waste Code: D001 - ignitable Container Type: Closed-head drum Management: Varsol may be added to a Waste Flammable drum as appropriate. Maintenance shops use varsol to clean oily parts. Only material that may be introduced into the waste is dirt and oils. Material Safety Data Sheets may be used to determine hazards.	D001	NWW	Flash Point, TOTAL metals	Not required	-
Waste Name: **Versatec Developer Solution** Waste Description: Solution from drafting equipment only Waste Code: D001 - ignitable Container Type: Closed-head drum Management: Versatec may be added to a Waste Flammable drum as appropriate. Drafting department equipment uses Versatec Developer Solution for printing drawings. Residual material is consolidated from its original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards.	D001	NWW	nONE	Not required	-

TABLE 2-1
Containerized Wastes and Waste Analysis Parameters

Waste Name, Description, Container, Management, Process Source	Waste Code	LDR	Hazardous Waste Parameters to be Analyzed[1]	UHCs to be analyzed[1]	Constituents Above LDRs
Waste Name: **Watershield** Waste Description: Watershield (with or without water added) only Waste Code: D001 – ignitable, D006 – Chromium, D007 - Cadmium Container Type: Closed-head drum Management: NO other mold release materials shall be added to this material. Water based mold release is applied to parts in a dip tank. The parts are then oven dried to remove any moisture. The mold release prevents propellant from sticking to the mold parts so they can be removed once the propellant is cured. Residual or off spec material is consolidated from its original containers to a drum to reduce disposal cost. Material Safety Data Sheets may be used to determine hazards.	D001, D006, D007	NWW	NONE.	Evaluate if RCRA triggered.	Chromium, Cadmium

WW = (Wastewater), **NWW** (Non-Wastewater), **NA** = Not Applicable

GENERAL NOTE: Some entries for specific materials state that they may be added to another drum (Waste Flammable, Bondliner, etc.) as appropriate. This means there is only a small quantity of the material to be disposed of and there is no reason to have an entire drum in that area for that one material. For example, a painting area has a quart of acetone to dispose of. They have a Waste Paint drum, but no acetone drum since this is not a usual occurrence. Therefore, they may add the acetone to the Waste Paint drum since acetone is a constituent of the paint waste.

Note 1: **Required** = Testing to be accomplished.

Note 2: **TS** = Treatment Standard, **UTS** = Universal Treatment Standard

UHCs: Analysis for selected waste streams is required for the underlying hazardous constituents found in 40 CFR 268.48. Analysis for dioxins, furans, and/or pesticides is excluded for selected wastes as indicated. Analysis for the solvent list (below) is required for selected waste streams in lieu of full UHC analysis.

Solvent List: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorobenzene, o-, m-, and p-cresol, cyclohexanone, o-dichlorobenzene, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, MEK, MIBK, nitrobenzene, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichlorofluoromethane, xylenes

TABLE 2-2
Analytical Methods

Waste Code	Parameters	Analytical Methods
D001	Flashpoint	ASTM D93-99a or ASTM D3278-96e1
D002	pH	SW-846 1110 or SW-846 9040B
D004 to D043	TCLP	SW-846 1311
D004	Arsenic	SW-846 6010B, SW-846 7060A, or SW-846 7061A
D005	Barium	SW-846 6010B, SW-846 7080A, or SW-846 7081
D006	Cadmium	SW-846 6010B, SW-846 7130, or SW-846 7131A
D007	Chromium	SW-846 6010B, SW-846 7190, or SW-846 7191
D008	Lead	SW-846 6010B, SW-846 7420, or SW-846 7421
D009	Mercury	SW-846 7470A or SW-846 7472
D010	Selenium	SW-846 6010B, SW-846 7740, or SW-846 7741A
D011	Silver	SW-846 6010B, SW-846 7760A, or SW-846 7761
D018	Benzene	SW-846 8021B or SW-846 8260B
D019	Carbon tetrachloride	SW-846 8021B or SW-846 8260B
D021	Chlorobenzene	SW-846 8021B or SW-846 8260B
D022	Chloroform	SW-846 8021B or SW-846 8260B
D023	o-Cresol	SW-846 8041 or SW-846 8270C
D024	m-Cresol	SW-846 8041 or SW-846 8270C
D025	p-Cresol	SW-846 8041 or SW-846 8270C
D026	Cresol	SW-846 8041 or SW-846 8270C
D027	1,4-Dichlorobenzene	SW-846 8041 or SW-846 8270C
D028	1,2-Dichloroethane	SW-846 8021B or SW-846 8260B
D029	1,1-Dichloroethene	SW-846 8021B or SW-846 8260B
D030	2,4-Dinitrotoluene	SW-846 8091 or SW-846 8270C
D032	Hexachlorobenzene	SW-846 8081A or SW-846 8270C
D035	Methyl ethyl ketone	SW-846 8021B or SW-846 8260B
D036	Nitrobenzene	SW-846 8091 or SW-846 8270C
D038	Pyridine	SW-846 8091 or SW-846 8270C
D039	Tetrachloroethene	SW-846 8021B or SW-846 8260B
D040	Trichloroethene	SW-846 8021B or SW-846 8260B
D041	2,4,5-Trichlorophenol	SW-846 8041 or SW-846 8270C
D042	2,4,6-Trichlorophenol	SW-846 8041 or SW-846 8270C
D043	Vinyl chloride	SW-846 8021B or SW-846 8260B
F001	VOCs	SW-846 8021B or SW-846 8260B
F002	VOCs	SW-846 8021B or SW-846 8260B
F003	VOCs	SW-846 8021B or SW-846 8260B
F005	VOCs	SW-846 8021B or SW-846 8260B

References

1. USEPA. *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual.* USEPA OSWER 9938.4-03. April 1994.

Permit Attachment 2

Process Information

Section D
Process Information

SECTION D

Process Information [40 CFR 270.15, 270.23, 264.170 through 264.178, and 264.601]

Section D provides information on the design and operation of the ABL hazardous waste storage buildings and the Burning Grounds, including the burn pans and the rocket motor tie-down unit. Descriptions are provided for all these units. This section also includes a description of recordkeeping requirements.

D-1 Containers [40 CFR 270.15 and 264.170 through 264.178]

Alliant Techsystems Operations LLC stores hazardous waste in containers. Currently, waste is stored in Building 366 and Building 810.

Building 366. Building 366 is approximately 100 ft long and 75 ft wide and covered with a roof. The sides of the building are open. The container storage area consists of two sets of concrete cells that are raised above the ground. Each set contains 20 cells, each with dimensions of 9 ft 3 in. long by 6 ft wide by 6.25 in. deep.

Building 810. The lab pack storage building is metal-sided structure with a concrete foundation. The inside dimensions of the building are 19 ft 4 in. by 15 ft 4 in., with a 10-ft ceiling. Nine portable polyethylene containment modules placed within the building provide secondary containment. Each containment module is topped with a rigid grate designed to ensure waste containers do not contact any liquids collected by the containment modules.

D-1a Containers with Free Liquids

D-1a(1) Description of Containers [40 CFR 264.171, 264.172, and 270.14(b)(1)]

The container storage units are used for storage of both hazardous and nonhazardous waste. The Building 366 hazardous waste storage area is designed to store a maximum of 320 drums within 40 diked cells (i.e., eight drums per cell). The containers are typically either 45-gallon drums, 55-gallon drums, cubic yard (Gaylord) boxes, or 66 gal. Labpak boxes. Building 810 is designed primarily to store containerized wastes in preparation for lab packing, to prepare lab packs for shipment, and to store the lab packs. These wastes are typically expired or off-specification commercial chemical products, stored in the original containers until lab packed. Maximum capacity is forty-four 55-gallon drums and four 21-gallon drums. All waste drums meet DOT specifications for the waste stored in the drums and are in good condition. "Good condition" means without significant rust, apparent structural defects, or leaks.

D-1a(2) Container Management Practices [40 CFR 264.173]

Procedures for transporting, handling, storing, and closing containers include provisions to ensure that containers are not opened, handled, or stored in a manner that may rupture the

containers. Persons engaged in hazardous waste operations are trained in the applicable procedures. Containers are moved with hand trucks, drum handlers, forklifts, or trucks with hydraulic tailgates, depending on the job task.

Container management practices include the following:

- Containers and drums are transported to and handled at the storage areas only by designated, trained personnel.
- Only trained drivers operate forklifts. Forklifts enter Building 366 from the ramp at the north end of the building.
- Containers will typically be placed into Building 810 by forklift then unloaded. There is a small internal ramp to accommodate a hand truck.
- Designated tools and equipment will be used for moving containers (e.g., forklift) or for opening and closing drum bungs and lids.
- Containers are not opened except to add or remove wastes and to obtain samples.
- Weekly inspections are performed to verify that containers are closed and in good condition.
- Drums to be transported off site are inspected for the following: they are DOT approved for hazardous waste; they are visually in good condition; they contain sufficient freeboard; they are securely closed and properly labeled; drum labels agree with the waste log; and they are labeled with the accumulation date.

In Building 366, containers are stored on skids, and a maximum of eight (8) drums, four (4) cubic yard boxes, or eight (8) Labpak boxes are stored in each of the 40 diked cells. Cells are separated by concrete lips and the two rows of cells are separated by a center aisle approximately 20 ft wide.

In Building 810, containers are stored directly on portable containment units or on portable shelving units, depending on the size of the container. Materials such as out-of-date lab chemicals will be stored in their original containers prior to being packaged for offsite shipment.

D-1a(3) Secondary Containment System Design and Operation [40 CFR 270.15(a)(1), 264.175(a), and 264.175(d)]

Building 366. The storage area design provides secondary containment well in excess of the volume of the largest container stored and/or in excess of 10 percent of the entire volume stored. The area consists of two sets of concrete cells that are raised approximately 4 in. above the ground. Each set contains 20 cells, each with dimensions of 9 ft 3 in. long by 6 ft wide 6.25 in. deep. The separate, diked cells allow incompatible wastes to be segregated.

Building 810. The area typically consists of nine sets of portable containment modules that are placed on the concrete floor of Building 810. These modules consist of:

- Four large containment modules that can each hold eight drums. Each module is 100 in. long, 53 in. wide, and 6 in. deep.

- Three mid-sized containment modules that can each hold six-drums. Each module is 76 in. long, 53 in. wide, and 6 in. deep.
- Two small containment modules that can each hold two-drums. Each module is 53 in. long, 29 in. wide, and 6 in. deep. The sump capacity of the two-drum containment module (according to the manufacturer) is 21 gallons. The separate containment modules allow incompatible wastes to be segregated. No containers larger than 21 gallons will be stored on the two-drum containment modules.

The storage area design provides secondary containment either in excess of the volume of the largest container stored or greater than 10 percent of the total volume stored.

D-1a(3)(a) Requirement for the Base or Liner to Contain Liquids [40 CFR 264.175(b)(1)]

Building 366. The concrete forming the floor in the cells will be free from cracks or gaps. Any cracks or gaps that develop will be sealed. The concrete is resistant to precipitation (e.g., runoff) and the wastes stored at the unit. The concrete is compatible with the waste and would not be adversely affected by contact with the waste. A roof to keep precipitation out of the cells covers the entire storage area. A 6-mil polyethylene vapor barrier was installed under the concrete at the storage area.

Building 810. The portable containment modules in Building 810 are formed from a single piece of polyethylene and are free from cracks and gaps. They are compatible with and resistant to all materials stored within the unit. The building is completely enclosed and prevents precipitation from entering the containment modules. No waste containers will be positioned to straddle two containment modules, thereby ensuring that any leaks or spills are contained within a single containment module.

D-1a(3)(b) Containment System Drainage [40 CFR 270.15(a)(2) and 264.175(b)(2)]

Building 366. Each cell in the storage area contains skids that are used to keep containers from direct contact with the base. The roof over the unit prevents run-on into the containment system and prevents the accumulation of precipitation in the cells. Checking for the presence or absence of standing liquid or other foreign residue in the cells is a weekly inspection item.

Building 810. Each containment unit in the storage area contains rigid grates that are used to keep containers from direct contact with the container base. The roof and walls prevent run-on into the containment units. Checking for the presence or absence of standing liquid or other foreign residue in the containment areas will be a weekly inspection item.

D-1a(3)(c) Containment System Capacity [40 CFR 270.15(a)(3) and 264.175(b)(3)]

Building 366. Each cell accommodates eight (8) drums, four (4) cubic yard boxes (solid only), or eight (8) Labpak boxes and has a gross containment volume of 28.9 cubic ft (ft^3) (9.25 ft long by 6 ft wide by 6.25 in. deep). The largest container that is stored is a cubic yard (Gaylord) box. The volume of the skids is no more than 0.3 ft^3 per cell. The displacement of each drum (to a height of 6.25 in.) is 1.5 ft^3. The net containment volume (calculated as gross containment volume minus skid volume minus displacement volume of seven drums) is 18.1 ft^3 (135 gallons) per cell. The containment system capacity of 135 gallons is sufficient to contain the volume of the largest (liquid) container (55 gallons) or 10 percent of the volume of all containers (44 gallons). The calculation of containment volume is as follows:

Capacity = gross containment volume (28.9 ft^3) – skid volume (0.3 ft^3) – volume of 7 drums (7 by 1.5 ft^3) = 18.1 ft^3 by 7.48 gal/ft^3 = 135 gallons

Building 810. Containment capacity for each module is as follows:

- Each of the largest of the three containment modules in the Building 810 lab pack storage unit has a containment volume of 73 gallons. The largest module has a storage capacity of eight 55-gallon drums. The containment volume of 73 gallons is larger than the volume of the largest container (55 gallons) or 10 percent of the volume of all containers (44 gallons).
- The mid-sized modules have a containment volume of 61 gallons. The containment volume of 61 gallons is larger than the volume of the largest container (55 gallons) or 10 percent of the volume of all containers (33 gallons).
- The smallest modules have a containment volume of 21 gallons. The containment volume of 73 gallons is larger than the volume of the largest container (limited to 21 gallons or less by procedure) or 10 percent of the volume of all containers (11 gallons).

D-1a(3)(d) Control of Run-On [40 CFR 270.15(a)(4) and 264.175(b)(4)]

Building 366. The cells are raised above ground level which prevents run-on. In addition, the storage pad is slightly elevated from the surrounding area and covered with a roof.

Building 810. The building is totally enclosed, preventing run-on. In addition, the containers are raised above ground level which prevents run-on.

D-1a(3)(e) Removal of Liquids from Containment System [40 CFR 270.15(a)(5) and 264.175(b)(5)]

Spilled or leaked waste and any accumulated rain or snow is removed from the containment system to prevent overflow. Small amounts of precipitation that blow into 366 is allowed to evaporate. Personnel trained in hazardous waste cleanup procedures clean up spilled or leaked waste. Any cleanup materials are collected and added to containers storing similar wastes. If necessary, accumulated liquid can be removed from the cells or containment units by pumping or using an absorbent pad. Liquids removed would be transferred into a drum. Accumulated liquids would be analyzed for the waste constituents stored in the cells containing standing liquids if knowledge of the wastes stored were not adequate to characterize the liquid.

D-1b Containers Without Free Liquids

D-1b(1) Test for Free Liquids [40 CFR 270.15(b)(1)]

Drummed hazardous waste is managed as if it contained free liquid. Therefore, wastes are not tested to determine whether they contain free liquid.

Wastes in boxes have no free liquids. They are from wipe-cleaning operations using solvent dispensed from squeeze bottles. This technique eliminates free liquid accumulation in containers.

D-1b(2) Description of Containers [40 CFR 264.171 and 264.172]

With the exception of boxes, the containers used for waste without free liquids are the same as those for waste with free liquids, as discussed in Section D-1a(1).

D-1b(3) Container Management Practices [40 CFR 264.173]

Container management practices used for waste without free liquids are the same as those for waste with free liquids, as discussed in Section D-1a(2).

D-1b(4) Container Storage Area Drainage [40 CFR 270.15(b)(2) and 264.175(c)]

Containers without free liquids are stored within the secondary containment structure described in Section D-1a(3).

D-2 Tank Systems [40 CFR 270.16 and 264.191 through 264.200]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) corrective action program, as appropriate.

D-3 Waste Piles [40 CFR 270.18 and 264.250 through 264.259]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under CERCLA corrective action program, as appropriate.

D-4 Surface Impoundments [40 CFR 270.17 and 264.220 through 264.231]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-5 Incinerators [40 CFR 270.19 and 264.340 through 264.351]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-6 Landfills

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-7 Land Treatment [40 CFR 270.20 and 264.270 through 264.283]

No active units currently exist at ABL. Inactive units are covered under the corrective action section of this permit application or under the CERCLA corrective action program, as appropriate.

D-8 Miscellaneous Units [40 CFR 270.23 and 264.600 through 264.603]

The Burn Pans, including the Rocket Motor Tie Down Unit, are a miscellaneous treatment unit.

D-8a Description of Miscellaneous Units

Location

Thermal treatment is conducted at the Burning Grounds that encompasses an area of 8 acres. A total of six (6) burn pans identified as Pans A-F and a rocket motor tie-down unit are used for thermal treatment. Figure D-1 shows the current Burning Grounds configuration.

Design and Construction

Burn pan dimensions are 9 ft long, 8 ft wide, and 12 in. deep. The pans are made from ¼-in. thick seam-welded carbon steel or stainless steel to prevent warping during burning operations. Burn pans are lined with 12 in. of crushed limestone. Three steel I-beams are welded to the bottom of each pan to elevate the pan and provide additional structural rigidity. 80 ft. by 80 ft. concrete pads are installed under each pan. Figure D-2 shows the design of the burn pans and pads.

ABL uses a mobile cover to protect each pan. The pan covers are made of an aluminum super-structure with a corrugated aluminum cover. Covers are used to prevent rainfall from collecting in the burn pans and prevent wind dispersion of treatment residue. The cover is

placed over each burn pan when safe to approach after treatment (during normal business hours) and in times of inclement weather. The roof of the structure is pitched from side to side to shed precipitation. The overall structure is mounted on four wheels. Figure D-3 shows the design of the burn pan covers.

Certain whole rocket motors or cased units may be treated utilizing the tie-down fixture. Figure D-4 shows section views of the burn pans, support walls, earth embankment, and tie down-devices.

Operation

Open burning at ABL is conducted in above-ground pans as discussed in Section D-8a. The steel burn pans contain crushed limestone that acts as an insulating material to maintain the integrity of the pan during the very high-temperature burning operation. Wastes are spread across the top of the limestone material. The combustion process may, under some conditions, leave small amounts of partially unburned material on the pan. After a cool down period, these solids are incorporated into the next burn operation..

Maintenance

Maintenance of burn pans and associated equipment generally consists of repair or replacement of damaged parts or the crushed limestone liner in the pan. Pre-burning and post burning maintenance activities are conducted at the Burning Grounds. If ash or other residue accumulates on the pans during treatment operations, it is collected and disposed of properly.

Monitoring

Treatment operations are monitored remotely by facility personnel via CCTV from the Burning Grounds control building (Building 831).

Inspection

Before and after treatment, the integrity of the pans is checked to determine if any leaks or spills of P/E waste or treatment residues have occurred. Any ejected material is collected and placed back into the burn pan for treatment in the next burn if it is an untreated waste or into a container if it is a treatment residue. Per procedure, the cover is placed over the burn pan until the next event. Detailed inspection procedures are described in Section F-2.

D-8b Waste Characterization [264.601(a), 264.601(b)(1), 264.601(c)(1)]

The Burning Grounds is used to treat reactive hazardous waste including propellants, explosives, and materials containing P/E waste. Materials burned at ABL consist of waste explosive materials from manufacturing, any excess propellant or explosive, in either uncured or cured conditions, uncured or cured P/E that is off-specification for reasons such as deviation from composition, physical, ballistic, or configuration product specifications, and solvents and saw dust contaminated with propellants or explosives. Typical concentrations of energetic material constituents in the waste are listed in Table C-3.

Open burning of P/E wastes in the burn pans at the Burning Grounds generates ash (treatment residue) and emissions to the air. The physical form of the treatment residue is

distinctly different from the unburned P/E waste. The treatment residue is a dark, coarse-grained material. The unburned P/E wastes have physical forms, such as liquid absorbed onto sawdust, thick dough-like substance, solid rubber-like material, powdered crystalline solid, and granular crystals, depending on the waste being treated.

D-8c Treatment Effectiveness

The effectiveness of OB treatment is addressed by the following studies and air models: *Emission Factors for the Disposal of Energetic Material by Open Burning and Open Detonation* (Mitchell and Suggs, August 1998), *SNL Report* (SNL, December 1996), *POLU13* (U.S. Naval Surface Warfare Center), and *Open Burning Open Detonation Model (OBODM)* (Bjorklund et al., 1998). A database of emission factors applicable to the OB (routinely used to destroy surplus or unserviceable energetic materials) was constructed and validated using emissions data from 16 energetic materials that were burned in a 930-m^3 chamber called a BangBox (Mitchell and Suggs, 1998). Additionally, emission factors exist from an emissions test using waste streams intended to be characteristic of ABL Burning Ground Activities, as part of the SNL 1996 air pathway risk assessment (SNL, 1996). Emissions data presented in the SNL Report were collected from test burns conducted in the SNL Air Emissions Test Chamber.

POLU13 is an update of the original POLU10 computer model published by the Department of the Navy's Ordnance Environmental Support Office. The POLU10 model is a modification of the Propellant Evaluation Program, written at the Naval Weapons Center, China Lake, California. The POLU13 model has the ability to calculate pollution products under the special conditions encountered in the open detonation and OB of explosives and propellants. The POLU13 model calculates products associated with the combustion of propellants and other energetic materials contained within the munitions. The model requires material ingredient data (constituent information) and material weight-to-air ratios as input data. The output file contains a calculated mass for each predicted combustion product.

OB procedures are normally used to dispose of propellants. The BangBox study shows that the following four parameters are statistically consistent across all explosive items detonated and burned in an unconfined state:

- %C as COx
- %CO/COx
- %N as NOx
- %NO/NOx

The emission products from most energetic materials destroyed by OB will be adequately represented by the following analytes: CO2, CO, NO, NO_2, total saturated hydrocarbons (e.g., ethane, propane, butane), acetylene, ethylene, propene, benzene, toluene, and particulate. (Mitchell and Suggs, August 1998)

The Open Burn/Open Detonation Dispersion Model (OBOD-M) (Bjorklund et al., 1998) was developed at the U.S. Army Dugway Proving Ground and was designed to evaluate the potential air quality impacts associated with OB and open detonation activities using empirical emission factors obtained from measurements (e.g., BangBox) or predicted by a products of combustion model (e.g., POLU13). The emission factors define the quantities of pollutants released per unit mass of material burned or detonated. OBOD-M calculates the

downwind transport and dispersion of the pollutants using cloud rise and dispersion model algorithms from existing dispersion models.

Dispersion modeling of emissions to the air from OB of propellants and explosives on the Burning Grounds at ABL was conducted using the above-referenced studies and model as input data into the OBOD-M. The results of the site-specific air dispersion modeling are included as Appendix A, Air Modeling Results.

D-8d Environmental Performance Standards for Miscellaneous Units

D-8d(1) Protection of Groundwater and Subsurface Environment [40 CFR 264.601(a), 270.23(b) and (c)]

This section addresses the protection of groundwater and the subsurface environment associated with the operations of the Burning Grounds as a permitted unit.

The Burning Grounds are within a larger area that has been designated Site 1 under the CERCLA program at ABL. Further, groundwater beneath the Burning Grounds is part of a CERCLA long term remedial action, documented in the *Final Record of Decision (ROD) for Site 1 Operable Unit 3: Groundwater, Surface Water, and Sediment at Allegany Ballistics Laboratory, West Virginia,* April 1997. Under this remedial action, groundwater in the alluvial and bedrock aquifers at CERCLA Site 1 is hydraulically contained, thereby preventing its discharge to the North Branch Potomac River. The contained groundwater is extracted from the aquifers, treated at an onsite groundwater treatment plant to remove VOCs, and discharged to ABL's steam generation plant and/or the North Branch Potomac River.

The strategy presented in this permit application for the protection of groundwater and the subsurface environment is to meet the substantive requirements of RCRA under the existing CERCLA program, consistent with the policies on the coordination between RCRA and CERCLA documented in the ABL Federal Facility Agreement (January 1998) and in *Coordination between RCRA Corrective Action and Closure and CERCLA Site Activities* (USEPA; S.A. Herman, E. P. Laws; September 24, 1996).

D-8d(1)(a) Environmental Assessment [40 CFR 264.601(a), 270.23(b) and (c)]

D-8d(1)(a)-1 Waste Characteristics and Volume, Including Potential for Migration through Soils, Liners, or Other Containing Structures

Waste from the propellant operations are energetic and are treated on-site via burning on above-ground pans. The propellant wastes consist of the propellant and solvents associated with removal of the propellant from the mixing and casting equipment and from rocket motor treatment. Wastes from finished motor assembly operations are also energetic and managed onsite via burning in above-ground pans. Wastes from motor casing preparation are typical of those associated with metals machining and surface preparation. These materials are segregated, containerized, and transported offsite for treatment or disposal at properly permitted facilities. Propellants are grouped by their ingredients into categories. The categories are:

- Aluminized Composite Propellants (principally aluminum and ammonium perchlorate)
- Non-Aluminized Composite Propellants (principally ammonium perchlorate, ammonium nitrate and polymer binder consisting of polybutadiene)

- Double Base Propellants (principally RDX or HMX, with lesser quantities of nitroglycerine or nitrocellulose, bismuth and/or tin, and/or 1- to 2-percent lead salts)
- Plastic-bonded Explosives (principally RDX or HMX, aluminum and various synthetic binder materials)

Other material that will be treated in the pans via burning are those contaminated with P/E. These materials include inert material grossly contaminated with P/E (e.g. paper, wood chips and scraps, plastics, cotton rags, cardboard, acetone and acetone/sawdust (50/50 mixture)). Section C of this Part B application contains detailed information on the physical and chemical characteristics of the wastes treated at the Burning Grounds.

Section D-8d(3)(a) contains detailed information on maximum quantity of wastes treated. The maximum throughput of wastes treated is 500,000 lb/year in any combination of each P/E material. The potential for future migration of wastes or waste constituents is considered to be low based on design of the pans and pads, Burning Grounds operations, and physical/chemical characteristics of the waste constituents. All burning operations take place on steel burn pans. The burn pans provide containment. The burn pans have mobile covers and are placed on concrete pads. The covers prevent the accumulation of precipitation in the burn pans. The concrete pads provide containment for any ejected wastes. The pads are slightly elevated above the surrounding ground surface to prevent run-on to the pads. Treatment is not initiated during precipitation events. Removal of ejected wastes from the pads reduces the potential for contaminated run-off from the pad.

D-8d(1)(a)-2 Hydrologic and Geologic Characteristics of the Unit and Surrounding Areas

The following discussion of hydrologic and geologic characteristics of the Burning Grounds was obtained from several documents: *Focused Remedial Investigation of Site 1 at Allegany Ballistics Laboratory Superfund Site* (CH2M HILL, 1995), *Phase II Remedial Investigation at Allegany Ballistics Laboratory* (CH2M HILL, 1996), *Long-Term Monitoring Plan Site 1 – Burning Grounds* (CH2M HILL, 1998), *Phase I Aquifer Testing at Allegany Ballistics Laboratory* (CH2M HILL, 1998), *Phase II Aquifer Testing at Site 1 at Allegany Ballistics Laboratory* (CH2M HILL, 1999), and the *Draft Annual Long-Term Monitoring Report for Sites 1 and 10* (CH2M HILL, 2001).

- **Geology of Surrounding Area.** ABL is located in the Valley and Ridge Physiographic Province, near its western boundary with the Allegheny Plateau Province. The transition between these provinces is referred to as the Allegheny Structural Front. The Valley and Ridge Physiographic Province is underlain by sedimentary rocks folded and faulted during the Paleozoic Era. The linear belts of ridges and valleys that characterize the province result from differential erosion of the various rock types. In general, more-resistant sandstone underlies ridges, whereas less-resistant shale and soluble limestone underlie lowlands.

  The most significant physiographic feature in the vicinity of ABL is Knobly Mountain, which flanks the developed portion of Plant 1 to the south and east. Plant 1, along the northern border of which is the Burning Grounds, is located on the floodplain of the North Branch Potomac River at a point where the river has cut into the base of Knobly Mountain.

Knobly Mountain is the surface expression of a portion of the Wills Mountain anticlinorium, the anticlinal axis of which plunges to the southwest and trends approximately N30°E as it approaches Plant 1 from the southwest, but displays a more north-south trend immediately north of Plant 1. Figure D-5, which is a geological map from the *Site 1 Focused Remedial Investigation Report* (CH2M HILL, 1995), suggests the anticlinal axis passes beneath the Burning Grounds.

Fracture trace analysis performed in the area surrounding the developed portion of Plant 1 indicated that the most common fracture pattern in the bedrock is parallel to the structural trend of the Wills Mountain anticlinorium (i.e., N26°E). The second-most common fracture pattern was found to be oblique to the primary fracture trace (i.e., N39°W).

- **Geology of Unit.** The geology beneath the Burning Grounds has been characterized through a number of activities, including drilling, soil sampling, rock coring, geophysical logging, downhole video, seismic refraction, seismic reflection, and fracture trace analysis. These activities identified three primary lithologic units which are described below.

  Four interpretative cross-sections of the lithologic units underlying the Burning Grounds have been prepared to assist in formulating a conceptual model of the subsurface stratigraphy. Figure D-6 shows the locations of the four cross-section alignments. Figures D-7 through D-10 present the cross sections for A-A', B-B', C-C', and D-D', respectively.

- **Floodplain Deposits.** The natural surficial material at the Burning Grounds is silty clay, considered to be floodplain deposits of the North Branch Potomac River. Just north of the Burning Grounds, between the perimeter fence and the North Branch Potomac River, up to several ft of fill material may exist, deposited in conjunction with historic, non-related activities that took place adjacent to the Burning Grounds.

  The surficial silty clay is typically light to dark brown. Toward the lower parts of the layer there are traces of fine-grained sand. The thickness of the silty clay layer at the Burning Grounds ranges from approximately 10 to 15 feet; its base is generally a few ft higher than the typical river surface elevation adjacent to the site (i.e., 650 ft above mean sea level, or amsl).

- **Alluvial Deposits.** Beneath the silty clay is alluvium consisting of generally poorly sorted sand, gravel, pebbles, and cobbles, with variable but typically significant amounts of clay and silt. This layer is presumably alluvial channel deposits laid down by the North Branch Potomac River as it meandered across its valley. Drilling activities conducted at the Burning Grounds have determined that the gravel size and quantity generally increase with depth, producing a relatively transmissive zone at the base of the alluvium.

  The natural (i.e., in the absence of groundwater pumping) saturated thickness of the alluvium varies across the Burning Grounds but, in general, is between 8 and 16 ft and tends to decrease from south to north across the unit.

- **Bedrock.** Directly beneath the alluvial deposits lies bedrock, consisting of primarily calcareous shale, limestone, and sandstone of Silurian age. As noted previously, the axis of Wills Mountain anticlinorium is assumed to pass beneath the Burning Grounds in a generally northeast-southwest orientation. On the southeast side of the axis, the strata are primarily calcareous shale that dip relatively gently to the southeast at approximately 30°. On the northwest side, the strata contain appreciable limestone and are generally vertical to slightly overturned.

  Bedrock drilling has identified fracture (and void) sets at similar elevations across the Burning Grounds. The two most common fracture sets were identified at elevations between 600 and 615 ft amsl and between 623 and 629 ft amsl. The primary difference in the fracture sets identified in the bedrock across the Burning Grounds is the quantity of water they yield. Aquifer testing and geophysical logging of bedrock boreholes at the unit suggest the fracture sets beneath the eastern portion of the Burning Grounds tend to have higher production capacities than those in the west. This finding is supported by the results of a seismic reflection survey that determined, in general, a higher density of fractures lie beneath the eastern portion of the unit than beneath the western portion.

  The bedrock surface beneath the Burning Grounds is fairly uniform with an elevation generally between 638 and 640 ft amsl. The most significant feature is an apparent depression in the bedrock surface just to the west of the Burning Grounds, which was identified during geophysical investigations and confirmatory drilling. The average depth to bedrock beneath the Burning Grounds is 18 to 20 feet.

- **Hydrology.** There are no surface-water bodies within the boundary of the Burning Grounds. A north-south trending stormwater drainage ditch lies approximately 450 ft west of the western end of the Burning Grounds. The ditch is spring-fed and generally contains at least some flow. The predominant hydrologic feature in the vicinity of the Burning Grounds is the North Branch Potomac River, which borders the northern and western boundaries of the developed portion of Plant 1. The reach of the river adjacent to the Burning Grounds is within approximately 75 to 100 ft of the unit's northern perimeter fence. The elevation of the river adjacent to the Burning Grounds is generally between 648 and 650 ft msl and the average flow from 1939 through 1979, measured at the Pinto gauging station just upstream of the Burning Grounds, was 886 cubic ft per second (ft^3/sec) (Maryland Geologic Survey, Report of Investigation No. 35)

- **Hydrogeology of the Surrounding Area.** Because the geology of the area is complex, so too is the hydrogeology. Significant quantities of groundwater across the developed portion of Plant 1 are found within both the alluvium and bedrock. Further, studies to date suggest there is no appreciable confining unit between these two hydrogeologic units and that there is clear hydraulic connection between them.

  Recharge to the alluvial aquifer within the developed portion of Plant 1 is assumed to be from precipitation. This information is supported by historical data that show marked decreases in the saturated thickness of the alluvial aquifer following periods of little or no precipitation. Conversely, increases in the water table are generally observed during the "wet" periods of the year.

Recharge to the bedrock aquifer within the developed portion of Plant 1 is believed to be from leakage from the alluvial aquifer and upwelling of deeper bedrock groundwater under the pressure influence of the surrounding highlands. This supposition is supported by historical data that generally show a downward vertical hydraulic gradient from the alluvium to the bedrock across the facility and an upward vertical hydraulic gradient from the deep (i.e., greater than approximately 90 feet) to more shallow bedrock.

Unlike the alluvial aquifer, lateral groundwater flow in the bedrock aquifer is confined to partings along bedding planes, fractures, and solution channels. Like the alluvial aquifer, however, this results in a complex flow regime whereby groundwater flow in the bedrock is controlled by the size, frequency, and orientation of these features. Where the bedrock is more highly fractured and more calcareous (i.e., dissolvable), as in the vicinity of the Wills Mountain anticlinal axis and to the west for example, groundwater flow may be more prevalent than to the east where there is less limestone and the strata are less folded and faulted.

Regardless of the specific direction or rate of flow, the ultimate discharge point for both alluvial and bedrock groundwater beneath the developed portion of Plant 1 (except for Site 1 under groundwater extraction conditions) is believed to be the North Branch Potomac River. The elevation of the base of the alluvial aquifer across the plant is approximately equal to the elevation of the river bottom. In addition, historically measured water levels in the river have been lower than water levels measured in bedrock wells adjacent to the river.

This complexity of the hydrogeologic regime at ABL has been enhanced beneath the Burning Grounds by the operation of a groundwater pump and treat system to remove VOC contamination attributed to historic solvent disposal activities within the unit's boundaries. Because of the physical CERCLA site/Burning Grounds overlap, appreciable additional hydrogeologic information has been obtained at the Burning Grounds relative to the remainder of Plant 1. This information is discussed below.

- **Hydrogeology of Unit.** As noted above, the alluvial aquifer beneath the Burning Grounds consists of between about 8 to 16 ft of silt, clay, and gravel. Natural groundwater flow (i.e., in the absence of groundwater extraction) in the alluvial aquifer beneath the Burning Grounds is north-northeast toward the North Branch Potomac River, with a generally uniform horizontal hydraulic gradient of approximately 0.008. However, near the western end of the burning ground, the direction of alluvial groundwater flow changes to the north-northwest toward the river, with a steeper gradient of approximately 0.016. This phenomenon is likely due to a reduction in bedrock aquifer transmissivity at the western end of the unit causing bedrock groundwater to mound as it approaches from an area of higher transmissivity and influence the gradient in the overlying alluvial aquifer.

  Testing conducted in conjunction with installation of the groundwater pump and treat system revealed that hydraulic conductivities in the alluvial aquifer are highest across the eastern half of the Burning Grounds and lowest across the western half, with a sharp decrease in the hydraulic conductivities observed near the western third of the burning ground. Across the eastern half of the Burning Grounds, the observed hydraulic

conductivities range from approximately 13 feet/day to 182 feet/day, with a mean of approximately 70 feet/day. This contrasts with the observed hydraulic conductivities across the western half, which range from about 0.4 feet/day to 17 feet/day, with a mean of approximately 6 feet/day. Although there were two wells with calculated hydraulic conductivities greater than 60 ft/day in the western half (i.e., wells 1EW23 and 1EW26 in Figure D-11), all but 3 of the 14 hydraulic conductivity measurements are less than 10 feet/day.

Based on the hydraulic gradient and hydraulic conductivity values presented above, the average linear velocity of natural (i.e., not influenced by groundwater extraction) horizontal groundwater flow in the alluvial aquifer beneath the eastern half of the Burning Grounds is estimated to average approximately 1,000 ft per year (ft/yr.), depending on the amount of clay present. This calculation assumes an effective porosity of 20 percent for the alluvium. Because of the lower observed hydraulic conductivities in the alluvial aquifer beneath the western portion of the Burning Grounds, the calculated average linear velocity of horizontal groundwater flow there is estimated to be about 175 feet/yr.

Similar to that of the alluvial aquifer, the general direction of natural groundwater flow (i.e., in the absence of groundwater extraction) in the bedrock beneath the Burning Grounds is north-northeast toward the North Branch Potomac River, with a nearly uniform horizontal hydraulic gradient of approximately 0.01. However, near the west end of the Burning Grounds, the groundwater flow becomes north-northwest toward the river with an increased horizontal hydraulic gradient of approximately 0.03. As stated previously, this phenomenon is likely due to a reduction in bedrock aquifer transmissivity beneath the western end of the unit causing bedrock groundwater to mound as it approaches from an area of higher transmissivity.

Although the bedrock across the Burning Grounds appears to be moderately fractured, the fractures beneath the western portion of the Burning Grounds do not appear to be capable of producing appreciable quantities of groundwater. Similar to the hydraulic conductivity values observed for the alluvial aquifer across the Burning Grounds, the observed transmissivity of the bedrock aquifer beneath the eastern portion of the unit (i.e., 285 square ft per day [ft^2/day]) is approximately 4 times that observed for the bedrock beneath the western portion (i.e., 70 ft^2/day). This is believed due to the relatively lower number of fractures present below the western part of the unit compared to the eastern part.

The above discussion focuses on the hydrogeologic characteristics of the alluvial and bedrock aquifer under natural (i.e., non-pumping) conditions. Currently, a series of 27 alluvial extraction wells and 7 bedrock extraction wells, as indicated in Figure D-11, exist at CERCLA Site 1 that withdraw groundwater at an average of about 100 gallons per minute (gpm) from the alluvial and bedrock aquifers beneath the Burning Grounds. The primary objective of the groundwater extraction well array is to create a hydraulic barrier whereby the direction of alluvial and bedrock groundwater flow is reversed from the river back to the extraction well alignments, which traverse the Burning Grounds from west to east . These extraction wells have altered the natural hydraulic gradient, whereby both alluvial and bedrock groundwater within the boundaries of the Burning

Grounds is being hydraulically contained and prevented from discharging to the North Branch Potomac River.

D-8d(1)(a)-3 Existing Groundwater Quality, Including Other Sources of Contamination and Their Cumulative Impact on the Groundwater

Existing groundwater quality information is derived from the four rounds of groundwater quality data that were collected as part of the baseline groundwater monitoring program for the Burning Grounds developed by the WVDEP, USEPA, Navy, ATK, and CH2M HILL in April 1999. Under this program, a subset of the CERCLA monitoring and extraction wells (i.e., five alluvial and four bedrock extraction wells and two upgradient alluvial and two upgradient bedrock monitoring wells) were sampled in April 1999, April 2000, July 2000, and October 2000. Additional data from the CERCLA long-term monitoring program (June 1998, January 1999, October 1999, and July 2000) are also included in the discussion of existing groundwater quality.

The results of a statistical evaluation conducted on the four rounds of baseline monitoring data indicate that the most prevalent constituents of potential concern in groundwater beneath the Burning Grounds are VOCs and to a lesser extent explosives. No other organic constituents (i.e., SVOCs, pesticides, polychlorinated biphenyls (PCBs), herbicides, dioxins, furans) have been detected at statistically significant levels. In addition, detected concentrations of inorganic constituents in groundwater beneath the Burning Grounds are similar to those found elsewhere at Plant 1.

The presence of VOCs, and in particular TCE (the most prevalent VOC detected), is attributed to the historic use of solvents at the facility and subsequent disposal in three solvent disposal pits located in the southwestern portion of the Burning Grounds (see Figure D-11). Although solvents were historically present in a portion of the propellants burned at the Burning Grounds, it is unlikely that the VOCs related to these solvents significantly contributed to groundwater contamination at the unit. This is due to the volatile nature of the solvents and the heat and turbulence involved in the burning process. Additionally, relative to the quantity of solvents discharged into the solvent disposal pits, the solvents in the waste burned represented a minimal quantity of VOCs. Any solvents or residue not destroyed during burning are volatilized or collected and handled rather than transported through the soil and dissolved in the groundwater below the unit.

HMX, RDX, and perchlorate are the explosive constituents detected most frequently in the groundwater beneath the Burning Grounds. All three of these constituents are common components of waste material historically burned at the unit. Of these three, perchlorate is the most prevalent explosive constituent detected, with respect to both concentration and distribution. The highest HMX, RDX, and perchlorate concentrations were detected in the wells downgradient of the solvent disposal pits, and are therefore potentially attributed to both burning at the unit and their presence in the solvents discharged to the pits. Historically, TCE and other solvents were used to clean up composite propellant, which contained ammonium perchlorate and other explosives. Discharge of these spent solvents in the solvent disposal pits would have released to the subsurface both VOCs and constituents picked up in the solvents during the cleaning processes (e.g., explosives and perchlorate).

D-8d(1)(a)-4 Quantity and Direction of Groundwater Flow [264.601(a)(4)]

Groundwater beneath the developed portion of Plant 1 flows toward the North Branch Potomac River (Figures D-12 and D-13). Under natural (i.e., non-pumping) conditions, alluvial and bedrock groundwater beneath the central and eastern portions of the Burning Grounds flows in a north-northeasterly direction. Near the western end of the Burning Grounds, alluvial and bedrock groundwater flows toward the north-northwest, under natural (i.e., non-pumping) conditions.

Alluvial groundwater flow velocities calculated based on natural flow directions and hydraulic gradients vary between 175 ft/yr (beneath the western portion of the unit) and 1,000 ft/yr (beneath the eastern portion of the unit). Natural bedrock groundwater flow is expected to vary substantially across the Burning Grounds, and would be based on the size, distribution, and connectivity of the openings (e.g., fractures, solution channels).

The operation of the Site 1 groundwater extraction and treatment system has altered the natural hydraulic gradients and velocities of groundwater beneath the Burning Grounds. Water-level drawdown in both the alluvial and bedrock aquifers has reversed the direction of groundwater flow from the river back to the extraction wells, thereby preventing discharge of contaminated groundwater into the North Branch Potomac River. This gradient reversal has resulted in hydraulic containment of the alluvial and bedrock groundwater beneath the Burning Grounds since the pump and treat system became operational in September 1998. Figures D-12 and D-13 demonstrate the hydraulic containment that has been achieved beneath the Burning Grounds.

D-8d(1)(a)-5 Proximity to and Withdrawal Rates of Current and Potential Groundwater Users

Except for the CERCLA groundwater extraction and treatment system, no groundwater is withdrawn for use from the developed portion of Plant 1. A portion of the treated groundwater is utilized by the facility's steam generation plant, on an as-needed basis. Residents across the North Branch Potomac River from ABL do use bedrock groundwater as a potable water source. The nearest residential well(s) to the Burning Grounds is approximately 1/3 mile from the northern perimeter fence. The locations of withdrawal wells in the vicinity of ABL are shown in Figure B-3. Historical data suggest contaminated groundwater did not migrate beneath the river under normal flow conditions (because of the higher hydraulic head on the north side of the river compared to the south side of the river) and existing data suggest that operation of the groundwater extraction system prevents offsite migration of groundwater beneath the Burning Grounds.

D-8d(1)(a)-6 Regional Land Use Patterns

Land use in the area of ABL is a mixture of rural and suburban residential. Dairy cattle grazing occurs among low-density residential areas north of the Burning Grounds; manufacturing and storage facilities with additional open space within plant boundaries lie further to the south. Residential areas located to the northwest of the Burning Grounds include Bel Air and Pinto about 1 mile to the west-northwest and Cresaptown, about 2 miles northwest. Cumberland Maryland, with a population of approximately 35,000 lies further north.

D-8d(1)(a)-7 Potential for Deposition or Migration of Waste Constituents into Subsurface Physical Structures and the Root Zone of Vegetation

Operations at the Burning Grounds result in the emissions of gases as described in Appendix A, Air Modeling Results. The emissions are dispersed in air and transported

offsite. The particulates suspended into the air may deposit onto soil, foliage, and surface water. SVOCs and metals adsorbed to deposited particulates may become incorporated into surface soil through mixing and desorption (i.e., leaching from the deposited particulates). Concentrations in surface soil resulting from particle deposition to offsite locations could become accumulated through root uptake into vegetation, such as fruits and vegetables grown in a backyard garden. Particles also could be deposited onto aboveground foliage.

The human health risk assessment and the ecological risk assessment are presented in Appendix B and Appendix C, respectively. Appendix B discusses the potential for soil deposition and migration to the surface or root zone in greater detail.

D-8d(1)(a)-8 Potential for Human Health Risks Caused by Exposure to Waste Constituents

Operation of the groundwater extraction and treatment system results in this pathway of exposure being incomplete. The existing CERCLA activities will maintain hydraulic control of the groundwater. See Appendix B for detailed discussion of human health risk assessment.

D-8d(1)(a)-9 Potential for Damage to Domestic Animals, Wildlife, Crops, Vegetation, and Physical Structures Caused by Exposure to Waste Constituents

Precipitation falling on the Burning Grounds is lost to evapo-transpiration processes or infiltrates the soils to reach groundwater. Groundwater flow at the Burning Grounds is generally north towards the North Branch Potomac River. However, groundwater at the Burning Grounds does not currently discharge directly to the river due to the presence of extraction wells associated with CERCLA activities in the area. Extracted water is treated before discharge to the river. Thus, damage to domestic animals, wildlife, crops, vegetation, and physical structures from exposure to waste constituents in groundwater is prevented by the operation of the groundwater extraction and treatment system. Operation of the CERCLA groundwater extraction and treatment system results in this pathway of exposure being incomplete. See Appendix C for detailed discussion of the ecological risk assessment.

D-8d(1)(a)-10 Potential Magnitude and Nature of Exposure of Humans or Environmental Receptors to Hazardous Waste or Hazardous Constituents

Potential exposure to groundwater at the Burning Grounds is negligible because this pathway is incomplete. Most ecological receptors have very limited exposure to subsurface soil (e.g., soil at depths greater than 2 ft below the ground surface). Workers performing excavation activities could encounter hazardous constituents in subsurface soil. Potential exposure pathways to workers under these conditions include dermal contact with soil and incidental soil ingestion. The concentrations present in subsurface soil would not pose a threat to workers. Additionally, specific work practices and personal protective equipment required for activities at the Burning Grounds would further reduce potential exposures to workers.

D-8d(1)(b) Performance Standards

The *Long-Term Monitoring Plan Site 1–Burning Grounds*(CH2M HILL, 1998) defines the performance requirements established for groundwater and treatment plant effluent monitoring required under the CERCLA program. Substantive performance standards associated with the Part B permit will be incorporated into the ongoing monitoring under the CERCLA program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996). Any exceedances of established treatment plant effluent discharge limits will be addressed in accordance with the Discharge Requirements Letter issued for the CERCLA Program by the WVDEP Office of Water Resources (OWR).

If the groundwater remediation objectives under CERCLA are met while the Burning Grounds are still in operation, further groundwater monitoring will be conducted under RCRA.

D-8d(2) Protection of Surface Water, Wetlands, and Soil Surface [40 CFR 264.601(b), 270.23(b) and (c)]

This section addresses the assessment of impact on the surface water, wetlands, and surface soil pathways from operations of the Burning Grounds as a permitted unit.

D-8d(2)(a) Environmental Assessment [40 CFR 264.601(b), 270.23(b) and (c)]

D-8d(2)(a)-1 Waste Characteristics and Volume

Section D-8d(1)(a) of this Part B application contains information on the physical and chemical characteristics of the wastes treated at the Burning Grounds as well as the maximum quantity of wastes treated.

D-8d(2)(a)-2 Effectiveness and Reliability of Containing, Confining, and Collecting Systems and Structures in Preventing Migration

Burning operations take place on steel burn pans that provide primary containment of waste materials. The burn pans have covers to prevent any buildup of precipitation inside the pans. The covers are mobile and can be moved to keep the pans open during treatment operations. The pans are placed on concrete pads to provide containment for any ejected wastes. After each burn, the concrete pads will be inspected for any ejected untreated wastes. Any ejected untreated wastes will be collected, placed into the pan, and treated in the next burn. Inspection and removal from the pads of any ejected wastes and treatment residues eliminates the potential for run-off from the pad to contain untreated wastes. The concrete pads are slightly elevated above the surrounding ground surface to prevent run-on to the pads. Waste treatment is not conducted during precipitation events.

D-8d(2)(a)-3 Hydrologic Characteristics of the Unit and the Surrounding Area

There are no surface-water bodies within the boundary of the Burning Grounds. A north-south trending stormwater drainage ditch lies approximately 450 ft west of the unit's western perimeter fence. The ditch is spring-fed and generally contains at least some flow. The predominant hydrologic feature in the vicinity of the Burning Grounds is the North Branch Potomac River, which borders the northern and western boundaries of the developed portion of Plant 1. The reach of the river adjacent to the Burning Grounds is within approximately 75 to 100 ft of the unit's northern perimeter fence. The elevation of the river adjacent to the Burning Grounds is generally between 648 and 650 ft amsl and the average flow from 1938 through 1981, measured at the Pinto gauging station just upstream of the Burning Grounds, was 886 ft^3/sec.

D-8d(2)(a)-4 Topography of the Surrounding Area and Hydrologic Unit Characteristics

The Burning Grounds are located in a relatively flat area of the historic floodplain of the North Branch Potomac River; there is less than approximately 5 ft total relief across the unit. With the exception of an east-west asphalt road through the unit, groundwater extraction well vaults, and burn pads, the Burning Grounds are grass-covered. Because of these characteristics, the potential for surface water runoff is low.

D-8d(2)(a)-5 Regional Precipitation Patterns

Mean annual rainfall for the local area is ranges between 36-46 in. per year. The maximum 24-hour rainfall is estimated to be in the range of 5-6 in.. Tornadoes are rare in this area, and severe thunderstorms are infrequent. However, intense local rainfall from warm-season thunderstorms can cause flash flooding in narrow valleys of the area.

D-8d(2)(a)-6 Quantity, Quality, and Direction of Groundwater Flow

See Section D-8d(1)(a) for details of groundwater flow.

D-8d(2)(a)-7 Proximity of the Unit to Surface Waters

The North Branch Potomac River is the closest surface-water body to the Burning Grounds, located between approximately 75 and 100 ft from the unit's northern perimeter fence. In addition, there is a north-south trending, spring-fed stormwater drainage ditch located approximately 450 ft west of the unit's western perimeter fence.

D-8d(2)(a)-8 Current and Potential Uses of Nearby Surface Waters

The lower 52 miles of the North Branch Potomac River, prior to its confluence with the South Branch of the Potomac to form the Potomac River, is physically located within the State of Maryland. For each water body there are specific designated uses specified as I-P by State's Water Quality Standards. These uses may be designated, whether or not they are being obtained. Unless otherwise designated streams are designated for: 1) the propagation and maintenance of fish and other aquatic life, and, 2) water contact recreation.

D-8d(2)(a)-9 Established Water Quality Standards for Surface Waters

The Maryland Water Quality Standards (Title 26, Subtitle 08, Subsections (13 et. seq., annotated Code of Maryland) do not limit the uses of surface water to those designated in the Water Quality Standards provided water quality is not adversely affected. The North Branch Potomac River (Subbasin 02-14-10) is designated as Use I-P. Use I-P carries the following Specific Designated Uses:

- Water contact sports
- Play and leisure activities where individuals may come in direct contact with the surface water
- Fishing
- The growth and propagation of fish (other than trout), other aquatic life, and wildlife
- Agricultural water supply
- Industrial water supply
- Use as a public water supply.

Likewise the West Virginia Water Quality Standards include other designations for public water supply, agricultural and wildlife uses and industrial uses, where applicable.

Water quality criteria are established to protect the designated standards. There are water quality criteria specific to the designated uses. For the I-P designation, the numerical criteria for toxic substances in surface waters are applicable as well as other, more traditional criteria apply. These include:

- Bacteriological - less than a log mean of 200 colonies per 100 ml, based on a five samples taken over a 30 day period and if 10 percent of the total number of samples taken during any 30-day period exceed 400 colonies per 100 ml, or other criteria as may be determined by the Department of the Environment following a sanitary survey.
- Dissolved oxygen - greater than 5 mg/l at any time

- Temperature – a maximum instream temperature (outside the mixing zone) of 90 degrees F (32 C), or the ambient temperature of the surface water whichever is greater.
- pH - > 6 and < 9

Turbidity – no discharge shall cause the surface water to exceed 150 nephelometric turbidity units (NTU) at any time or 50 NTU as a monthly average for exceed levels detrimental to aquatic life.

D-8d(2)(a)-10 Existing Quality of Surface Waters and Surface Soils, Including Other Sources of Contamination and their Cumulative Impact on Surface Waters and Surface Soils

Surface Waters. Generally, the topography within the boundary of the Burning Grounds is flat with no surface-water bodies and low potential for surface water runoff. Puddles of precipitation at the Burning Grounds are usually observed after a rainfall event. The puddled water either infiltrates to the groundwater, that is being captured by the CERCLA groundwater program instituted at Site 1, or evaporates to the atmosphere. Due to the paucity of surface water runoff from the Burning Grounds and the resulting absence of a surface water risk pathway, the cumulative impact on existing water quality of the North Branch Potomac River is expected to be negligible.

Existing water quality information has been extrapolated for the North Branch Potomac River from a report entitled *"An Ecological Assessment of the North Fork of the Potomac River Watershed"*, WVDEP, Office of Water Resources, 1997, Report No. 02070002-1997 (the Report). This report provides some insight into the biological, physical, and chemical conditions that can be expected in the main fork. However, since the lower 52 miles of the North Branch Potomac River are located in Maryland, the report indicates that there could be undetermined impacts from the towns of Cumberland, Maryland; Keyser, West Virginia; and, large tributaries of Savage River and Patterson Creek.

The segment of the North Branch Potomac River adjacent to ABL is located in Ecoregion 67. Upstream of the Maryland/West Virginia state line, the river is greatly influenced by historical acid mine drainage , which has been attenuated to some extent by AMD treatment and the construction of the Jennings Randolph Reservoir. The Report finds that Ecoregion 67 streams have an average Bioscore of 65.00 percent (100 percent is best) and an average Habitat Score of 67.5 percent (100 percent is most diverse). In Ecoregion 67, only 3 of the 27 sample points had comparable Bioscores less than 50.

In-stream water chemistry for traditional parameters and applicable WVDEP Water Quality standards are included in Table D-1. The corresponding WVDEP Water Quality Standards list the relevant criteria as 5 mg/l DO, pH 6-9, conductivity (no criterion but generally expected to be less than 1000 uohms/cm), Ammonia Nitrogen (no criterion), and Nitrate plus Nitrite nitrogen (no criterion). These criteria do not vary significantly from the Maryland Criteria listed in a previous section. However, the findings did lead the WVDEP to conclude in the Report that the North Branch Potomac exceeded the WVDEP Water Quality Standards and, if it were in West Virginia, it would be listed on the 303 (d) list of impaired waters. (See description of four sampling stations in Appendix C for more information.)

Soils. Soil borings were-completed at the locations shown in Figure D-14 for the purpose of collecting surface and subsurface soil samples to determine the current conditions of soil at the Burning Grounds and provide data for a human health and ecological risk screening.

Seventeen discrete surface soil samples and seven subsurface soil samples were collected from locations within the Burning Grounds. An additional three surface soil samples were collected adjacent to the Burning Grounds. Surface soil samples were collected to a depth of 6 in., while subsurface samples were collected from 18 to 24 in. below the ground surface (bgs).

The number and location of the soil samples at the Burning Grounds were determined by reviewing existing soil data and by taking into consideration the historic locations, the existing locations, and the proposed locations of burn pads. The three surface soil samples adjacent to the Burning Grounds were collected in a shallow depressional area south of the Burning Grounds unit in order to determine if any chemicals had been transported to low lying areas by surface-water runoff.

Surface and subsurface soil samples were analyzed for Appendix IX metals plus aluminum, cyanide, iron, and manganese, Appendix IX VOCs and SVOCs plus biphenyl, dioxins and furans, explosives, nitroglycerin, perchlorate, ammonium nitrate, pH, and total organic carbon (TOC).

Results of the analysis of the surface soil boring samples are presented in Appendix D-1. Subsurface soils boring samples results are also presented in Appendix D-1.

Surface Soil. This section addresses the results of the analytical data obtained from surface soil samples collected at the Burning Grounds. Soil screening criteria are addressed as part of the risk assessments presented in Appendices B and C.

- **Volatile Organic Compounds (VOCs).** Two VOCs were detected in surface soil borings at the Burning Grounds. The VOCs detected were acetone and TCE. Acetone was detected in surface soil samples at concentrations at or below 16 µg/kg, with the highest acetone concentration detected at sample location SB06. TCE was detected in surface soil samples at concentrations at or below 28 µg/kg, with the highest TCE concentration detected at sample location SB02. Appendix D-1 presents VOC concentrations at each sample location. Figure D-15 presents the location and concentrations of detected VOCs in surface soil at the Burning Grounds.

- **Semi-volatile Organic Compounds SVOCs).** Nine SVOCs were detected in surface soil borings at the Burning Grounds. The SVOCs detected were 1,1-biphenyl, benzo(a)anthracene, benzo(a)pyrene, chrysene, diethylphthalate, dimethyl phthalate, naphthalene, phenanthrene, and bis(2-Ethylhexyl)phthalate. Appendix D-1 presents SVOC concentrations at each sample location. Figure D-16 presents the location and concentrations of detected SVOCs in surface soil at the Burning Grounds.

- **Dioxins / Furans.** Two dioxin/furan isomers and four total dioxin/furan constituents were detected in surface soil borings at the Burning Grounds. The dioxins/furans detected were 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8-heptachloro-dibenzofuran, total hepta-dioxins, total hepta-furans, total octachlorodibenzo-p-dioxin, and total octachlorodibenzofuran. Appendix D-1 presents dioxins/furans concentrations

at each sample location. Figure D-17 presents the location and concentrations of detected dioxins/furans in surface soil at the Burning Grounds.

- **Explosives.** Three explosive compounds were detected in surface soil borings at the Burning Grounds. The explosives detected were HMX, RDX, and perchlorate. HMX was detected at concentrations at or below 2,400 µg/kg, with the highest concentration detected at sample location SB03. RDX was detected at or below 784 µg/kg, with the highest concentration detected at sample location SB05. Perchlorate was detected at or below 880 µg/kg, with the highest concentration detected at sample location SB05. Appendix D-1 presents explosives concentrations at each sample location. Figure D-18 presents the location and concentrations of detected explosives in surface soil at the Burning Grounds.

- **Metals.** Twenty-one metals were detected in surface soil borings at the Burning Grounds. The metals detected were aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, cyanide, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc. Table 3 in Appendix D-1 presents metals concentrations at each sample location. Figure D-19 presents the location and concentrations of detected lead in surface soil at the Burning Grounds. The facility background mean concentration for lead in surface soil is 17.5 milligrams per kilogram (mg/kg).

- **Wet Chemistry Parameters.** Four wet chemistry parameters were analyzed for at the Burning Grounds (nitrate, nitrite, TOC, and pH). Three of the four wet chemistry parameters were found in surface soil borings at the Burning Grounds. The parameters found were nitrate, TOC, and pH. Nitrate was found in surface soil samples at concentrations at or below 9.9 mg/kg, with the highest concentration found at sample location SB20. TOC was found at concentrations up to 78,400 mg/kg, with that highest TOC concentration found at sample location SB01. The pH of the surface soil was found to be between 5.7 and 7.9. Appendix D-1 presents wet chemistry parameters found at each sample location.

Subsurface Soil. This section addresses the results of the analytical data obtained from subsurface soil samples collected at the Burning Grounds. Appendix A-1 presents the analytical data for subsurface soil samples at the Burning Grounds.

- **Volatile Organic Compounds (VOCs).** One VOC was detected in subsurface soil borings at the Burning Grounds. TCE was detected in the subsurface soil sample at a concentration of 5 (J) µg/kg at sample location SB16. Appendix D-1presents the VOC concentration at SB16. Figure D-20 presents the location and concentration of the VOC (TCE) detected in subsurface soil at the Burning Grounds.

- **Semi-volatile Organic Compounds.** No SVOCs were detected in subsurface soil borings at the Burning Grounds.

- **Dioxins/Furans.** One dioxins/furan constituent was detected in subsurface soil borings at the Burning Grounds. Total octachlorodibenzo-p-dioxin, was detected in subsurface soil samples at concentrations at or below 0.158 µg/kg, with the highest concentration detected at sample location SB19. Appendix D-1 presents the dioxins/furan concen-

trations at each sample location. Figure D-21 presents the location and concentrations of detected dioxins/furans in subsurface soil at the Burning Grounds.

- **Explosives.** Two explosive compounds were detected in subsurface soil borings at the Burning Grounds. The explosives detected were HMX and perchlorate. HMX was detected in one subsurface soil sample, at a concentration of 340 (J) µg/kg at sample location SB14. Perchlorate was detected in three subsurface soil samples (SB14, SB16, and SB17) at concentrations at or below 2,500 µg/kg, with the highest concentration detected at sample location SB17. Appendix D-1 presents explosives concentrations at each sample location. Figure D-22 presents the location and concentrations of detected explosives in subsurface soil at the Burning Grounds.

- **Metals.** Sixteen metals were detected in subsurface soil borings at the Burning Grounds. The metals detected were aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, thallium, vanadium, and zinc. Table 4 in Appendix D-1 presents metals concentrations at each sample location. Figure D-23 presents the location and concentrations of detected lead in subsurface soil at the Burning Grounds. The facility background mean concentration for lead in subsurface soil is 23.3 milligrams per kilogram (mg/kg).

- **Wet Chemistry Parameters.** Four wet chemistry parameters were sampled for at the Burning Grounds (nitrate, nitrite, TOC, and pH). Two of the four parameters were found in subsurface soil at the Burning Grounds. TOC was found up to 12,300 mg/kg, with that highest TOC concentration found at sample location SB19. The pH of the soil was found to be between 7.0 and 7.6. Appendix A-1 presents wet chemistry parameters found at each sample location.

D-8d(2)(a)-11 Regional Land Use Patterns

See Section D-8d(1)(a)-6 for Regional Land Use Patterns.

D-8d(2)(a)-12 Potential for Human Health Risks Caused by Exposure to Waste Constituents

Current Conditions. The human health risk assessment (Appendix B) evaluated potential risks for humans from exposure to facility-related chemical constituents in surface soils based on current conditions. The risk assessment incorporated sampling and analytical data collected in soil during a field investigation of the Burning Grounds. Contaminants of potential concern were identified from these analytical data, using procedures outlined by USEPA Region III. Potential intake of these contaminants by workers were estimated using intake equations and conservative exposure factors. Health risks potentially associated with these estimated intake rates were characterized using USEPA-derived toxicity values.

The results from this risk assessment indicated that there were no complete human exposure pathways from hazardous constituents in soil to surface water. The site is relatively flat, contains no drainage features (such as ditches), and is completely covered with periodically mowed grasses and other herbaceous plants (except on a few unpaved roads and in the area immediately surrounding a few of the active burn pans). Thus, significant surface runoff is not likely to occur even during significant rain events. However, this potential transport pathway was evaluated based on the three surface soil samples collected in the most obvious drainage feature present, a shallow depression located just south of the Burning Grounds fence line. Evaluation of site topography indicates this

depression has no connection with the river. The site maximum for six metals occurred within this set of three samples although only chromium was elevated (in one of the three samples) relative to background. While the site maximums for polycyclic aromatic hydrocarbons (PAHs) occurred in one of these three samples (SS-01), concentrations were low. The site maximum for total dioxin (consisting of hepta and octa congeners) also occurred at SS-01 although the most commonly occurring dioxin and furan congeners (octa) were fairly uniformly distributed over the site. Based on the available data, there does not appear to be any systematic contaminant transport via surface runoff to this low area south of the Burning Grounds. In addition, this depressional area does not appear to outlet to the North Branch Potomac River.

Continued Operations. The human health risk assessment (Appendix B) evaluated potential future risks from continued operations of the Burning Grounds based on an assumed 40-year additional facility lifetime. This portion of the evaluation focused on areas surrounding the Burning Grounds and the likelihood of transport by prevailing winds of uncombusted materials and/or combustion products may occur from the Burning Grounds to surrounding areas where they may deposit to surface soils and surface water bodies. Complete exposure pathways may exist to offsite residents from dispersion of emissions to the air, and deposition of particulate emissions onto soil or surface water. Emissions to the air could result in concentrations in surface water from deposition onto soil followed by surface runoff into water, or from direct deposition onto the water. Potential pathways of exposure considered in the risk assessment included ingestion of fish.

The results from this risk assessment indicate that the total estimated risk is below 1×10^{-5} for all of the exposure scenarios evaluated. Noncancer hazard quotients (HQ) are less than 0.25. These results indicate that the emissions should not pose a significant risk to human health. Therefore, action does not appear warranted to prevent unacceptable cancer risks or unacceptable noncancer effects from emissions to the air associated with continued operations at the Burning Grounds. Characterization of health risks associated with chemical contaminants in emissions to the air from the Burning Grounds has been based on a series of conservative assumptions that tend to overstate rather than understate health risks. The results of the risk assessment, using these conservative approaches, is that the emissions are highly unlikely to pose significant human health risks to offsite human receptors through contact with surface water and soils.

D-8d(2)(a)-13 Potential for Damage to Domestic Animals, Wildlife, Crops, Vegetation, and Physical Structures Caused by Exposure to Waste Constituents

Current Conditions Within the Boundaries of the Burning Grounds. There are no surface water bodies, wetlands, or other surface drainage features located within the boundaries of the Burning Grounds. The North Branch Potomac River is located just north of the Burning Grounds. The entire area of the Burning Grounds is within the 500-year floodplain of the river and a portion of the Burning Grounds (not including the burn pans) is within the 100-year floodplain. As discussed in Section D-8d(1)(a), potential transport of waste constituents to the North Branch Potomac River via groundwater is currently prevented by the operation of the groundwater extraction and treatment system.

The design of the burn pads and pans (i.e., soil-lined steel pans, asphalt burn pads, and precipitation covers) will minimize the potential for migration of wastes and combustion residues onto the surface soils. The site is relatively flat, contains no drainage features (such

as ditches), and is completely covered with periodically mowed grasses and other herbaceous plants (except on a few unpaved roads). Thus, significant surface runoff from the Burning Grounds to the North Branch Potomac River is not likely to occur even during flood events.

The ecological risk assessment (Appendix C) evaluated potential risks for terrestrial receptors (e.g., wildlife and vegetation) from exposure to facility-related chemical constituents in surface soils based on current conditions. Baseline risk estimates using site-wide averages indicate low to negligible risks to upper trophic level receptors (wildlife). Other than dioxins/furans, only arsenic had a hazard quotient (HQ) exceeding one (1.68), although surface soil concentrations for arsenic were consistent with facility-specific background concentrations. Exceedances for dioxins/furans were heavily influenced by non-detected congeners (representing the more toxic congeners) in a few samples and estimates based solely on detected congeners (representing the least toxic congeners) indicated negligible risk.

Widespread, high-magnitude exceedances of both soil Toxicity Reference Values (TRVs) and facility-specific background concentrations were not apparent based on the existing surface soil data collected during February 2001. Except for lead, background exceedances were generally infrequent and of relatively low magnitude. Lead, which is believed attributable at least in part to deposition from burning activities, was elevated in two areas. The first was in the southwestern corner of the Burning Grounds where the site maximum of 1,730 mg/kg occurred. The second area was in the east-central portion of the Burning Grounds. Given the limited habitat quality of the Burning Grounds, these relatively small areas of elevated lead concentrations are not likely to result in adverse impacts to populations of ecological receptors.

Except for chromium, most exceedances were of plant TRVs. Manganese and vanadium, each with a relatively high frequency of exceedance for soil fauna TRVs, were consistent with background. Soil fauna TRVs were also exceeded for lead (one sample), mercury (one sample), and zinc (two samples), although mean hazard quotients were all less than one. The site is covered in periodically-mowed grasses and other herbaceous plants, providing habitat of limited diversity and quality. Except for unpaved roads and the areas immediately around some of the active burn pans, areas of bare soil are uncommon and no obvious phytotoxic effects (e.g., large areas of bare soil, dead or dying plants) were observed. This suggests limited potential for adverse effects to ecological receptors at the Burning Grounds.

Based on the ecological evaluation of current site conditions, the risk estimates do not warrant any remedial actions be taken prior to the construction of the new burn pads. The relatively small areas with potentially elevated lead concentrations will be addressed in the future closure plan for the unit, when initiated, because they are not likely to be adversely affecting receptor populations at the current time under current land uses.

Continued Operations of the Burning Grounds. The ecological risk assessment (Appendix C) also evaluated potential future risks from continued operations of the Burning Grounds based on an assumed 30-year additional facility lifetime. This portion of the evaluation focused on areas surrounding the Burning Grounds because transport by prevailing winds of non-combusted materials and/or combustion products may occur from

the Burning Grounds to surrounding areas where they may deposit to surface soils and surface water bodies. Based on the results of the ecological risk assessment (Appendix C) for terrestrial habitats, there were no exceedances of soil TRVs or background concentrations even using the most conservative exposure assumptions (e.g., 1-cm soil mixing depth, maximum point of deposition, screening inputs).

The ecological risk assessment also evaluated three water bodies: (1) the portion of the North Branch Potomac River directly adjacent to the Burning Grounds; (2) a pond located about 1.5-km west of the Burning Grounds; and (3) an emergent wetland located approximately 1-km north of the Burning Grounds. The ecological evaluation of the portion of the North Branch Potomac River directly adjacent to the facility indicated negligible risks to wetland and aquatic receptors, even using the most conservative exposure assumptions. For the pond and wetland, there were low-magnitude exceedances of surface water TRVs for lead (pond - HQ of 1.10; wetland - HQ of 1.00) when it was conservatively assumed that the water bodies were located at the maximum point of deposition. Risk estimates based on modeling at the actual water body locations indicated low to negligible risks. Risks to upper trophic level receptors at both the pond and wetland were negligible, even using the most conservative exposure assumptions.

Based on the results of the ecological evaluation, risks to ecological receptors inhabiting the terrestrial, wetland, and aquatic habitats surrounding the Burning Grounds are expected to be negligible from the continued operation of the Burning Grounds facility using the new burn pad configuration.

Meteorological Assessment

The weather in this area is characterized by warm summers and cold winters with a fairly even distribution of precipitation throughout the year. The mean annual temperature is approximately 53°F, with an average minimum daily temperature (January) of 20°F and an average daily maximum temperature (July) of 87°F. Average annual precipitation is about 33 in. and average annual snowfall is 28.1 in.. Prevailing winds are generally from the northwest at an average speed of 6.2 miles per hour (mph).

Potential Magnitude and Nature of Exposures of Humans or Environmental Receptors to Hazardous Waste Constituents

Based on the ecological conceptual model, complete exposure pathways in terrestrial habitats exist to surface soil within the Burning Grounds. Complete exposure pathways also exist to upper trophic level receptors that may feed on prey items in terrestrial habitats located within the Burning Grounds. There are no surface water bodies, wetlands, or other surface drainage features located within the boundaries of the Burning Grounds. Thus, there are no complete exposure pathways to surface water, sediment, or aquatic biota.

Based on the ecological conceptual model, complete exposure pathways exist to ground-level ambient air and surface soil (terrestrial habitats) in areas surrounding the Burning Grounds. Complete exposure pathways also exist to surface water and sediments in surface water bodies located adjacent to (North Branch Potomac River) and near (ponds and wetlands) the Burning Grounds. Complete exposure pathways also exist to upper trophic level receptors that may feed on prey items in these terrestrial, aquatic, and wetland habitats.

As discussed in the previous section, the potential magnitude of the risks to ecological receptors in terrestrial, wetland, and aquatic habitats on and surrounding the Burning Grounds is low to negligible.

The human health risk assessment (Appendix B) also evaluated potential future risks from continued operations of the Burning Grounds based on an assumed 30-year additional facility lifetime. This portion of the evaluation focused on areas surrounding the Burning Grounds because transport by prevailing winds of non-combusted materials and/or combustion products may occur from the Burning Grounds to surrounding areas where they may deposit to surface soils and surface water bodies. Complete exposure pathways may exist to offsite residents from dispersion of emissions to the air, and deposition of particulate emissions onto soil or surface water. Potential pathways of exposure considered in the risk assessment included inhalation of ambient air, and ingestion of soil, home-grown fruits and vegetables, ingestion of meat and milk products raised by subsistence farmers, and ingestion of fish.

The results from this risk assessment indicate that the total estimated risk is below 1×10^{-5} for all of the exposure scenarios evaluated. Noncancer hazard quotients (HQ) are less than 0.25. These results indicate that the emissions should not pose a significant risk to human health. Therefore, action does not appear warranted to prevent unacceptable cancer risks or unacceptable noncancer effects from emissions to the air associated with continued operations at the Burning Grounds. Characterization of health risks associated with chemical contaminants in emissions to the air from the Burning Grounds has been based on a series of conservative assumptions that tend to overstate rather than understate health risks. The results of the risk assessment, using these conservative approaches, is that the emissions are highly unlikely to pose significant human health risks to offsite human receptors. Based on the human health evaluation of current site conditions, the risk estimates do not warrant additional conditions or limitations on wastes to be burned at the Burning Grounds.

D-8d(2)(b) Performance Standards

The *Long-Term Monitoring Plan Site 1 – Burning Grounds*(CH2M HILL, 1998) defines the performance requirements established for groundwater and treatment plant effluent monitoring required under the CERCLA program. Substantive performance standards associated with the Part B permit will be incorporated into the ongoing monitoring under the CERCLA program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996). Any exceedances of established treatment plant effluent discharge limits will be addressed in accordance with the Discharge Requirements Letter issued for the CERCLA Program by the WVDEP Office of Water Resources (OWR).

If the groundwater remediation objectives under CERCLA are met while the Burning Grounds are still in operation, further groundwater monitoring will be conducted under RCRA.

D-8d(3) Protection of the Atmosphere

D-8d(3)(a) Environmental Assessment

Waste Characteristics and Volume, Including Potential for Emission and Dispersal of Gases, Aerosols, and Particulates

The following information provides an assessment of the potential for release to air. The waste characteristics and volume, including the potential for emission and dispersal of gases, aerosols, and particulates, is included to address 40 CFR 264.601(c)(1). Wastes burned at the Burning Grounds are materials from ABL resulting from the cleanup of P/E preparation equipment or trimmed from propellant castings. These wastes include NG, nitrocellulose (NC), AP, HMX, RDX, and various propellants and explosives. Propellants are grouped by their ingredients into categories. The categories are:

- Aluminized Composite Propellants (principally aluminum and AP)
- Non-Aluminized Composite Propellants (principally AP, ammonium nitrate, and polymer binder consisting of polybutadiene)
- Double Base Propellants (principally RDX or HMX, with lesser quantities of NG or NC, bismuth and/or tin, and/or 1 to 2 percent lead salts)
- Plastic-bonded Explosives (principally RDX or HMX, aluminum and various synthetic binder materials)

The wastes are RCRA characteristically hazardous due to their explosive nature and are designated as D003 wastes. Formulation information is provided in Section C. The composite propellants and warhead materials are classified as D003. Some propellants in the double base propellants category are likely to contain lead in concentrations above the listing criteria of 5 mg/1 TCLP). These double base propellants are designated as D008 in addition to D003. Equipment cleanup for double base propellants preparation necessitates the use of acetone. These cleanup wastes are identified as D003, D008 and F003 (acetone). Other materials that will be treated in pans via burning are those contaminated with P/E. These materials include inert materials grossly contaminated with P/E (e.g. paper, wood chips and scraps, plastics, cotton rags, cardboard, acetone and acetone/sawdust (50/50)).

Methylene chloride is stripped out of the nitroglycerine in a batch still prior to use in the propellant manufacturing process. Still bottoms are blended with saw dust to manage nitroglycerine shock sensitivity. This waste is called NG, Nitroglycerine or Lacquer Squares and carries RCRA codes D003 and F003.

Formulation information is provided in Section C, Attachment C-1.

The maximum throughput of wastes treated is 500,000 lb/year in any combination of each P/E material. The volumes of waste treated at the Burning Grounds are presented in Table D-2.

The maximum total represents the maximum amount of any P/E material that can be burned at the unit. This is a conservative throughput amount that assumes that all of the burn pans operate simultaneously at capacity. Representing the maximum waste volumes in

such a way allows for a conservative modeling of worst-case emissions. It also allows operating flexibility of the unit, capping the total throughput at 500,000 lb/year.

Air dispersion modeling of emissions to the air from the open burning of P/E wastes at the Burning Ground was conducted to provide the conceptual understanding of the nature, composition, and impact of the air emissions from the OB activities. The protocol followed for this air dispersion modeling, the emission factors used, and results can be seen in Appendix A.

Table D-3 presents the estimated annual air emissions of criteria pollutants from the facility, based on the worst case (by pollutant rather than waste) emissions using the maximum material throughput projections in Table D-2 and emission factors in Appendix A.

Table D-4 presents other estimated maximum annual air emissions from the facility, based on the worst case (by pollutant rather than waste) emissions using the maximum material throughput projections in Table D-2 and emission factors in Appendix A.

Tables D-5 and D-6 present the maximum estimated hourly and daily air emissions of criteria and non-criteria pollutants from the facility, based on the worst case (by pollutant rather than waste) emissions using these maximum hourly and daily material throughput projections (including constraints) and emission factors in Appendix A.

The results from the coarse, fine, and discrete-grid air dispersion modeling analysis are summarized in Appendix A. The National Ambient Air Quality Standards (NAAQS) were compared to the ground level concentrations calculated from air dispersion modeling to determine a plausible number of burns allowed per day for each compound. Results are only given for the time period for which NAAQS are applicable (i.e., 1-hr and 8-hr concentrations for CO). For the 1-hr, 8-hr, and 24-hr periods, the Reference Exposure Level (REL) and the USEPA's Reference Concentration (RfC) were used as the threshold limit for HCl emission concentrations because NAAQS are not applicable. Table 6-3 in Appendix A presents the highest ground level concentrations, receptor location, threshold limit, and indicates whether the concentration plus the background concentration exceeds the threshold.

The coarse and fine receptor locations are not limited to the surrounding topography beyond the ABL property fenceline. The highest emission concentrations may be located at receptors that are within the ABL property fenceline. The isopleths that are presented in Appendix A provide a visual representation of the concentration levels that extend beyond the property fenceline. It is evident from the isopleths that the dispersion of the pollutants is isolated within the 3-kilometer radius of the fine grid receptors. The bodies of water that are of concern (pond, wetland, and North Branch Potomac River), though not on the site, are located within the fine grid receptors. The exposure to these bodies of water is further discussed in the human health and ecological risk assessments.

Effectiveness and Reliability of Systems and Structures to Reduce or Prevent Emissions

To address 40 CFR 264.610(c)(2), the effectiveness and reliability of the systems and structures to reduce or prevent emissions are as follows. OB procedures are normally used to dispose of propellants. The following four parameters are statistically the same across all explosive items detonated and burned in an unconfined state: %C as COx, %CO/COx, %N

as NOx, and %NO/NOx. The emission products from most energetic materials destroyed by OB will be adequately represented by the following analytes: CO_2, CO, NO, NO2, total saturated hydrocarbons (e.g., ethane, propane, butane), acetylene, ethylene, propene, benzene, toluene, and particulate. (EPA, 1998).

Open burning at ABL is conducted on pans as discussed in Section D-8a. The steel burn pans contain crushed limestone that acts as a refractory material to maintain the integrity of the pan during the very high temperature burning operation. Wastes for a given propellant are spread across the top of the refractory material. The combustion process may, under some conditions leave small amounts of partially unburned material on the pan. After a cool down period, these solids are incorporated into the next burn operation. The pans are covered when not in use.

Operating Characteristics of the Unit

Based on the capacity of the burning pans, the maximum waste limit for the Burning Grounds is 1,355 lbs per burn. Up to nine burns per day may be conducted totaling 14,670 lbs per day for the facility.

Atmospheric, Meteorological, and Topographic Characteristics of the Unit and the Surrounding Area

To address 264.601(c)(4), the atmospheric, meteorological, and topographic characteristics of the unit and the surrounding area are presented.

ABL is located in the complex terrain of the Allegheny Mountains and experiences variations in seasonal climate from year to year. Summers are characterized by warm, humid, showery weather, but the heat is moderated by elevation and topography induced cloudiness. High temperatures in the summer can exceed 90°F. Winters are moderately severe with rapid changes. Snowfall may be frequent, and at times heavy. Snow seldom remains on the ground for extended periods of time. Glaze formation on trees, wires and the ground is rare. Cold spells alternate frequently with thaws, and snow is subject to frequent complete melting during the winter. Severe cold spells occur occasionally but they seldom last more than two or three days. A daily low of zero degrees or below can be expected several times annually.

Climatic characteristics of the area are associated with air currents rising and descending over the mountains. Orographic lifting of air can cause low clouds to persist when upslope winds prevail from the north-west quadrant in the winter. Downsloping winds from the Allegheny Mountains prevail with easterly or southerly winds, tending to diminish low cloud layers. Nocturnal radiation fog is common during the summer and the autumn but it usually dissipates rapidly after sunrise. Temperature inversions can occur as a result of strong nocturnal cooling and colder air collecting in the valleys. These inversions generally dissipate by mid to late morning.

The mean relative humidity for the area is generally about 70 percent each month, with the exception of the period July through September when the mean monthly relative humidity is about 80 percent. The mean annual Class A pan evaporation is estimated to be about 39 in.. The mean annual lake evaporation is about 29 in.

Prevailing wind direction varies with season, with winds being more southerly in the spring and summer, while being more west and northwesterly in the fall and winter. A wind rose, depicting the frequency distribution of wind speed and direction at the ABL Burning Grounds, is presented in Figure B-5.

By virtue of its location in the foothills of the Allegheny Mountains, the ABL facility is surrounded by hilly terrain. The North Branch Potomac River flows northward along the western boundary of the ABL plant property. The river then turns toward the east and forms the northern border of the plant boundary, ultimately turning back in a northerly direction as it flows toward the city of Cumberland, Md. The Burning Grounds, located on the flat terrain along the river are at an elevation of 705 ft amsl. Adjacent hilly terrain is found nearly all directions with the highest ridges, rising to 1,300 to 1,600 ft msl directly to the northeast and east. The slope is more gradual to the north and northwest; however. Ridge lines at altitudes nearing 1,000 ft amsl are observed in these directions as well.

Existing Air Quality, Including Other Sources of Contamination and Their Cumulative Impact on the Air

To address 264.601(c)(5), the existing air quality, including other sources of contamination and their cumulative impact on the air are as follows:

The site is in a rural area of Mineral County on the West Virginia - Maryland Border. It is bordered immediately to the north by Allegany County, Maryland and is west of the Virginia border. Both counties are characterized as sparsely populated, rural environments, with a limited number of other sources of pollutant emissions. The general area is largely agricultural with widely dispersed, light industry.

There are no air monitoring sites in Mineral County, WV. The state presently classifies Mineral County as attainment/unclassifiable. This classification means that insufficient air quality data exists to definitively classify the county attainment or non-attainment. There are no non-attainment areas proximate to the area. The entire State of Maryland is in attainment of all of the NAAQS with the exception of ozone. Ozone non-attainment areas in Maryland are in the central and eastern portions of the State. Emission inventory records for sources of criteria and hazardous pollutants in each county were requested from both West Virginia and Maryland environmental protection departments. A listing of reported contaminant emission sources within Mineral County, West Virginia is shown in Table D-7. Sources located in Allegany County, Maryland are summarized in Table D-8.

Background concentration data for criteria pollutants at the site were not available. A monitoring station was located in Allegany, Co. MD in 1997 and part of 1998. The SO_2 and PM_{10} data from this site was used for those background concentrations. In lieu of local data, background concentrations were estimated by using the averages of all available monitoring data in the state of West Virginia obtained from EPA's Aerometric Information Retrieval System (AIRS) database (http://www.epa.gov/air/data/ monvals.html) for the most recently available year. The year 1997 was used for lead and 2000 for CO. These data are presented in Appendix A, Table 6-1, and are considered to be rough, conservative estimates. These data are used to demonstrate conservative compliance with NAAQS. Modeling indicates no new violations of NAAQS will occur and that considerable "margin" exists between modeled concentrations and NAAQS.

Potential for Human Health Risks Caused by Exposure to Waste Constituents

As part of the human health risk assessment (Appendix B), annual average concentrations in ground-level air at the point of maximum impact outside the facility boundary, based on dispersion modeling, were used to estimate potential human exposures and health risks via inhalation. The results of this evaluation were that potential risks from inhalation exposures are highly unlikely to pose significant human health risks to offsite human receptors. Thus the potential magnitude of human health risks is negligible.

Potential for Damage to Domestic Animals, Wildlife, Crops, Vegetation, and Physical Structures Caused by Exposure to Waste Constituents

The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures from exposure to waste constituents in air is low. As part of the ecological risk assessment (Appendix C), concentrations in ground-level air (based on modeled annual average concentrations at the estimated point of maximum impact outside of the boundaries of the Burning Grounds) were compared to inhalation-based TRVs. There were no exceedances of inhalation-based TRVs from exposure to facility-related chemicals in ground-level air for chemicals with available toxicity data. Thus, the potential ecological risks associated with exposures via air (wildlife and vegetation) are negligible.

Potential exposures of crops or domestic animals to waste constituents in air are correspondingly low, and potential risks are considered negligible.

Potential Magnitude and Nature of Exposures of Humans or Environmental Receptors to Hazardous Waste of Hazardous Constituents

Non-combusted materials and/or combustion products from Burning Ground operations are released to the air where they may be transported to surrounding areas by prevailing winds. Based on the ecological conceptual model (Appendix C), complete exposure pathways exist to ground-level ambient air in areas surrounding the Burning Grounds (via inhalation for animals or foliar contact for plants).

As part of the ecological risk assessment (Appendix C), concentrations in ground-level air (based on modeled annual average concentrations at the estimated point of maximum impact outside of the boundaries of the Burning Grounds) were compared to inhalation-based TRVs. There were no exceedances of inhalation-based TRVs from exposure to facility-related chemicals in ground-level air for chemicals with available toxicity data. Thus, the magnitude of potential ecological risks is negligible.

As part of the human health risk assessment (Appendix B), annual average concentrations in ground-level air at the point of maximum impact outside the facility boundary, based on dispersion modeling, were used to estimate potential human exposures and health risks via inhalation. The results of this evaluation were that potential risks from inhalation exposures highly unlikely to pose significant human health risks to offsite human receptors. Thus the potential magnitude of human health risks is negligible.

D-8d(3)(b) Performance Standards

Design and Operating Requirements

The following operating constraints are proposed, the maximum waste limit for the Burning Grounds is 1,355 lbs per burn. Up to nine burns per day may be conducted, totaling 14,670 lbs per day for the facility. Maximum annual throughput of wastes treated shall be limited to 500,000 lbs. in any combination of each P/E material.

Open burning activities shall not occur when wind velocity exceeds fifteen (15) miles per hour, when electrical storms are in progress or imminent, or during rain events.

Detection and Monitoring Requirements

Ambient air monitoring of open burning activities at the Burning Grounds would be unsafe and impractical. Safety regulations prohibit personnel from entry into the Burning Grounds during operations. Remote location of ambient monitors would be problematic due to the variations in pan usage and wind directions. Therefore operating constraints based on conservative air models are proposed in lieu of monitoring.

Requirements for Responses to Releases

See Section F, Procedures to Prevent Hazards for a detailed discussion of release responses.

D-8e Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action [40 CFR 264.602]

D-8e(1) Elements of the Monitoring Program [40 CFR 264.602]

The *Long-Term Monitoring Plan Site 1 – Burning Grounds*(CH2M HILL, 1998) defines the performance requirements established for groundwater and treatment plant effluent monitoring required under the CERCLA program. Substantive performance standards associated with the Part B permit will be incorporated into the ongoing monitoring under the CERCLA program. This coordination of RCRA and CERCLA program requirements is in accordance with the ABL Federal Facility Agreement (January 1998) and USEPA guidance (USEPA, September 24, 1996). Any exceedances of established treatment plant effluent discharge limits will be addressed in accordance with the Discharge Requirements Letter issued for the CERCLA Program by the WVDEP Office of Water Resources (OWR).

If the groundwater remediation objectives under CERCLA are met while the Burning Grounds are still in operation, further groundwater monitoring will be conducted under RCRA.

D-8e(2) Air Monitoring Alternatives [40 CFR 264.602]

Ambient air monitoring of open burning activities at the Burning Grounds would be unsafe and impractical. Safety regulations prohibit personnel from entry into the Burning Grounds during operations. Remote location of ambient monitors would be problematic due to the variations in pan usage and wind directions. Emission factors were determined for the ATK waste stream in actual burn testing and through literature values. This rationale is contained in Section D-8d(3) and Appendix A. Other than the discontinuation of several waste types tested, there are no changes anticipated that would result in different emission factors.

D-9 Boilers and Industrial Furnaces (BIFs)

There are no hazardous wastes boilers or industrial furnaces at ABL; therefore, this section is not applicable.

D-10 Containment Buildings [40 CFR 260.10, 264.1100, 264.1101, 264.1102]

There are no containment buildings at ABL; therefore this section is not applicable.

Tables

TABLE D-1
Existing Surface Water Quality for Ecoregion 67, WVDEP, 1997

	DO mg/l	Conductivity (umhos or uohms/cm)	Temp C	TSS Mg/l	P Mg/l	PH Standard units	Ammonia Nitrogen mg/l	Nitrates + nitrates
Average	7.44	322	21.9	11	0.03	8	0.5	0.3
Minimum	2.7	85	15.5	5	0.02	7.3	0.5	0.7
Maximum	8.8	1391	27.8	23	0.04	8.8	0.5	0.53

TSS = total suspended solids

TABLE D-2
Projected Material Throughput at the Burning Grounds

Material	Max Annual Quantity, lbs
Al Composite Propellant	500,000
Composite Propellant	500,000
Double Base Propellant	500,000
PBX Explosive	500,000
Type 1 P/E Waste	500,000
Type 2 P/E Waste	500,000
MAXIMUM TOTAL	**500,000**

TABLE D-3
Estimated Annual Air Emissions of Criteria Pollutants

Criteria Pollutants	lbs/year	Tons/year
NO	2,000	1.00
NO_2	550	0.28
SO_2	700	0.35
PM_{10}	28,500	14.25
VOC*	2,221	1.11
CO	41,500	20.75

* Summation of speciated NMOC at the maximum of reported or ½ of detection levels

TABLE D-4
Estimated Maximum Annual Air Emission

Other Emissions[1]	lbs/year	Tons/year
HCl (gas)	14,300	7.15
1,3-Butadiene	82.50	0.041
1,6-Dinitropyrene	0.017	8.33E-6
1-Methylnaphthalene	1.20	6.00E-4
1-Nitropyrene	1.10	5.50E-4
2,4-Dinitrotoluene	0.017	8.33E-6
2,5-Diphenyloxazole	0.48	2.42E-4
2,6-Dinitrotoluene	2.90	0.001
2-Methylnaphthalene	1.20	6.00E-4
2-Nitroaphthalene	0.85	4.25E-4
4-Nitrophenol	0.017	8.33E-4
4-Nitrosodiphenylamine	0.017	8.33E-4
Benzo[a]anthracene	2.20	0.001
Benzene	550	0.28
Benzo[a]pyrene	0.017	8.33E-6
Biphenyl	2.35	0.001
Dibenz[a,h]anthracene	0.017	8.33E-6
Dibenzofuran	0.50	2.50E-6
Di-n-propyl adipate	0.68	3.42E-4
Dioxin	1.30E-05	6.50E-9
Diphenylamine	0.10	5.00E-5
Mesitylene	0.15	7.50E-5
Naphthalene	1.95	9.75E-4
n-Hexane	82.50	0.041
N-Nitrosodiphenylamine	0.017	8.33E-6
Phenanthrene	1.00	5.00E-4
Phenol	1.40	7.00E-4
Pyrene	0.017	8.33E-6
Resorcinol	3.00	0.002
Styrene	82.50	0.041
Thianaphthene	0.017	8.33E-6
Toluene	1,750	0.88
Tractin	0.017	8.33E-6
Xylenes	470	0.24
Aluminum	50,000	25.00
Lead	4,400	2.20
Zirconium	4,400	2.20
Copper	500	0.25
Iron	5.50	0.003

Note:

[1] Maximum of reported concentration or ½ of detection levels. Note that 0.00E+00 values represent rounding.

TABLE D-5
Estimated Maximum Hourly and Daily Air Emissions of Criteria Pollutants

Criteria Pollutants	Maximum, lbs./day	Maximum, tons/day	Maximum, lbs./hr	Maximum, tons/hr
NO	58.5	0.029	6.50	0.003
NO_2	16.2	0.008	1.80	0.001
SO_2	20.7	0.010	2.30	0.001
PM_{10}	836	0.418	92.9	0.046
VOC*	65.3	0.033	7.25	0.004
CO	1,218	0.609	135	0.068

* Summation of speciated NMOC at the maximum of reported or ½ of detection levels

TABLE D-6
Estimated Maximum Hourly and Daily Air Emissions of Non-Criteria Pollutants

Other Emissions[1]	Maximum, lbs/day	Maximum, tons/day	Maximum, lbs/hr	Maximum, tons/hr
HCl	419.6	0.210	46.62	0.023
1,3-Butadiene	2.42	0.001	0.27	1.34E-4
1,6-Dinitropyrene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
1-Methylnaphthalene	0.035	1.76E-5	0.004	1.95E-6
1-Nitropyrene	0.032	1.62E-5	0.004	1.80E-6
2,4-Dinitrotoluene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
2,5-Diphenyloxazole	0.014	6.98E-6	0.002	7.75E-7
2,6-Dinitrotoluene	0.085	4.25E-5	0.009	4.73E-6
2-Methylnaphthalene	0.035	1.76E-5	0.004	1.95E-6
2-Nitroaphthalene	0.025	1.24E-5	0.003	1.38E-6
4-Nitrophenol	4.50E-4	2.25E-7	5.00E-5	2.50E-8
4-Nitrosodiphenylamine	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Benzo[a]anthracene	0.064	3.22E-5	0.007	3.58E-6
Benzene	16.14	0.008	1.79	8.97E-4
Benzo[a]pyrene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Biphenyl	0.069	3.44E-5	0.008	3.83E-6
Dibenz[a,h]anthracene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Dibenzofuran	0.015	7.43E-6	0.002	8.25E-7
Di-n-propyl adipate	0.020	9.90E-6	0.002	1.10E-6
Dioxin	0.00	0.00	0.00	0.00
Diphenylamine	0.003	1.35E-6	3.00E-4	1.50E-7
Mesitylene	0.005	2.25E-6	5.00E-4	2.50E-7
Naphthalene	0.057	2.86E-5	0.006	3.18E-6
n-Hexane	2.42	0.001	0.27	1.34E-4
N-Nitrosodiphenylamine	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Phenanthrene	0.029	1.46E-5	0.003	1.63E-6
Phenol	0.041	2.05E-5	0.005	2.28E-6
Pyrene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Resorcinol	0.088	4.41E-5	0.010	4.90E-6
Styrene	2.42	0.001	0.27	1.34E-4
Thianaphthene	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Toluene	51.3	0.026	5.71	0.003
Tractin	4.50E-4	2.25E-7	5.00E-5	2.50E-8
Xylenes	13.79	0.007	1.53	7.66E-4
Aluminum	1,467	0.734	163	0.082
Lead	129	0.065	14.34	0.007
Zirconium	129	0.065	14.34	0.007
Copper	587	0.293	65.2	0.033
Iron	0.16	8.08E-5	0.018	8.98E-6

Note:

[1] Maximum of reported concentration or ½ of detection levels. Note that 0.00E+00 values represent rounding.

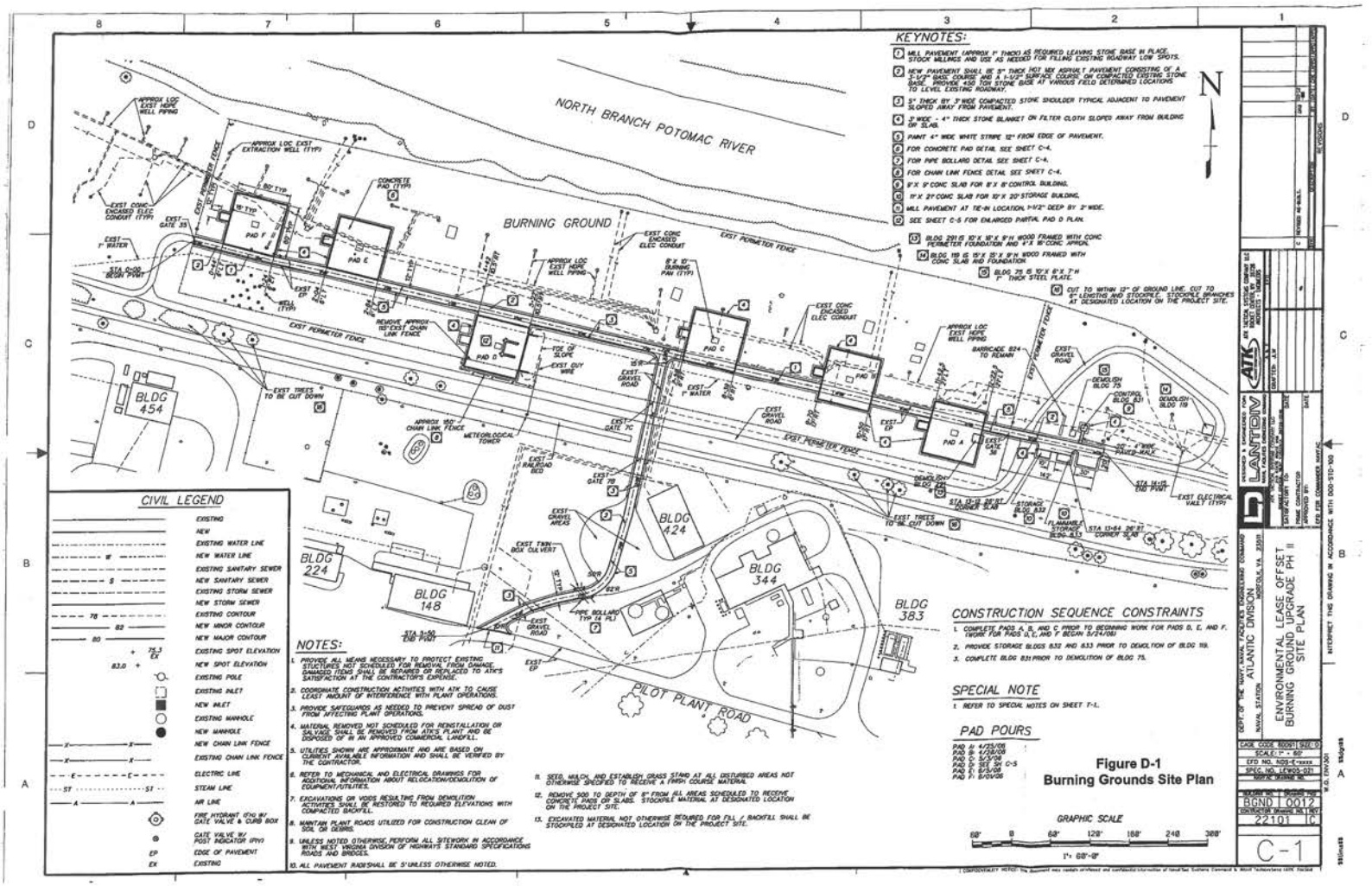
TABLE D-7
Air Emission Sources Located in Mineral County, West Virginia, within 10 Kilometers of the ABL Burning Grounds

Source Name	Pollutant	Emissions (tons/yr)
Kingsford Manufacturing	Particulate	91.2
	Sulfur dioxide	29.2
	Nitrogen dioxide	68.1
	Carbon monoxide	1.1
	Volatile organic Compounds	1.3
	Methyl alcohol	0.4
Westvaco Corporation	Particulate	148.0
	Sulfur dioxide	0.4
	Nitrogen dioxide	108.0
	Carbon monoxide	77.3
	Volatile organic Compounds	12.6
	Styrene	0.03
	Ethylene dichloride	0.0001
	Hexone	0.02
	Toluene	0.04
	Hexane	0.001
	Trichlorobenzene	0.002
	1,2,4-Trichlorobenzene	0.02
	Tetrachloroethylene	0.03
	Formaldehyde	0.3
	1,2-Dichloroethylene	0.006
	Carbon tetrachloride	0.0007
	Methyl disulfide	1.6
	Lactol spirits	0.15
	Methyl alcohol	0.02
	Acetone	1.4
	Chloroform	0.007
	Benzene	0.01
	Methyl chloroform	0.01
	Methyl chloride	0.07
	Methyl mercaptan	2.3
	Acetaldehyde	1.07
	Methylene chloride	0.0005
	Ammonia	17.0
	Hydrogen sulfide	1.09
	2-Butanone	0.16
	1,1,2-Trichloroethane	0.0004
	Trichloroethylene	0.0004
	Napthalene	0.5

TABLE D-8
Air Emission Sources Located within Allegany County, Maryland, that are within 10 Kilometers of the ABL Burning Grounds

Source Name	Location	Pollutant	Emissions (tons/yr)
Westvaco	Allegany County	Particulates	750
		Sulfur dioxide	19,883
		Nitrogen dioxide	5,030
		Carbon monoxide	139
		Volatile Organic Compounds	668
John Duckworth Coal Co.		Nitrogen dioxide	3
Westvaco Warehouse		Nitrogen dioxide	2

Figures


KEYNOTES:
1 MILL PAVEMENT (APPROX 1" THICK) AS REQUIRED LEAVING STONE BASE IN PLACE. STOCK MILLINGS AND USE AS NEEDED FOR FILLING EXISTING ROADWAY LOW SPOTS.
2 NEW PAVEMENT SHALL BE 3" THICK HOT MIX ASPHALT PAVEMENT CONSISTING OF A 2-1/2" BASE COURSE AND A 1-1/2" SURFACE COURSE ON COMPACTED EXISTING STONE BASE. PROVIDE 450 TON STONE BASE AT VARIOUS FIELD DETERMINED LOCATIONS TO LEVEL EXISTING ROADWAY.
3 5" THICK BY 3' WIDE COMPACTED STONE SHOULDER TYPICAL ADJACENT TO PAVEMENT SLOPED AWAY FROM PAVEMENT.
4 3' WIDE - 4" THICK STONE BLANKET ON FILTER CLOTH SLOPED AWAY FROM BUILDING OR SLAB.
5 PAINT 4" WIDE WHITE STRIPE 12" FROM EDGE OF PAVEMENT.
6 FOR CONCRETE PAD DETAIL SEE SHEET C-4.
7 FOR PIPE BOLLARD DETAIL SEE SHEET C-4.
8 FOR CHAIN LINK FENCE DETAIL SEE SHEET C-4.
9 9'X 9' CONC SLAB FOR 8'X 8' CONTROL BUILDING.
10 11' X 21' CONC SLAB FOR 10'X 20' STORAGE BUILDING.
11 MILL PAVEMENT AT TIE-IN LOCATION, 1-1/2" DEEP BY 2' WIDE.
12 SEE SHEET C-5 FOR ENLARGED PARTIAL PAD D PLAN.
13 BLDG 391 IS 10'X 10' X 9'H WOOD FRAMED WITH CONC PERIMETER FOUNDATION AND 4'X 8' CONC APRON.
14 BLDG 119 IS 15'X 15' X 8'H WOOD FRAMED WITH CONC SLAB AND FOUNDATION
15 BLDG 75 IS 12'X 8'X 7'H T1-11 SIDING WITH STEEL PLATE.
16 CUT TO WITHIN 12" OF GROUND LINE, CUT TO 6' LENGTHS AND STOCKPILE. STOCKPILE BRANCHES AT DESIGNATED LOCATION ON THE PROJECT SITE.
NORTH BRANCH POTOMAC RIVER
BURNING GROUND
EXIST PERIMETER FENCE
PAD A
PAD B
PAD C
PAD D
PAD E
PAD F
BLDG 454
BLDG 224
BLDG 148
BLDG 424
BLDG 344
BLDG 383
PILOT PLANT ROAD
EXIST GRAVEL ROAD
EXIST GRAVEL AREAS
EXIST RAILROAD BED
EXIST T'KEN BOX CULVERT
EXIST GATE 33
EXIST GATE 7C
EXIST GATE 7B
EXIST 1" WATER
EXIST CONC ENCASED ELEC CONDUIT
APPROX LOC EXIST HDPE WELL PIPING
APPROX LOC EXTRACTION WELL (TYP)
CONCRETE PAD (TYP)
EXIST TREES TO BE CUT DOWN
REMOVE APPROX 150' EXIST CHAIN LINK FENCE
APPROX 450' CHAIN LINK FENCE
METEOROLOGICAL TOWER
BARRICADE 624 TO REMAIN
EXIST GRAVEL ROAD
DEMOLISH BLDG 75
CONTROL BLDG 831
DEMOLISH BLDG 119
STA 14+15 END POINT
EXIST ELECTRICAL VAULT (TYP)
STA 13+54 BEGIN SLAB
STA 13+64 END SLAB
STA 12+18 BEGIN SLAB
STORAGE BLDG 833
FLAMMABLE STORAGE BLDG 843
CIVIL LEGEND
EXISTING
NEW
EXISTING WATER LINE
NEW WATER LINE
EXISTING SANITARY SEWER
NEW SANITARY SEWER
EXISTING STORM SEWER
NEW STORM SEWER
EXISTING CONTOUR
NEW MINOR CONTOUR
NEW MAJOR CONTOUR
EXISTING SPOT ELEVATION
NEW SPOT ELEVATION
EXISTING POLE
EXISTING INLET
NEW INLET
EXISTING MANHOLE
NEW MANHOLE
NEW CHAIN LINK FENCE
EXISTING CHAIN LINK FENCE
ELECTRIC LINE
STEAM LINE
AIR LINE
FIRE HYDRANT W/2 1/2" GATE VALVE & CURB BOX
GATE VALVE W/ POST INDICATOR (PIV)
EDGE OF PAVEMENT
EXISTING
NOTES:
1. PROVIDE ALL MEANS NECESSARY TO PROTECT EXISTING STRUCTURES NOT SCHEDULED FOR REMOVAL FROM DAMAGE. DAMAGED ITEMS SHALL BE REPAIRED OR REPLACED TO ATK'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
2. COORDINATE CONSTRUCTION ACTIVITIES WITH ATK TO CAUSE LEAST AMOUNT OF INTERFERENCE WITH PLANT OPERATIONS.
3. PROVIDE SAFEGUARDS AS NEEDED TO PREVENT SPREAD OF DUST FROM AFFECTING PLANT OPERATIONS.
4. MATERIAL REMOVED NOT SCHEDULED FOR REINSTALLATION OR SALVAGE, SHALL BE REMOVED FROM ATK'S PLANT AND BE DISPOSED OF IN AN APPROVED COMMERCIAL LANDFILL.
5. UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON CURRENT AVAILABLE INFORMATION AND SHALL BE VERIFIED BY THE CONTRACTOR.
6. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION ABOUT RELOCATION/DEMOLITION OF EQUIPMENT/UTILITIES.
7. EXCAVATIONS OR VOIDS RESULTING FROM DEMOLITION ACTIVITIES SHALL BE RESTORED TO REQUIRED ELEVATIONS WITH COMPACTED BACKFILL.
8. MAINTAIN PLANT ROADS UTILIZED FOR CONSTRUCTION CLEAN OF SOIL OR DEBRIS.
9. UNLESS NOTED OTHERWISE, PERFORM ALL SITEWORK IN ACCORDANCE WITH WEST VIRGINIA DIVISION OF HIGHWAY'S STANDARD SPECIFICATIONS ROADS AND BRIDGES.
10. ALL PAVEMENT RADII SHALL BE 5' UNLESS NOTED OTHERWISE.
11. SEED, MULCH, AND ESTABLISH GRASS STAND AT ALL DISTURBED AREAS NOT OTHERWISE SPECIFIED TO RECEIVE A FINISH COURSE MATERIAL.
12. REMOVE 300 TO DEPTH OF 6" FROM ALL AREAS SCHEDULED TO RECEIVE CONCRETE PADS OR SLABS. STOCKPILE MATERIAL AT DESIGNATED LOCATION ON THE PROJECT SITE.
13. EXCAVATED MATERIAL NOT OTHERWISE REQUIRED FOR FILL / BACKFILL SHALL BE STOCKPILED AT DESIGNATED LOCATION ON THE PROJECT SITE.
CONSTRUCTION SEQUENCE CONSTRAINTS
1. COMPLETE PADS A, B, AND C PRIOR TO BEGINNING WORK FOR PADS D, E, AND F. WORK FOR PADS D, E, AND F BEGAN 5/24/06)
2. PROVIDE STORAGE BLDGS 832 AND 833 PRIOR TO DEMOLITION OF BLDG 119.
3. COMPLETE BLDG 831 PRIOR TO DEMOLITION OF BLDG 75.
SPECIAL NOTE
1. REFER TO SPECIAL NOTES ON SHEET 7-1.
PAD POURS
PAD E: 4/25/06
PAD B: 4/28/06
PAD C: 5/3/06
PAD D: SEE SH. C-5
PAD E: 6/5/06
PAD F: 5/20/06
GRAPHIC SCALE
60' 0 60' 120' 180' 240 300'
1"= 60'-0"
Figure D-1
Burning Grounds Site Plan
DEPT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA. 23511
ENVIRONMENTAL LEASE OFFSET
BURNING GROUND UPGRADE PH II
SITE PLAN
CAGE CODE 80091 SEC'D
SCALE: 1" = 60'
EFD NO. NDS-*xxxx
SPEC NO. LEWOS-071
BGND 0012
22101 IC
C-1
ATK
ALLIANT TECHSYSTEMS INC.
LANTDIV
CONFIDENTIALITY NOTICE: This document may contain privileged and confidential information of Alliant Techsystems Inc. and/or its affiliates. ©2006 ATK

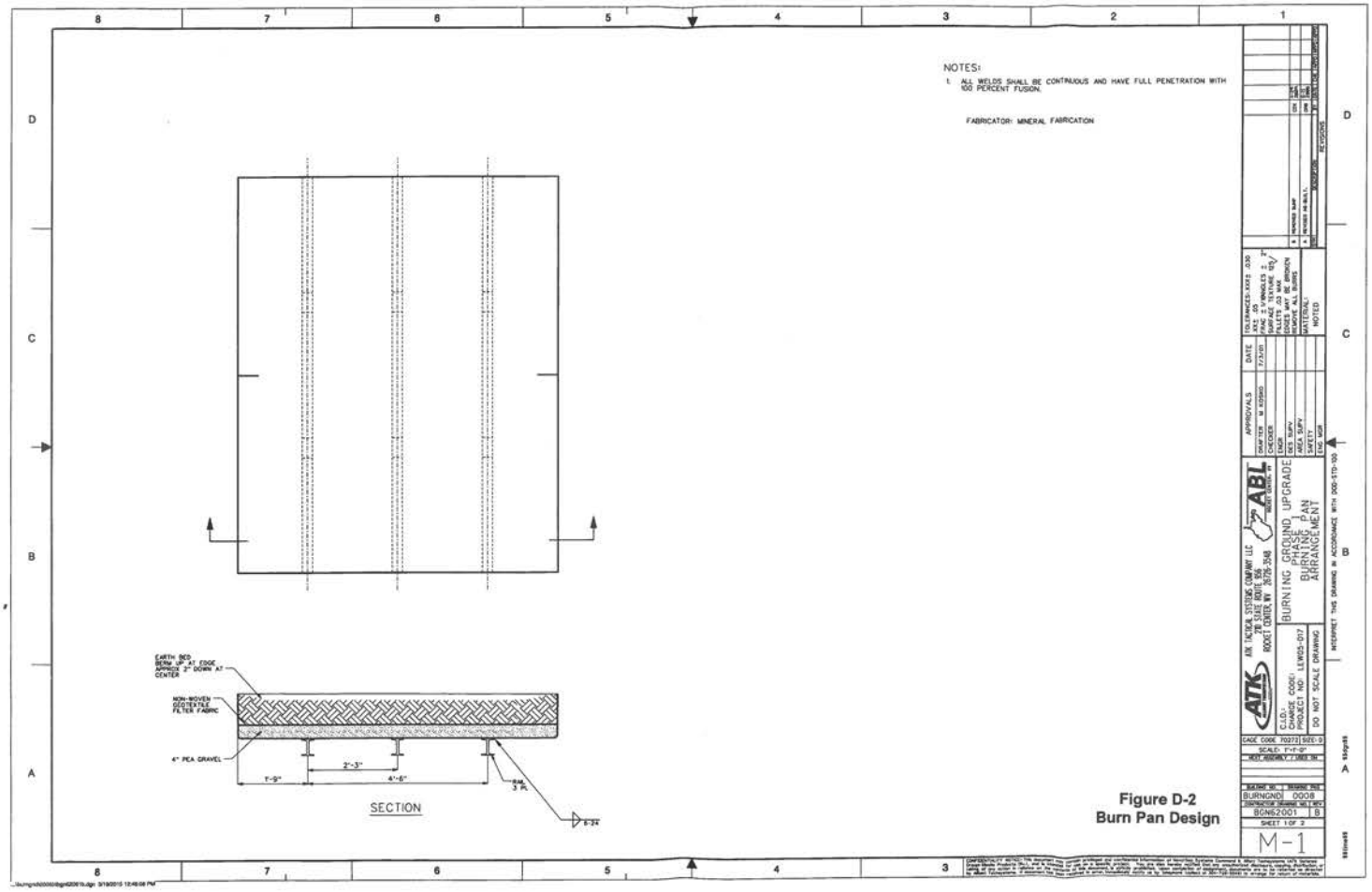


Figure D-2
Burn Pan Design

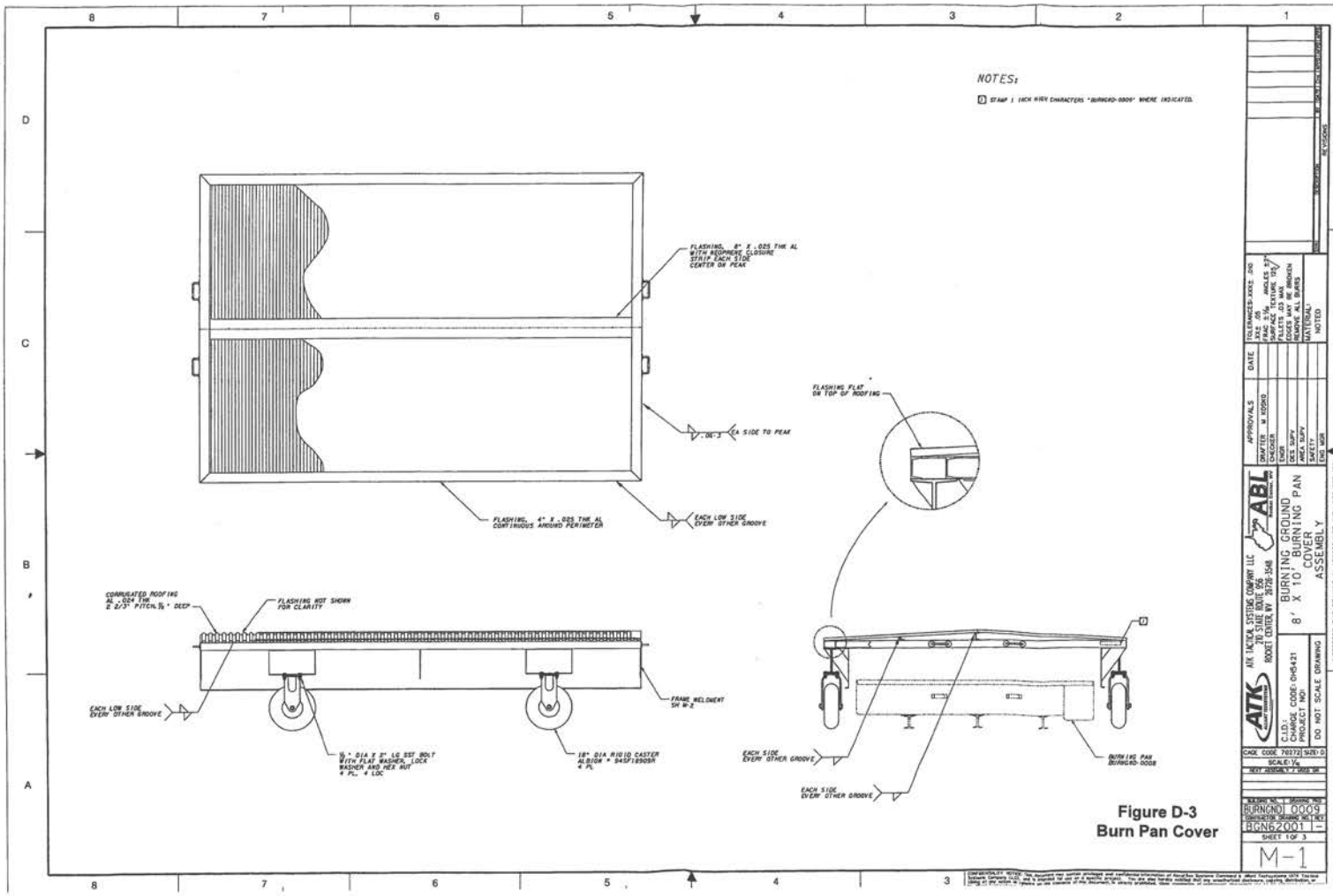


Figure D-3
Burn Pan Cover

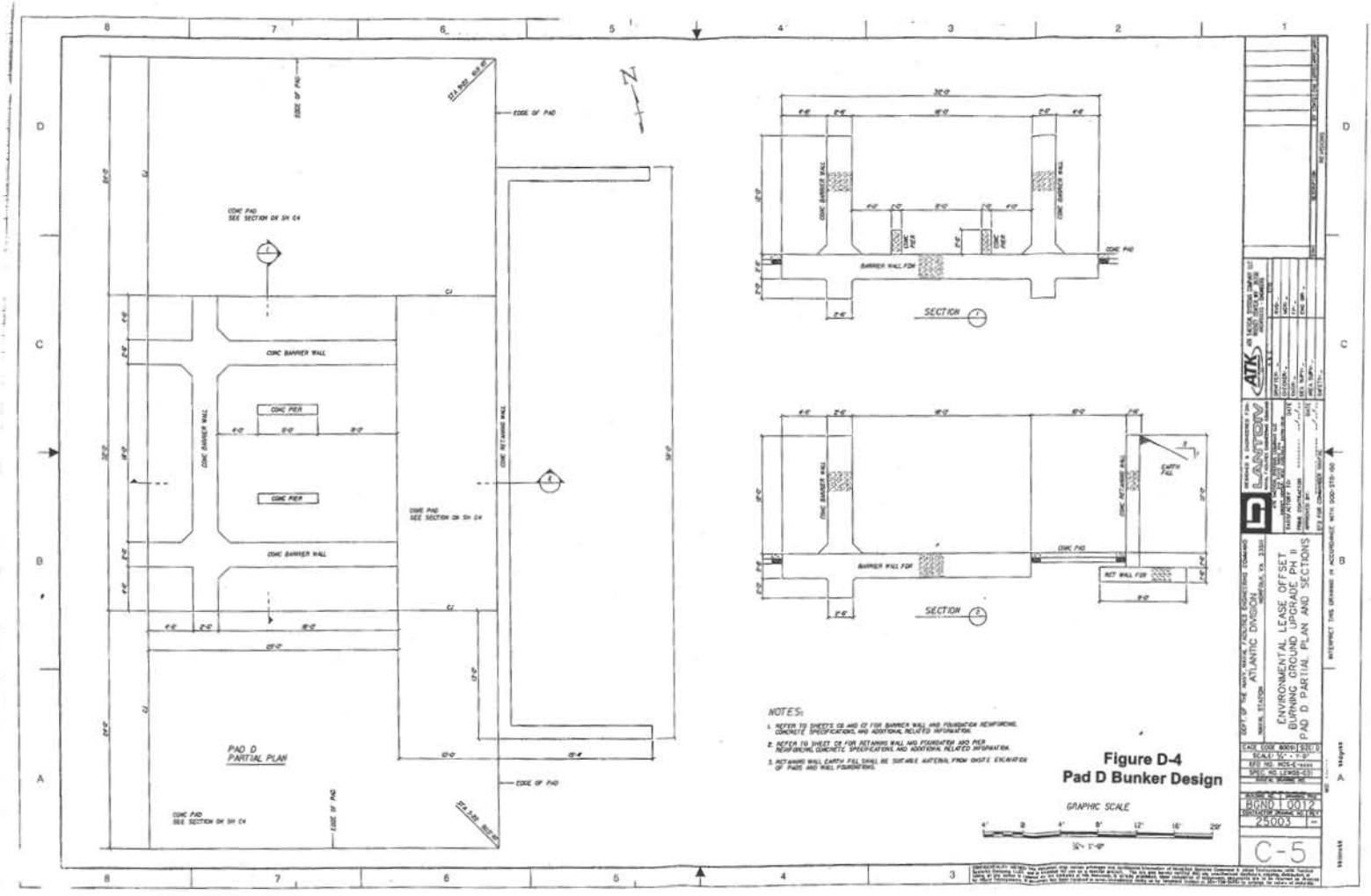


Figure D-4
Pad D Bunker Design

Permit Attachment 3

General Operating Procedure - Explosive Burning Grounds Operations

ALLIANT TECHSYSTEMS OPERATIONS
ROCKET CENTER, WV

GENERAL OPERATING PROCEDURE

TITLE	**PROPELLANT AND EXPLOSIVE WASTE TREATMENT**		
BUILDINGS	**00392, 00831**		
REVISION REQUESTED	**MINOR** ☐	**MAJOR** ☒	**NEW** ☐

REVISION	DATE	SUMMARY OF CHANGES	MADE BY	EFFECTIVITY
38	07/11/12	Added evacuation requirement for Bldg. 424 during Group 3 burns, returned treatment of initiators/igniters, moved Appendix 2 and Appendix 4 information into body of GOP, identified location of forms, consolidated wetting calculations table, updated video coverage directions, added MSDS information and general clarifications.	J. SHERTZER	08/03/12
39	10/31/12	Added clarification for Group 3 disposal of motors with nozzles but open forward ends; added propellant/explosive designations to Appendix 1.	J. SHERTZER	12/05/12
40	12/3/14	Updated format; added Exxsol D60 (Actrel replacement) and Fluke infrared camera; deleted Alinco; minor changes.	J. SHERTZER	12/11/14

This document consists of a cover page, Training Record, and pages 1 to 37 inclusive.

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

Insert OP-242 here

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

1.0 SCOPE

1.1. This document describes the safety rules and procedures required for treating propellant and explosive wastes, via open burning, at the ABL Burning Grounds.

2.0 REQUIREMENTS

2.1. The procedures indicated herein are those required for use by Missile Subsystems and Components.

2.2. In the case of an emergency, an unforeseen event, equipment malfunction, or lack of facilities which would necessitate the deviation from existing procedures, the supervisor shall take whatever action he deems necessary to bring the job to a safe stopping point or to complete the operation. If circumstances permit, an emergency procedure may be written by the supervisor to describe an unforeseen event or circumstance. This procedure shall be labeled EMERGENCY PROCEDURE and shall be assigned a number by the Document Control Group. It shall include an effective date and a termination date and necessary safety instructions. The procedure shall be approved by the Supervisor, Department Superintendent, or his representative, and a representative of the Safety Department. A copy shall be sent to the Document Control Group for the history file and shall be accompanied by a request to revise the procedure if the change is to be permanent. If circumstances do not permit, the action taken by the Supervisor should be documented after the fact, either by a Non Conformance (N/C) Record or by a procedure change.

2.3. All measuring devices that require calibration shall be inspected prior to an operation to verify that calibration intervals have not been exceeded.

3.0 APPLICABLE DOCUMENTS

3.1. The following documents form a part of this document to the extent specified:

Specifications	Description
N/A	

Publications	Description
GOP 1-00-01	ABL Safety Rules
GOP 1-00-47	Operations Division – Manufacturing Training
GOP 1-00-38	Waste Classification, Labeling, Storage, and Disposal

4.0 MATERIALS AND EQUIPMENT

Materials	Description*	SDS
Acetone	ASTM D329	0034
Actrel 1160L	Solvent, Exxon	0483
Exxsol D60	Solvent, Exxon	2619
Fuel, Diesel		0625
Kerosene		-
Match, Electric	Daveyfire, N Series (N32B)	1109
Igniter, Bag ($BKNO_3$ Pellets)	ATK	0019
Powder, Casting	ATK	2434 / 2467
Powder, Starting	ATK Red Dot (or equivalent)	1108
Powder, Black	Goex Inc.	0610

Equipment	Description*
Blanket, Fire	
Camera, Infrared	Fluke
Can, Safety	2.5-gallon and 5-gallon
Chocks, Wheel	
Coat, Lab	
Coveralls, Flame Resistant	
Glasses, Safety	UVEX Z87+
Hose, Garden	
Gloves	Latex or Vinyl
Gloves	Cotton or Canvas
Gloves	Leather

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

Equipment	Description*
Gloves	Cut resistant
Knife, Propellant Trimming	
Knife, Linoleum	AMPCO Non-Sparking
Machine, Blasting	Hand Generator Type
Shoes, Safety	Safety Toe, Conductive
Swatter, Fire	Council
Sweeper, Power	American-Lincoln Model 6150
Rake, polyethylene	
Wood Flour (Sawdust)	American Wood Fibers 204150

Note: All materials and equipment shown on applicable drawings are required.
* Unless otherwise indicated, source is commercial.

5.0 SAFETY

5.1. All safety precautions and practices established in the General Operating Procedures for the area in which this operation is performed shall be observed.

WARNING

IF AT ANY TIME DURING THIS OPERATION THERE SHOULD BE AN UNUSUAL OCCURRENCE OF A NATURE WHICH WOULD AFFECT THE SAFETY OF THE OPERATION OR THE QUALITY OR COST OF THE PRODUCT, THEN THIS OPERATION SHALL BE BROUGHT TO A SAFE AND ORDERLY STOP AND OPERATIONS SUPERVISION NOTIFIED.

5.2. Safety Data Sheets (SDS) for chemicals used in this procedure are available in SiteHawk. Section 9 provide details for accessing SiteHawk. All operating personnel are required to familiarize themselves with the information and safety requirements provided.

5.3. All hazardous materials which are transferred from their original container to other containers are to be labeled as to their contents per GOP 1-00-01.

5.4. The following explosive limits shall be posted in a conspicuous location and shall not be exceeded:

Table I
BURN PAD EXPLOSIVE LIMITS*

Pad ID	Explosive Class 1.1 Limits (lbs)
A	200
B	200
C	155
D	400
E	200
F	200

* Additional restrictions for specific materials defined in Section 6.5 of this UOP.

5.5. SAFETY EQUIPMENT

5.5.1. Conductive shoes, safety glasses and appropriate flame resistant outer-garments shall be worn by all personnel, within the fenced area of the Burning Grounds, when open burning operations are being conducted.

5.5.2. Flame resistant coveralls shall be worn by all personnel directly involved in the handling of explosives at the Burning Grounds. All other personnel (i.e. observers, visitors) shall wear flame resistant lab coats when present (within the fenced area) during operations. Flame resistant clothing shall be completely closed and fastened (front and sleeves) at all times. Flame retardant-treated canvas coats may be worn over the coveralls in cold weather.

5.5.3. Conductive shoes shall be checked for proper conductivity at one of the testers within the Energetics operating area and recorded on a daily basis.

5.5.4. Approved gloves shall be worn when operations present hazards to hands. Latex/vinyl gloves shall be used for all explosives except items that are rough or abrasive. Cotton/canvas gloves shall be used for rough or abrasive items. Cut resistant gloves shall be worn on the hand opposite the cutter any time cutting operations are performed on plastic bags or containers.

5.5.5. All tools used in conjunction with any operation that may involve direct contact with explosives shall be of a spark-resistant type and approved by supervision. Raking of explosives shall be kept to a minimum.

5.5.6. Faulty tools or equipment shall not be used and shall be reported to the supervisor immediately when this condition is noticed.

5.5.7. Fire blanket shall be readily accessible. (Stored in operator's vehicle.)

5.5.8. Building 832 shall be used to store equipment, tools, and flammable solvents (i.e., acetone) used at the Burning Grounds. Building 833 shall be used for storage of wood flour. No explosives or explosive wastes shall be stored in these buildings.

5.6. SAFETY PROCEDURES

WARNING

FAILURE TO STRICTLY MEET THE FOLLOWING REQUIREMENT MAY RESULT IN A HAZARDOUS CONDITION CAPABLE OF CAUSING INJURY OR DEATH.

5.6.1. Make sure the firing panel Safe-Arm switches are in the safe position with the key removed and both the key and the blasting machine in the possession of the operator before any Burning Grounds operations are performed.

5.6.2. Observe all personnel limits. Operations shall stop if limits are exceeded. The personnel limit within the fenced area of the Burning Grounds, when explosives are present, shall not exceed six (6).

5.6.3. Work areas shall be kept clean at all times. All waste and trash shall be kept cleaned up and kept in separate approved containers. Supervision is responsible for ensuring the cleanliness of Building 831, Building 832, Building 833, the Burning Grounds and the equipment used in treatment operations.

5.6.4. Any nitroglycerin spillage shall be cleaned up in accordance with GOP 1-00-03, and a Stress Incident report shall be submitted. Safety Department shall be notified.

5.6.5. All injuries shall be reported immediately to supervision and shall receive treatment at Medical Department.

5.6.6. All visitors are required to obtain clearance with supervision before entering the Burning Grounds area.

5.6.7. All food and drink, with the exception of water, shall be consumed only in the change house and in approved offices.

5.6.8. All explosive waste treatment shall be done only in the designated Burning Grounds area. Burning shall only be conducted on burn pans or other approved apparatus.

5.6.9. The ground water treatment facility (Building 424) shall be evacuated during a Group 3 burn. Personnel shall either go to Bldg. 446 Break Room or exit plant via Gate 5. Additionally, personnel at the boiler house (Building 344) shall be notified during a Group 3 burn and any non-ATK personnel in that area shall be evacuated.

5.6.10. Extreme caution shall be taken to mix only compatible types of explosives and/or chemicals (See Section 6.3.7; Table VI). Supervision shall be notified of any suspect materials before handling.

5.6.11. Starting powder and electric matches shall be stored in separate containers in the magazine located within the fenced area of the Burning Grounds.

5.6.12. Never conduct burns of materials that only detonate (e.g. detonators and leads), or are very sensitive like lead azide, on a pan, and then conduct subsequent burns with any explosives on the same pan. That pan must be exposed to two burns of non-detonable material (e.g. saw dust and solvents like acetone or kerosene) that will insure no detonable material was left behind after the initial burn.

6.0 OPERATIONS

6.1. PRE-STARTUP PREPARATION AND CHECKS

6.1.1. A Burning Grounds Facility Inspection Check Sheet (Form OP-024) shall be completed by the Burning Grounds operator prior to normal daily burning operations. Completed forms shall be submitted to the Environmental Department for filing.

Note: The Burning Grounds supervisor shall evaluate factors such as the treatment characteristics and quantities of specific wastes, wind velocities, drought conditions, and the availability of adequate water supply for fire suppression prior to commencing treatment operations. Based on that evaluation, the Burning Grounds supervisor will determine if support from the ABL Fire Brigade is needed during treatment operations. Requests for Fire Brigade support shall be made to the ABL Fireman (301-697-8516).

Note: Forms are located in Pilgrim or Pilgrim Viewer located on the ATK Intranet and can be accessed by query of form number. Additionally, the following URL can take you directly to Pilgrim Viewer - http://wv01svwebprd/pilgrim/ - and selecting View Documents, then Query.

6.1.2. Prior to using Pan F, ensure that all enclosure gates are opened to fullest extent possible and secured.

6.1.3. Roll mobile cover away from pan to the designated parking area on the west side of the pad and chock wheels.

6.1.4. If less than 24 hours has elapsed since a pan was last used, the pan shall be raked and thoroughly wetted down with water, using the infrared camera to scan the pan surface to assure that all areas of the pan are at ambient temperature. If evidence of hot spots remain utilize water to cool area, and rake again.

6.1.5. In all cases, inspect the pan to verify it is safe (no hot spots or smoldering residue) for next use.

6.1.6. Inspect the ground in the vicinity of the pan for possible presence of ejected material. Any unburned explosives shall be returned to the pan. Any non-energetic hardware shall be collected and disposed of properly.

6.1.7. Combustion residue shall be removed from a pan before the volume of residue becomes a hindrance to operations. Refer to the Burn Residue Removal Procedure (Appendix 3) for details.

6.1.8. Pans to be used for the treatment of RDX, HMX, and CL-20 must be cleared of bulky debris or residue that could hinder the proper spreading of these materials per 6.4.7 (Table VII) or create a confinement. Following the removal of any debris, the pan surface shall be leveled using the top edge of a polyethylene rake.

6.1.9. Prior to raking, confirm with supervision that no 'unusual', non-routine, or highly sensitive energetic materials have been treated on the pan. Refer to Section 6.8.2 for additional instructions.

6.2. WASTE COLLECTION

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

WARNING

ONLY GROUP 1 AND GROUP 2 REACTIVE WASTES IDENTIFIED IN TABLE II SHALL BE APPROVED FOR TREATMENT PER THIS PROCEDURE. GROUP 3 WASTES SHALL BE TREATED IN ACCORDANCE WITH AN APPROVED WASTE-SPECIFIC UOP. FAILURE TO STRICTLY MEET THIS REQUIREMENT MAY RESULT IN INJURY TO PLANT PERSONNEL AND/OR DAMAGE TO PROPERTY AND EQUIPMENT.

Table II. Approved Reactive Wastes Table

Group 1	Group 1 wastes are defined as those wastes that exhibit a very low potential to become propulsive during treatment and are approved for treatment at the ABL Burning Grounds **without any form of restraint or confinement**.
Group 2	Group 2 wastes are defined as those wastes that exhibit a low to moderate potential to become propulsive or create significant amounts of ejecta during treatment and are approved for treatment at the ABL Burning Grounds **only with the use of appropriate containment, confinement, or restraint**.
Group 3	Group 3 wastes are defined as those wastes that exhibit a high potential to become propulsive or have a potential to fragment during treatment and **shall only be treated in the ABL Burning Grounds bunker using an approved tie-down fixture and restraining device.** **The Groundwater Treatment Facility (Bldg. 424) shall be evacuated during a Group 3 burn, by either direct notification of personnel or by phone (304-726-4219). A separate UOP shall be required for each Group 3 configuration to be burned.**

6.2.1. All bulk explosives such as RDX, HMX, AP, AN, NC, CL-20, NG squares, and acetone squares shall be stored and transported in conductive or anti-static containers as approved by Safety/Hazards. Bags containing NG squares, acetone squares, or other wastes which contain liquid explosives shall be placed in rigid plastic containers which serve as secondary containment.

Note: Secondary containment is required for liquid explosives due to leakage potential of anti-static bags.

Note: Containers of scrap RDX, HMX, and CL-20 identified for treatment at the Burning Grounds shall not exceeded 50 lbs. Any containers exceeding 50 lbs. are to be rejected and supervision notified immediately.

WARNING

EXPLOSIVE CONTAINERS SHALL BE HANDLED GENTLY, AND SHALL NOT BE ROLLED, DROPPED, OR OTHERWISE HANDLED IN A MANNER WHICH CREATES AN IMPACT OR IMPINGEMENT POINT. FAILURE TO STRICTLY MEET THIS REQUIREMENT MAY RESULT IN A HAZARDOUS CONDITION CAPABLE OF CAUSING INJURY OR DEATH.

6.2.2. Preferential pick-up shall be given to Nitroglycerin (NG), BuNENA, BTTN, RDX, and HMX wastes. In no case shall NG, BuNENA or BTTN wastes be stored longer than 14 days prior to treatment. RDX and HMX scrap from Bldgs. 262 and 374 shall be treated within 30 days of generation.

6.2.3. Catocene and Butacene-containing wastes shall be picked up and burned during the next burn event.

6.2.4. There are four (4) scrap sheds in the Research Complex, Bldgs. 399, 416, 403A and 807.

6.2.4.1. Bldgs. 399 (behind Bldg. 406) and 416 (near Bldg. 400) are required by the area site plan, to be emptied daily. Those materials may be moved to Bldg. 403A (near Bldg. 395 (near Research Area Cure Bays) or Bldg 807 (near Bldg. 21).

6.2.4.2. The scrap in Bldgs. 403A and 807 (near Bldg. 21) will be emptied daily when weather conditions allow open burning operations.

6.2.5. All waste must be properly labeled with a red explosive waste ticket (Form OP-027). Improperly or incompletely labeled waste shall not be picked up. After waste has been picked up, forms may be discarded.

Note: Forms are located in Pilgrim or Pilgrim Viewer located on the ATK Intranet and can be accessed by query of form number. Additionally, the following URL can take you directly to Pilgrim Viewer - http://wv01svwebprd/pilgrim/ - and selecting View Documents, then Query.

6.2.6. Burning Grounds personnel shall not handle any questionable items until all uncertainties are resolved.

6.2.7. All explosives shall be transported to the Burning Grounds in closed secure containers or in sealed conductive or anti-static bags.

Table III. Group 1 Reactive Wastes Table

Waste Type	Waste Form(s)	Details/Description (examples)
Double-Base Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Bulk Propellant (Unconfined)	Blocks, Sections, Casting Powder, Starting Powder, etc.
	Propellant Fines and Cuttings	Chips, 'ribbons', shavings, slivers, flakes, etc.
	Samples (Cast/Containerized)	Cardboard Tubes, Freezettes, Sputum Cups
	Samples (Loose)	Lab Scrap ('Dog Bones', etc.)
	Propellant Contaminated Solvent in Sawdust	Acetone 'Squares'
		NG 'Squares'
Composite Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Bulk Propellant (Loose)	Blocks, Sections, etc.
	Propellant Fines and Cuttings	Chips, 'ribbons', shavings, slivers, flakes, etc.
	Samples (Loose)	Lab Scrap ('Dog Bones', etc.)
Hybrid Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Bulk Propellant (Loose)	Blocks, Sections, etc.
	Propellant Fines	
	Cuttings	
	Samples (Loose)	Lab Scrap ('Dog Bones', etc.)
Plastic-Bonded Explosive *(REFER TO ATTACHED PROPELLANTS TABLE)*	Bulk PBX (Loose)	Blocks, Sections, etc.
	Samples (Cast/Containerized)	Cardboard Tubes, Freezettes,
	Samples (Loose)	Lab Scrap ('Dog Bones', etc.)
	Solvent in Sawdust	Heptane 'Squares' (MAC W/H Only)
AN	Granular Powder	
AP	Granular Powder	<45 Micron
CL-20	Granular Powder	
HMX	Granular Powder	
NC	Wetted Fines	
RDX	Granular Powder	
Initiation Devices (Refer to Section 6.5.8)	Initiators, Igniters, Fuzes,	

Table IV. Group 2 Reactive Wastes Table

Waste Type	Waste Form(s)	Details/Description
Double-Base Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Phenolic Tubes	TP-1, TPC, Variations
	Metal Cased Units (other than motors)	2x4s
	Strands	Strand Bomb Test Samples
Composite Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Phenolic Tubes	TP-1, TPC, Variations
	Samples (Cast/Containerized)	Cardboard Tubes, Freezettes,
	Strands	Strand Bomb Test Samples
Hybrid Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Phenolic Tubes	TP-1, TPC, Variations
	Samples (Cast/Containerized)	Cardboard Tubes, Freezettes,
	Strands	Strand Bomb Test Samples
Plastic-Bonded Explosive *(REFER TO ATTACHED PROPELLANTS TABLE)*	Phenolic Tubes	TP-1, TPC, Variations

Table V. Group 3 Reactive Wastes Table

Waste Type	Waste Form(s)	Details/Description
Double-Base Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Motors w/o nozzles	Hellfire, TOW, Chaparral etc.
	Metal-Cased Grains	R&D units, test articles, etc.
	Gas Generator Grain	MK-74
Composite Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Motors w/o nozzles	AMRAAM, NLOS, LRLAP, AIM-9M/9X/RAM, etc.
	Motors with nozzles, but fully open forward ends	SFW, LRLAP, etc. (nozzle present, but open forward reduces operating pressure and resultant thrust.
	Metal and Composite-Cased Grains	R&D units, test articles, etc.
Hybrid Propellants *(REFER TO ATTACHED PROPELLANTS TABLE)*	Motors w/o nozzles	ESSM, etc.
	Metal and Composite-Cased Grains	R&D units, test articles, etc.

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

6.3. UNLOADING OF EXPLOSIVES

6.3.1. Approach the burn pan with the vehicle carrying explosives.

Note: Only one vehicle containing explosive waste shall be loaded or unloaded at one location at one time.

6.3.2. Park the vehicle no closer than 10 feet from the burn pan with the exhaust outlet directed away from the pan.

6.3.3. Turn off the vehicle ignition before explosives are loaded or unloaded.

6.3.4. Unload the containers of waste from the vehicle and place containers on the pan or pad next to pan.

WARNING

EXPLOSIVE CONTAINERS SHALL NOT BE ROLLED, DROPPED OR OTHERWISE HANDLED IN A MANNER WHICH CREATES AN IMPACT OR IMPINGEMENT POINT OR WHICH CREATES FRICTION. FAILURE TO STRICTLY MEET THIS REQUIREMENT MAY RESULT IN A HAZARDOUS CONDITION CAPABLE OF CAUSING INJURY OR DEATH.

6.3.5. Containers or materials exceeding a weight of 50 lbs. require a two-man lift or use of an approved lifting device.

Note: Scrap RDX, HMX, and CL-20 in drums, regardless of weight, must be handled by two operators.

6.3.6. All waste shall be unloaded and the vehicle moved a distance of 20 feet from the burn pan before the operator spreads or squibs any explosive waste.

6.3.7. Individual classes of P/E wastes shall be treated on separate pans unless otherwise noted in Table VI.

Table VI

EXPLOSIVE WASTE COMPATIBILITY MATRIX

WASTE TYPE	Aluminized Composite	Non-Aluminized Composite	Double-Base	PBX	Hybrid	NG Squares	Acetone Squares	RDX/HMX	AP	AN	NC	Gas Generators	Lab Waste	Cast Grains	Catocene/Ferrocene/Butacene	Initiating Devices (Dets, Leads, etc.)
Aluminized Composite	C	C	X	C	C	X	X	X	C	C	X	X	X			
Non-Aluminized Composite	C	C	X	C	C	X	X	X	C	C	X	X	X			
Double-Base[1]	X	X	C	X	X	C	C	X	C	C	X	C	X			
PBX	C	C	X	C	C	X	X	X	C	C	X	X	X			
Hybrid[2]	C	C	X	C	C	X	X	X	C	C	X	X	X			
NG Squares	X	X	C	X	X	C	C	C	C	C	X	X	X			
Acetone Squares	X	X	C	X	X	C	C	C	C	C	X	C	X			
RDX/HMX/CL20[3]	X	X	X	X	X	C	C	C	C	C	X	C	X			
AP	C	C	C	C	C	C	C	C	C	C	X	C	X			
AN	C	C	C	C	C	C	C	C	C	C	X	C	X			
NC	X	X	X	X	X	X	X	X	X	X	C					
Gas Generator (e.g., MK-74, MK-75)	X	X	C	X	X	X	C	C	C	C		C	X			
Lab Waste[4]	X	X	X	X	X	X	X	X	X	X		X	C			
Cast Grains														C		
Catocene/Ferrocene/Butacene[5]															C	
Initiating Devices (Dets, Leads, etc.)																C

C: Fully compatible wastes; may be intermixed.
X: Wastes may be placed on same pan; but may not be intermixed. Wastes must be physically separated with a trail of starting powder and casting powder connecting the wastes when required to propagate ignition.
▨: Incompatible materials; wastes must be placed on separate pans during treatment

1. Waste type includes min-smoke propellants (e.g., TOW, Hellfire)
2. Waste type includes HTPE/BuNENA (e.g., ESSM) and "Fuel Rich" formulations.
3. CL20 propellants must not be in the direct path of flame from adjacent wastes
4. Wastes generated in gram-quantities (from moisture analysis or similar procedures).
5. Waste type includes RAM igniter propellant. Propellant color is normally yellow-tan. Any discoloration suggests increased sensitivity to initiation.

6.4. EXPLOSIVES PLACEMENT AND SET UP OF IGNITION TRAIN

6.4.1. Before spreading and squibbing waste on the pans, secure the gate (i.e., Gate 7B) adjacent to the groundwater treatment plant (Bldg. 424) and ensure that the warning sign is in place.

6.4.2. The Burning Grounds operator shall get the necessary number of electric matches and/or bag igniters and sufficient starting powder and casting powder from storage and place in separate containers in the back of the operator's pickup truck. Electric matches shall not be transported in the same vehicle with waste explosives.

6.4.3. The vehicle shall be kept at a safe distance (minimum of 20 feet) with the ignition off during explosive spreading and squibbing operations.

6.4.4. Group 2 wastes (See Table IV) shall only be treated on Pan F located within a cage-type enclosure.

6.4.5. The operator shall open the waste containers and spread the waste on the pans immediately before the burn event is scheduled to begin. Plastic bags may be cut open using a non-sparking knife. A second operator or other authorized person shall observe the waste spreading from a safe distance.

Note: Explosives shall not be placed unless meteorological conditions indicate favorable conditions at the time of burning will be likely. The Plant Manager's designated representative (i.e. Operations Supervisor) is responsible for determining if favorable meteorological conditions will be likely. See Appendix 2 for instructions on checking weather conditions from the Burning Grounds computer.

6.4.6. Only one container shall be emptied at a time. Empty reusable containers shall be moved to a safe distance (minimum of 70 feet) before any burning is performed.

6.4.7. Spread bulk explosives to a depth not exceeding that specified in Table VII for the waste being spread. Use polyethylene rake for spreading. Spreading shall be done slowly and carefully to minimize impact and friction imparted to the explosive waste.

CAUTION: FAILURE TO SPREAD EXPLOSIVES TO THE DEPTHS PRESCRIBED IN TABLE VII ABOVE MAY RESULT IN DAMAGE TO PLANT PROPERTY OR EQUIPMENT.

Note: Following completion of the staging and/or spreading of waste materials on burn pans, *but prior to ignition train setup*, each pan shall receive a final inspection by Supervision to ensure that all wastes present are approved for treatment and that no unusual conditions exist.

Table VII

EXPLOSIVE PLACEMENT DEPTH REQUIREMENTS

MATERIAL	MAXIMUM DEPTH (inches)
Ultrafine AP (UFAP) (<1 micron)	0.5
Casting Powder	1
Casting Solvent in Sawdust, desensitized w/ TA (50/50)	1
Lacquer (NG) in Sawdust, desensitized w/ TA (50/50)	1
Nitramines (RDX/HMX), CL20	1
AP (<45 micron)	2
Nitrocellulose (NC)	2
Ammonium Nitrate (AN)	2
Propellant fines and cuttings	3
Propellant (from motor disassembly)	*

*Spread to the minimum depth practicable based on the physical characteristics (i.e., size, shape) of the individual propellant pieces

6.5. REQUIREMENTS FOR SPECIFIC WASTES

Note: Composite and hybrid propellant wastes approved for treatment under this procedure are highly energetic materials with a potential to exhibit unpredictable characteristics during treatment which may result in those materials being ejected from the burn pan. Close surveillance of these materials must be maintained during treatment to ensure any releases beyond the confines of the burn pad are immediately recognized and appropriate action taken.

6.5.1. When mixing AP or AN with other compatible P/E wastes (See Table VI), the AP and AN shall be placed on the pan first and spread to a maximum depth of 2 inches prior to adding other wastes to the pan.

6.5.2. RDX, HMX, and CL-20 shall not exceed 50 lbs. per pan and shall not exceed one inch in depth when spread.

WARNING

BOND SPRINKLING CAN TO BULK CONTAINER PRIOR TO TRANSFER OF LIQUIDS. FAILURE TO DO SO MAY RESULT IN A HAZARDOUS CONDITION CAPABLE OF CAUSING INJURY OR DEATH.

6.5.3. After spreading RDX, HMX, or CL-20 use sprinkling can to wet material to a minimum 15% (by weight) with Actrel, Exxsol, diesel fuel, or kerosene as determined by the Wetting Agent Calculations Table for Nitramine Desensitization found in Table VIII below. All fractional weights should be rounded up to the next highest number.

Table VIII. Wetting Agent Calculations Table for Nitramine Desensitization

Quantity of Nitramine* Pounds	WETTING AGENT					
	Actrel / Exxsol		Diesel		Kerosene	
	Gallons	Quarts	Gallons	Quarts	Gallons	Quarts
1 to 5	0.125	0.50	0.125	0.50	0.125	0.50
6	0.25	1.00	0.25	1.00	0.25	1.00
7 to 11	0.25	1.00	0.25	1.00	0.25	1.00
12	0.50	2.00	0.25	1.00	0.50	2.00
13 to 22	0.50	2.00	0.50	2.00	0.50	2.00
23	0.75	3.00	0.50	2.00	0.75	3.00
24 to 33	0.75	3.00	0.75	3.00	0.75	3.00
34 to 35	1.00	4.00	0.75	3.00	1.00	4.00
36 to 44	1.00	4.00	1.00	4.00	1.00	4.00
45 to 47	1.25	5.00	1.00	4.00	1.25	5.00
48 to 50	1.25	5.00	1.25	5.00	1.25	5.00

6.5.4. Fines shall be spread by carefully sprinkling into a layer, with the minimum raking possible.

6.5.5. Handling and placement of Catocene, Butacene, and GAP propellants shall be in accordance with established PPCB directives for these classes of wastes.

6.5.6. The NC shall be spread in a layer no thicker than 2 inches. Raking and spreading of NC shall be kept to a minimum. Only non-sparking tools shall be used to spread NC. The NC shall be squibbed immediately after it is spread, and shall not be disturbed after it is spread and squibbed.

6.5.7. Reusable transport containers shall be cleaned by wiping the container as clean as possible with clean white rags dampened with acetone. Contaminated rags shall be burned with the acetone squares or NG squares. When no longer serviceable, the cleaned container shall be shipped off-site as explosive contaminated waste.

6.5.8. Igniters, initiators, fuzes, and other electro-explosive devices (EEDs) shall not be burned with other bulk explosives or propellants. The aforementioned articles shall be treated as Group 1 waste in an approved stainless steel basket with cover in accordance with the following procedure:

6.5.8.1. Place one or more acetone squares on a burn pan and prepare squares for treatment as prescribed in Section 6.4.

6.5.8.2. Arrange EEDs, etc. within the stainless steel basket in such a way as to allow separation between individual articles (see Figure 1). Place cover on basket.

6.5.8.3. Position the basket on top of the acetone squares.

Figure 1. Use of Basket for Initiators/Igniters

6.6. FIRING LINE PREPARATION

Note: Ignition trains shall not be set up unless meteorological conditions indicate favorable conditions will be likely at the time of burning.

Note: Preparation of the firing train (i.e., squibbing) shall be done by one operator under observation by a second operator or other authorized person at a safe distance. Any other persons shall retire to the control building (Bldg. 831) or a vehicle during final set-up of pans.

Note: Bag igniters *shall not* be used for initiating nitramines (e.g., RDX, HMX, CL-20) or any other P/E wastes that are determined to be 'highly sensitive' per Hazards or PPCB.

6.6.1. With firing line leads at least ten feet from pan, touch the leads of the firing line together to ensure that no voltage potential exists in the line. Connect leads of match or bag igniter to leads of firing line by twisting wires together. Carefully place the head of the match or bag igniter near the waste in the pan. A small piece of propellant waste may be used to help hold the electric match and firing line in position on the burn pan.

6.6.2. When using an electric match as the ignition source, place starting powder or casting powder train on the pan to connect the explosive waste to the electric match.

6.6.3. When using Pan F to treat Group 2 wastes, close and secure all enclosure gates after squibbing.

6.6.4. Repeat steps 6.6.1 and 6.6.2 for each successive pan, working from the one farthest from the firing bunker to the one closest to the firing bunker.

6.6.5. Return to the control building, Bldg 831.

6.7. VIDEO RECORDING OPEN BURNING OPERATIONS

Note: The video equipment shall be controlled by supervision. There are three cameras active at the burning grounds – Cameras 1 and 2 are Pan, Tilt and Zoom (PTZ) cameras, while Camera 3 is fixed.

6.7.1. All open burning shall be recorded using the Burning Grounds closed-circuit video system with digital video recorder (DVR).

6.7.2. Turn on the monitor. Select File->User Login. [Username: admin, Password: 1111]

6.7.3. Verify proper date and approximate time is shown at the bottom of monitor display. Figure 2 below defines the meaning of symbols at the bottom of monitor display.

Icon	Description
	Indicates the DVR is locked. Note) to unlock, right click on the live view screen and click on Unlock.
	Audio mute. To select audio output, press the Audio after click the right button on the mouse. Toggle from Audio 1 to 4, mute in order. .
	Indicates that alarm is set. To set the alarm function, press the Alarm button on the front panel.
	Indicates that alarm output is activated.
	Event indicator. When there is an event (motion recording, video loss, HDD fail, S.M.A.R.T), this icon will be highlighted.
	Indicates that a network client is connected to the DVR.
	Indicates that sequencing mode is enabled.
2009/04/14 17:23:40	Displays the current date and time.
RC: ALL	Remote control ID display. If a remote ID is not set, the message "ALL" is displayed.
 15%	Displays the amount of recording on the hard disk from 0-99%.
	Indicates that HDD is recycled.
	Continuous recording in progress.
	Manual recording in progress. To set the Manual recording mode, press the Record button on the front panel.
	Motion alarm recording in progress.
	Sensor recording in progress. (Only for D8RS and D16RS model.)

Figure 2. Monitor Screen Icon Definitions

6.7.4. Set-up of the DVR is by menu driven commands. Menu can be accessed from any window by clicking the right mouse button to obtain drop-down menu (see Figure 3).

6.7.5. Verify the record is set for continuous record, 30-day loop. This can be verified by clicking the right mouse button, selecting SETUP and then selecting STORAGE or RECORD options. The proper settings are shown in Figure 4 and Figure 5.

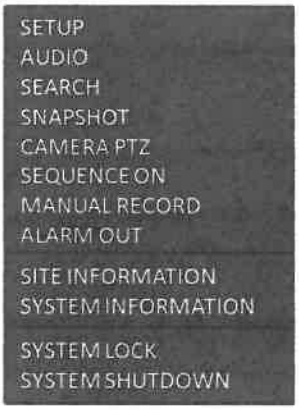


Figure 3. Right Click Drop-down

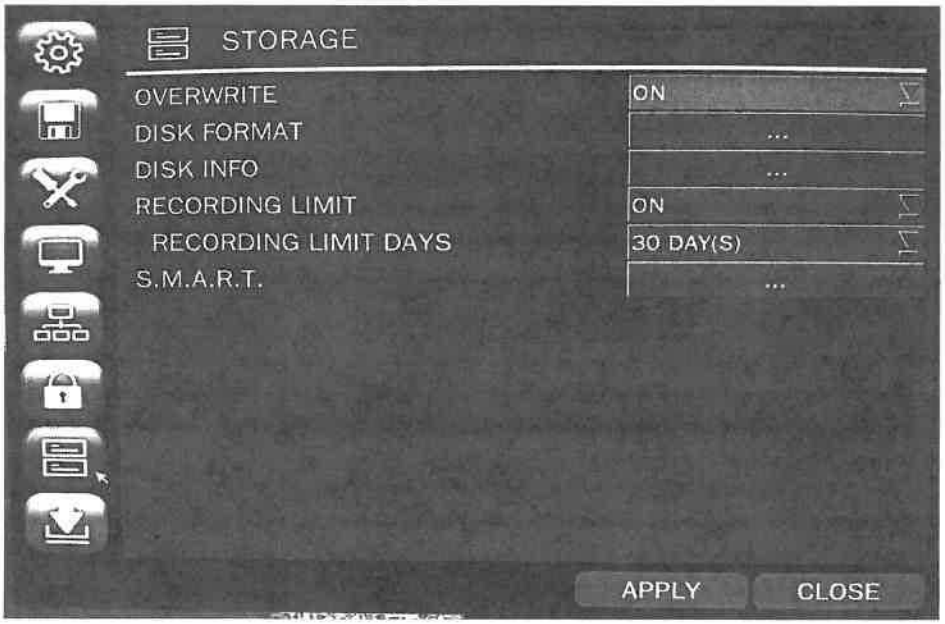


Figure 4. Screen Display, Storage Menu

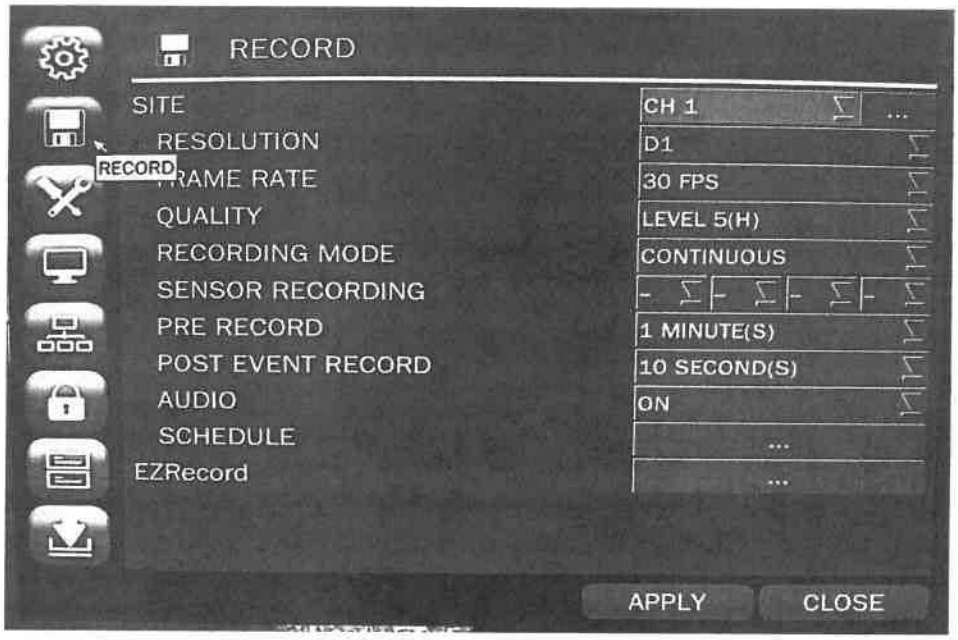


Figure 5. Screen Display, Record Menu

6.7.6. Immediately prior to the ignition of a burn pan, direct at least one of the two PTZ cameras towards the pan to be ignited by clicking right mouse button in window, selecting CAMERA PTZ and following options in Figure 6. Pans A, B, and C shall be recorded using the camera located near the east end of the Burning Grounds. Pans D, E and F shall be recorded using the camera located near the west end of the Burning Grounds.

Item	Description
INITIALIZE	Initialize the PTZ settings of the selected camera
PAN/TILT	Select PAN/TILT using the ▲▼◀ and ▶button, then press **SEL**. Adjust the tilt (UP/DOWN)/pan (LEFT/RIGHT) position using the ▲▼◀and ▶ buttons.
ZOOM/FOCUS	Select ZOM/FOCUS using the▲▼◀ and ▶ buttons, then press **SEL**. Adjust the zoom (UP/DOWN)/ focus (LEFT/ RIGHT)position using the ▲▼◀ and ▶ buttons.
OSD	Select OSD to enter the menu. Control keys are Right, Left, UP, Down, Select, Far (REW KEY), and Near (FF KEY). Press the **ESC** button to return to the previous menu. Press the **PTZ** button to close the OSD menu.
AUTOSCAN	Press the right key(▶) to start auto scan. Press the left key (◀) to stop auto scan.
PRESET	Select PRESET, then press the left key(◀). A number input window will appear. Set the number (3digits) using the number key, then press the SEL to confirm the preset number for the current position. Press the right key (▶) and enter the number (3digits) to go to the preset position.
TOUR	Select TOU and press the right (▶) key. A number input window will open. Select a number (1digit) using a number key, then press SEL to start the tour. Press the left (◀) key to stop the tour. Preset the number of the tour group in the OSD menu.
NUMBER	For the TOUR and PRESET menu.
	Press ESC to return to the main menu

Figure 6. Pan, Tilt and Zoom Menu Options and Directions

6.7.7. Following waste ignition, continue to observe the pan, pad and adjacent area until all waste has been completely treated or until burning reaches a steady state. Ensure that the grassy area bordering the pad is free of fires that may have resulted from the ejection of material from the pan.

6.7.8. After the burn is complete you can play back the video using the Search option from the drop down menu (see Figure 3). From this window you can search by Timeline (calendar), Event, First Time (oldest record), Last Time (most recent record), Specific Time (date/time), Archive or Log List (see Figure 7 and command details below). Positioning mouse at the bottom of the screen during playback enables the status bar for typical DVR commands - Play/Pause, Fast Forward, Rewind, etc. (see Figure 8). At any time, select PREVIOUS to return to prior menu.

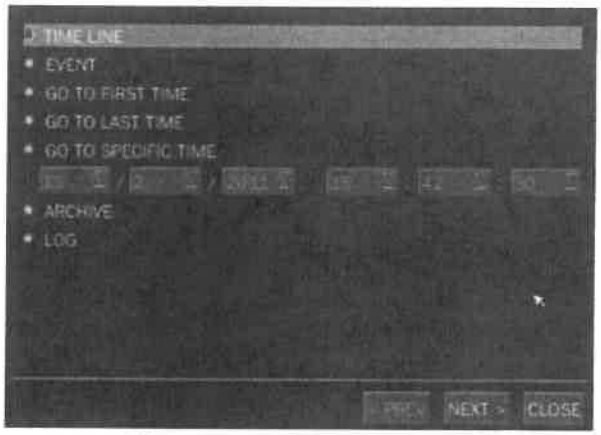


Figure 7. Search Screen

6.7.8.1. Timeline – Select TIME LINE and NEXT. Click date on calendar, select NEXT, drag red time indicator to desired hour and select PLAY.

6.7.8.2. Event – Select EVENT and NEXT. Scroll to desired record and select PLAY.

6.7.8.3. Go to First Time – Select GO TO FIRST TIME and NEXT.

6.7.8.4. Go to Last Time – Select GO TO LAST TIME and NEXT.

6.7.8.5. Go to Specific Time – Select GO TO SPECIFIC TIME, adjust date and time and select NEXT.

6.7.8.6. Archive List – Select ARCHIVE and NEXT. Scroll to desired record and select DISPLAY.

6.7.8.7. Log List – Select LOG and NEXT. Scroll to desired record and select NEXT.

Button	Description
◀◀	Press to rewind the footage of multi channel • 1x, 2x, 4x, 8x,16x, 32x speeds for D4RS/D4WRS • 1x, 2x, 4x, 8x,16x for D8RS/D8WRS • 1x, 2x, 4x, 8x for D16RS/D16WRS Single Channel backward playback speed 1x, 2x, 4x, 8x, 16x, 32x, 64x
–◀	Jump/Step backward. The playback position moves 60 seconds backward.
▶/II	Press to play or pause recorded video.
▶–	Jump/Step forward. Playback position moves 60 seconds forward.
▶▶	Press to fast-forward the footage of multi channel • 2x, 4x, 8x,16x, 32x speeds for D4RS/D4WRS • 2x, 4x, 8x,16x for D8RS/D8WRS • 2x, 4x, 8x for D16RS/D16WRS Single Channel forward playback speed 1x, 2x, 4x, 8x, 16x, 32x, 64x
¼ ▶	Slow Mode play. Forward playback speed x1/4, x1/2
	Press to backup the video.
	Return to the previous menu screen, search window, or exit from the Menu.

Figure 8. Playback Controls

6.7.9. Video can be backed up onto USB drive or hard drive during playback of the recorded video. In playback mode, press the BACKUP button to launch. Select media type – Still Image or AVI (movie) – and follow menu prompts for media type, channel, duration.

6.8. PROHIBITIONS AND LIMITATIONS

WARNING

ONLY GROUP 1 AND GROUP 2 REACTIVE WASTES IDENTIFIED TABLE II SHALL BE APPROVED FOR TREATMENT PER THIS PROCEDURE. GROUP 3 WASTES SHALL BE TREATED IN ACCORDANCE WITH AN APPROVED WASTE-SPECIFIC UOP. FAILURE TO STRICTLY MEET THIS REQUIREMENT MAY RESULT IN INJURY TO PLANT PERSONNEL AND/OR DAMAGE TO PROPERTY AND EQUIPMENT.

6.8.1. Classes of wastes may only be intermingled or mixed as indicated in Table VI.

6.8.2. Following the treatment of any waste determined to be 'unusual' or non-routine, the pan used for treatment of that waste shall be 'decontaminated', as deemed necessary based on the characteristics of the waste, to remove any potentially remaining residual prior to that pan's reuse. Decontamination shall be performed under the direction of Safety/Hazards and/or PPCB.

WARNING

FAILURE TO THOROUGHLY DECONTAMINATE A BURN PAN SURFACE FOLLOWING THE TREATMENT OF 'UNUSUAL', NON-ROUTINE, OR HIGHLY SENSITIVE ENERGETIC MATERIALS COULD CREATE A HAZARDOUS CONDITION ON THE PAN DURING SUBSEQUENT USE THAT MAY RESULT IN AN UNEXPECTED, VIOLENT REACTION CAPABLE OF CAUSING SERIOUS INJURY OR DEATH.

6.8.3. Propellant contaminated rags, bags, cardboard, lever packs, boxes, paper and other material shall not be burned if contamination is less than 10%. These materials must be disposed of as explosive contaminated waste per GOP 1-00-38.

6.8.4. Nitramine/alcohol contaminated plastic and muslin bags shall not be burned. These materials must be disposed of as explosive contaminated waste per GOP 1-00-38.

6.8.5. Fiberboard drums or lever packs used for transporting RDX, HMX, or CL-20 to the Burning Grounds shall not be treated on the same pan as bulk RDX, HMX, or CL-20.

6.8.6. Drums or lever packs that contain sufficient RDX, HMX, CL-20 residue to require treatment may be placed on pans containing other reactive wastes but shall not be intermixed with those waste to be 'flashed out' or treated.

6.8.7. The treatment technique for unusually configured cast motors or grains, one-of-a-kind articles, or newly introduced scrap units shall be reviewed by the PPCB or have specific approval of the Operations Vice President prior to disposal.

6.9. IGNITION AND BURNING OF PANS

6.9.1. The Plant Manager's designated representative (i.e., Operations Supervisor) shall verify that meteorological conditions (See Section 7.1) are within tolerances to permit burning.

6.9.2. The Burning Grounds Operator shall insert blasting machine plug into control panel receptacle.

6.9.3. Insert key into Safe-Arm switch and turn switch to the arm position

6.9.4. Supervision shall ensure proper video coverage per Section 6.7

6.9.5. Upon direction from Supervision, fire electric match by twisting handle on blasting machine and energizing firing circuit. Verify ignition on video monitor.

6.9.6. Remove blasting machine plug from receptacle, turn Safe-Arm switch to safe.

6.9.7. The Plant Manager's designated representative (i.e. Operations Supervisor) shall record ignition time by pan on the Open Burning Weather Record form (Form OP-025). The Burning Grounds operator shall record the waste type and weight by pan on the Burning Grounds Treatment Summary Form (Form OP-026).

Note: Forms are located in Pilgrim or Pilgrim Viewer located on the ATK Intranet and can be accessed by query of form number. Additionally, the following URL can take you directly to Pilgrim Viewer - http://wv01svwebprd/pilgrim/ - and selecting View Documents, then Query.

6.9.8. When burning of waste is complete or reaches a steady state, repeat steps 6.9.1 through 6.9.7 for each pan to be burned. Pans shall be burned in the order specified by the Operations Supervisor. Burning shall begin with the pan located most downwind, and shall proceed in order with the most upwind pan being burned last. The only exceptions to this sequence are pans containing flammable liquid residue, which shall be ignited first. Pans shall not be fired simultaneously.

6.9.9. Following ignition of the last pan, disconnect blasting machine from the firing circuit control pan, turn Safe-Arm switch to safe and remove key, and return blasting machine to its carrying case and lock.

6.9.10. When burning on all pans is complete or reached a steady state the Burning Grounds operators shall drive through the Burning Grounds to verify completion of burn and absence of any burning or smoldering material or grass outside the pan.

Note: Personnel shall not leave the vehicle or approach a pan for a period of 16 hours after the burn event unless responding to an unusual event or condition, preparing for another burn event, placing covers on pans, or directed to do so by supervision.

6.9.11. Once burning is complete and pans have cooled, return covers to pans.

6.9.12. Close and lock the gates to the Burning Grounds before leaving the area.

7.0 HANDLING UNUSUAL EVENTS

7.1. UNSUITABLE METEOROLOGICAL CONDITIONS

7.1.1. If one or more pans cannot be burned due to improper meteorological conditions, the electric matches shall be disconnected from the firing lines and removed to storage. The gates to the Burning Grounds shall be locked and Security shall be notified of the presence of unburned explosives at the Burning Grounds.

7.1.2. The following meteorological conditions, as determined by the ABL Weather Station, are unsuitable for open burning activities:

7.1.2.1. 15-Minute Average Wind velocity greater than 15 MPH (6.7 MPS)

7.1.2.2. Wind gusts exceeding 15 MPH (6.7 MPS) at the time of each pan ignition.

7.1.2.3. Electrical storm(s) in progress or imminent/approaching

7.1.2.4. Measurable rainfall as reported by ABL Weather Station data collection

7.2. MISFIRES

7.2.1. Should ignition of a pan fail to occur the following steps shall be taken:

7.2.1.1. Check connections at blasting machine and at firing circuit control panel. Operate the blasting machine several times to confirm that pan will not ignite.

7.2.1.2. Burn any/all remaining pans prior to making further investigation or corrective action.

7.2.1.3. Disconnect the blasting machine from the firing circuit control panel, turn Safe-Arm switch to safe, and remove key.

7.2.1.4. After burning the last pan, and a *minimum* of thirty (30) minutes after the misfire, approach the pan where the misfire occurred.

7.2.1.5. Proceed to the pan and examine the electric match to determine if it fired. If the match fired, the problem is in the ignition train (match did not ignite starting powder or flame did not propagate through starting powder). If match did not fire, the match may be defective or there may be either a short or break in the firing line.

7.2.1.6. Connect a new match and reposition firing line on pan. Inspect powder train and apply additional starting powder if necessary. Leave the discarded match on the pan to be burned.

7.2.1.7. Return to the control building and follow ignition procedures in Section 6.9.

7.2.1.8. If misfire occurs after second ignition attempt, suspend operations pending further investigation of the firing circuit and blasting machine.

7.3. GRASS FIRES

7.3.1. In the event of a grass fire, the following steps shall be taken:

7.3.1.1. Notify the Fireman on duty (301-697-8516) that a grass fire has occurred at the Burning Grounds and request that he remain on stand-by until further notice. If unable to establish contact with the Firemen, notification should be made to Security at 304-726-5310 or dial 5400 from a land line phone.

7.3.1.2. Allow the pan from which the grass fire was initiated to burn down.

7.3.1.3. The Operations Supervisor in attendance shall determine if grass fire can be safely extinguished with personnel present, taking into consideration the size and location of the fire, the location of any other explosives on adjacent pans, and fire spread factors such as wind speed, grass height and grass dryness. If safe to do so, proceed to step 7.3.1.4. Otherwise, proceed to step 7.3.1.6.

7.3.1.4. Extinguish grass fire utilizing rubber tampers (fire beaters) and water hoses as necessary.

Note: At least one person shall observe fire-extinguishing efforts from a safe distance and be ready to summon help if necessary.

7.3.1.5. Notify the Fireman (or Security) that the grass fire was successfully extinguished by Burning Grounds personnel.

7.3.1.6. If a grass fire cannot safely be extinguished by personnel present under the conditions in existence, summon the Plant Fire Brigade at 304-726-5310.

Note: Fire Protection personnel shall be apprised of fire conditions and locations and quantities of explosives on adjacent pads, if any, before entering Burning Grounds.

7.4. EXPLOSIVE REACTIONS

7.4.1. If an explosive reaction occurs, the following steps shall be taken:

7.4.1.1. Account for all personnel and report accounting to Supervision or Management.

7.4.1.2. Notify Security at 304-726-5310 (or dial 5400 from a land line phone) of event, providing details, post-event situation and presence of any unburned explosives on adjacent pads. Request Fire Brigade and Medical Assistance response as needed.

7.4.1.3. Assist responders as appropriate.

7.4.1.4. Archive video coverage of burn event by exporting from digital video recorder to secure location on the LAN or by copying to a CD.

8.0 HOUSEKEEPING AND CLEAN-UP OPERATIONS

8.1. Combustion residue and standing water shall be removed from pans as required as specified in Step 6.1.7.

8.2. Reusable transport containers (e.g., plastic garbage cans used to transport NG and acetone squares) shall be cleaned by wiping the container as clean as possible with clean white rags dampened with acetone. Rags shall be disposed of as explosive contaminated waste. When no longer serviceable, the cleaned container shall be disposed of as explosive contaminated waste.

8.3. Grass within the Burning Ground shall be kept cut so that its height does not exceed 6 - 8 inches.

8.4. The pad around each burn pan shall be inspected, as soon as safely practical following each burn, for untreated wastes that may have been ejected from the pan during treatment. Untreated propellants or energetic materials shall be returned to the pan for further treatment.

8.5. Ash, burn residue, and non-reactive debris shall be regularly removed from the pads by either manual means or through use of a power sweeper.

9 SAFETY DATA SHEET(S)

Safety Data Sheets (SDSs) and corresponding summary sheets can now be viewed electronically through SiteHawk using the following link in SharePoint:

- http://msportal/ablnet/organization/safety/Pages/SDS.aspx
    - Login Name: ATK
    - Password: msds
    - Company ID: 1510

APPENDIX 1
ABL Propellants Table
ABL Propellants Table as of 9/16/11

Double-Base Propellants (XLDB)	
Program Name	**Propellant ID**
A-3/E-3	RPD 380
ADATS	
Brimstone	GEU
Chaparral	GJA
CKEM	GIB, GIC, GIN
Hellfire	GEU
JAGM	GJG
KEM	
LOSAT	GCY-1
MPIM/Predator	GCV
Pintle Nozzle	GFW, GIK
TOW	GCV
MK-74	EDD-2
MK-75	POU-2

Composite Propellants (CTPB-Al, HTPB, HTPB-Al)	
Program Name	**Propellant ID**
AGM-130	MG-834A
AIM-9M, AIM-9X, RAM	MG-841
AIM-9M/9X/RAM Igniter	MG-842
AMRAAM R/M	MG-844
ANSR	SAA-139A
DPRM	SAA-158
DSWS	SAA-150
Excalibur	
EMMD	SAA-159
GMLRS	SAA-148A
JASPAR (Booster)	KAA-131
JASPAR (Sustainer)	KKA-106
LRLAP	SAA-146
Maverick R/M	SAO-119
NLOS	SAO-109/123A
Oriole	SAA-144
RATO	SAA-137
SFW	SAO-114
Sparrow (Booster)	KAA-131
Sparrow (Sustainer)	KKA-106
Term KE	SAA-136A

PROPELLANT AND EXPLOSIVE WASTE TREATMENT

Composite Propellants (CTPB-Al, HTPB, HTPB-Al) - CONTINUED	
Program Name	**Propellant ID**
Titan Igniter	SAA-137

Hybrid Propellants (HTPE/BuNENA)	
Program Name	**Propellant ID**
ESSM (Inner Grain)	GHE
ESSM (Outer Grain)	GHT-20
Mongoose	GIM

Plastic-Bonded Explosives (PBX)	
Program Name	**Propellant ID**
AMRAAM P3I W/H	PBXN-110
AMRAAM W/H	PBX(AF)-108
GMLRS WH	PBXN-109/110
MAC W/H	PBXN-112
MAPAM / M1061	PBXN-110
Maverick Warhead	PBX(AF)-108
MK-125	PBXN-110

APPENDIX 2

ABL Weather Station Operating Instructions

ABL Weather Station
OPERATING INSTRUCTIONS

Activating Real-Time Monitoring [i.e., Current Conditions display]

1. Log on to PC using your personal User Name (Employee ID) and Password

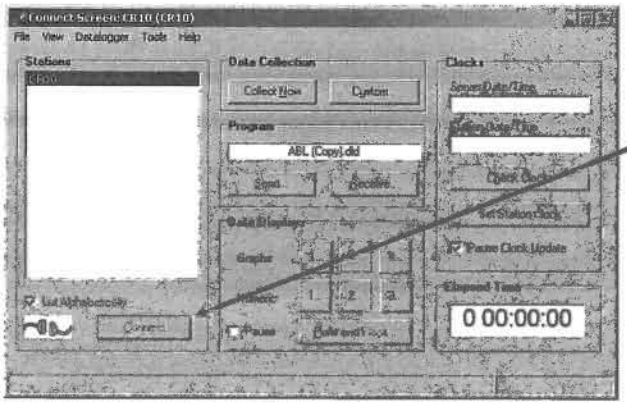
2. Double-click on LoggerNet Icon

LoggerNet.lnk

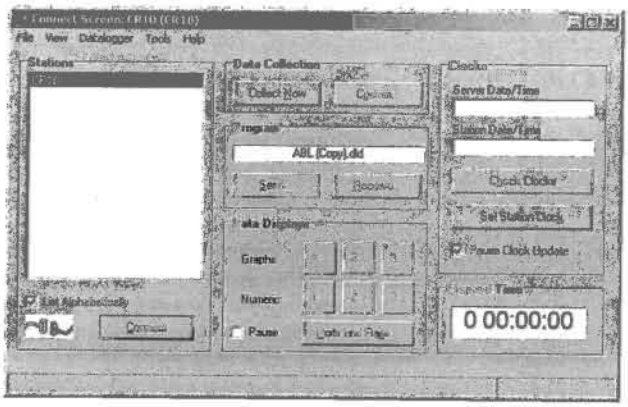
3. Click on [Connect] button on the LoggerNet Toolbar to bring up Connect Screen.

Note: Actual LoggerNet Toolbar display may vary.

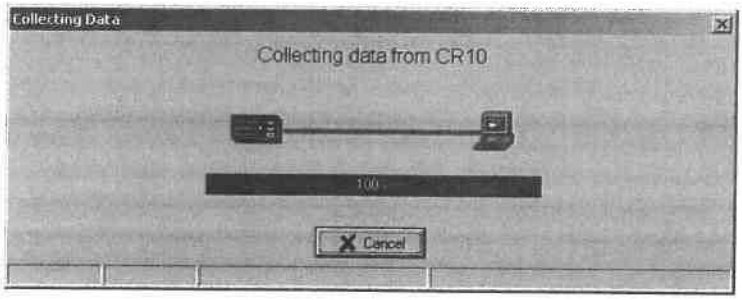
4. Click on the [Connect] button to establish connection with weather station.



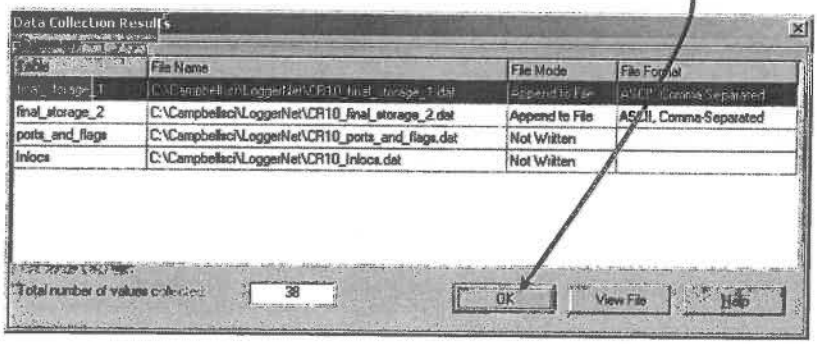
5. After connection is established, click on [Collect Now] button.



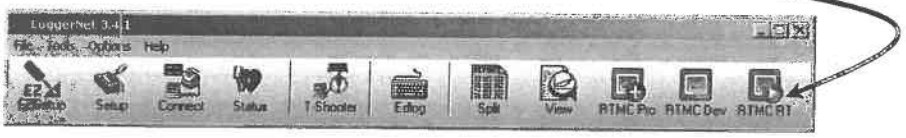
6. Allow data to download from the weather station



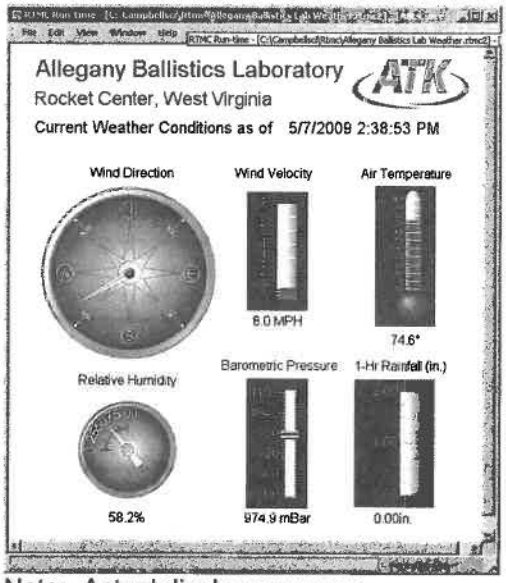
7. Click [OK] to clear Data Collection Results window.



8. Click on [RTMC RT] button on LoggerNet Toolbar.



9. ABL *Current Weather Conditions* window will open.

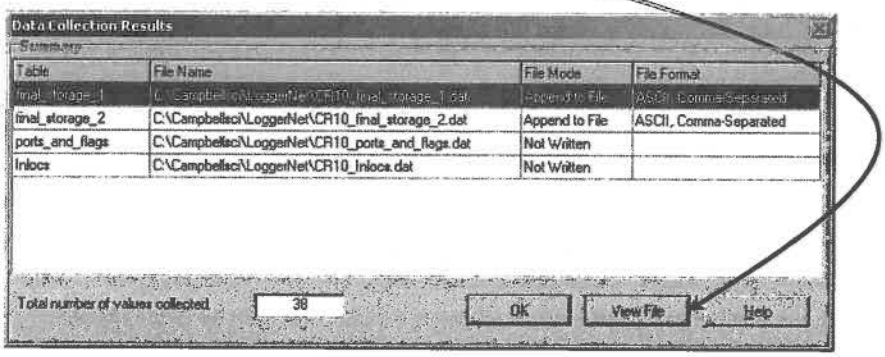


Note: Actual display may vary.

Retrieving 15-Min. Average Data

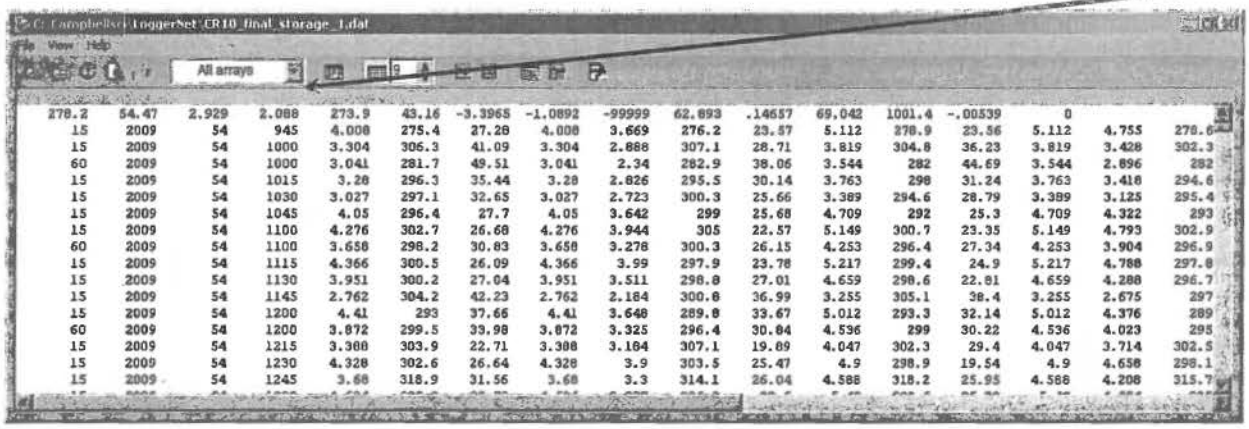
10. Establish connection with weather station and download data following Steps 1-6 above.

11. After data has been collected, Data Collection Results window will appear. Click on [View File] button to open data file.



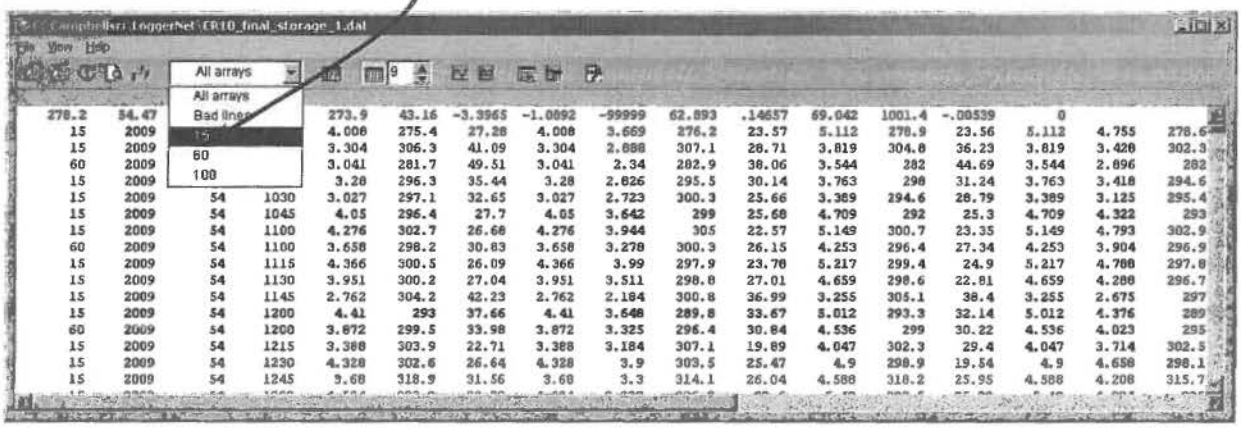
PROPELLANT AND EXPLOSIVE WASTE TREATMENT

12. To view the most recent 15-min. average data, click on the array selection drop-down menu.



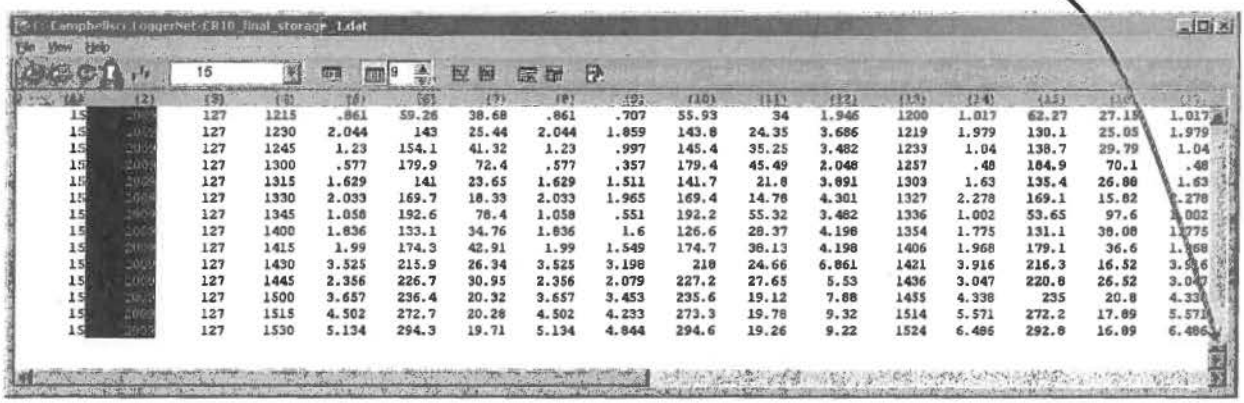
278.2	54.47	2.929	2.088	273.9	43.16	-3.3965	-1.0892	-99999	62.893	.14657	69.042	1001.4	-.00539	0	
15	2009	54	945	4.008	275.4	27.28	4.008	3.669	276.2	23.57	5.112	278.9	23.56	5.112	4.755	278.6
15	2009	54	1000	3.304	306.3	41.09	3.304	2.888	307.1	28.71	3.819	304.8	36.23	3.819	3.428	302.3
60	2009	54	1000	3.041	281.7	49.51	3.041	2.34	282.9	38.06	3.544	282	44.69	3.544	2.896	282
15	2009	54	1015	3.28	296.3	35.44	3.28	2.826	295.5	30.14	3.763	298	31.24	3.763	3.418	294.6
15	2009	54	1030	3.027	297.1	32.65	3.027	2.723	300.3	25.66	3.389	294.6	28.79	3.389	3.125	295.4
15	2009	54	1045	4.05	296.4	27.7	4.05	3.642	299	25.68	4.709	292	25.3	4.709	4.322	293
15	2009	54	1100	4.276	302.7	26.68	4.276	3.944	305	22.57	5.149	300.7	23.35	5.149	4.793	302.9
60	2009	54	1100	3.658	298.2	30.83	3.658	3.278	300.3	26.15	4.253	296.4	27.34	4.253	3.904	296.9
15	2009	54	1115	4.366	300.5	26.09	4.366	3.99	297.9	23.78	5.217	299.4	24.9	5.217	4.788	297.8
15	2009	54	1130	3.951	300.2	27.04	3.951	3.511	298.8	27.01	4.659	298.6	22.81	4.659	4.288	296.7
15	2009	54	1145	2.762	304.2	42.23	2.762	2.184	300.8	36.99	3.255	305.1	38.4	3.255	2.675	297
15	2009	54	1200	4.41	293	37.66	4.41	3.648	289.8	33.67	5.012	293.3	32.14	5.012	4.376	289
60	2009	54	1200	3.872	299.5	33.98	3.872	3.325	296.4	30.84	4.536	299	30.22	4.536	4.023	295
15	2009	54	1215	3.388	303.9	22.71	3.388	3.184	307.1	19.89	4.047	302.3	29.4	4.047	3.714	302.5
15	2009	54	1230	4.328	302.6	26.64	4.328	3.9	303.5	25.47	4.9	298.9	19.54	4.9	4.658	298.1
15	2009	54	1245	3.68	318.9	31.56	3.68	3.3	314.1	26.04	4.588	318.2	25.95	4.588	4.208	315.7

13. Select the 15-Minute array.



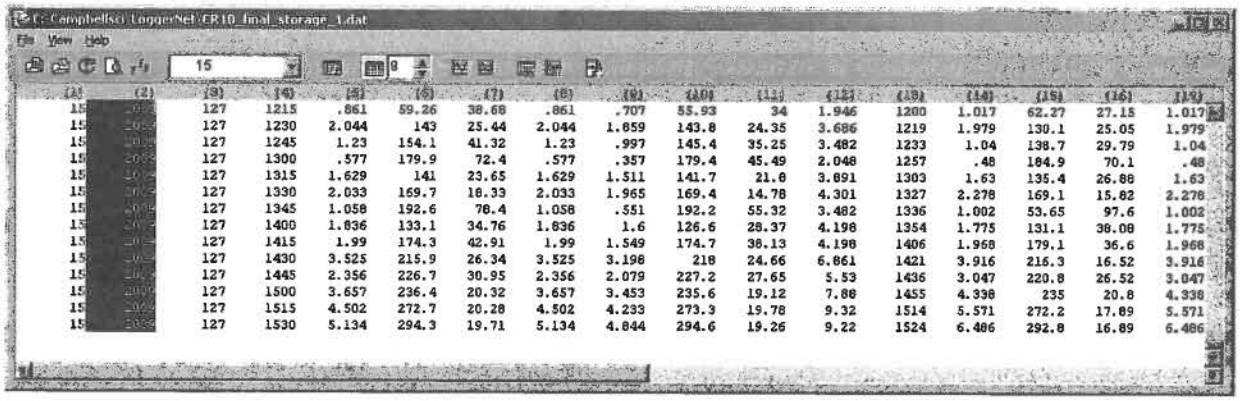
278.2	54.47			273.9	43.16	-3.3965	-1.0892	-99999	62.893	.14657	69.042	1001.4	-.00539	0	
15	2009			4.008	275.4	27.28	4.008	3.669	276.2	23.57	5.112	278.9	23.56	5.112	4.755	278.6
15	2009			3.304	306.3	41.09	3.304	2.888	307.1	28.71	3.819	304.8	36.23	3.819	3.428	302.3
60	2009			3.041	281.7	49.51	3.041	2.34	282.9	38.06	3.544	282	44.69	3.544	2.896	282
15	2009			3.28	296.3	35.44	3.28	2.826	295.5	30.14	3.763	298	31.24	3.763	3.418	294.6
15	2009	54	1030	3.027	297.1	32.65	3.027	2.723	300.3	25.66	3.389	294.6	28.79	3.389	3.125	295.4
15	2009	54	1045	4.05	296.4	27.7	4.05	3.642	299	25.68	4.709	292	25.3	4.709	4.322	293
15	2009	54	1100	4.276	302.7	26.68	4.276	3.944	305	22.57	5.149	300.7	23.35	5.149	4.793	302.9
60	2009	54	1100	3.658	298.2	30.83	3.658	3.278	300.3	26.15	4.253	296.4	27.34	4.253	3.904	296.9
15	2009	54	1115	4.366	300.5	26.09	4.366	3.99	297.9	23.78	5.217	299.4	24.9	5.217	4.788	297.8
15	2009	54	1130	3.951	300.2	27.04	3.951	3.511	298.8	27.01	4.659	298.6	22.81	4.659	4.288	296.7
15	2009	54	1145	2.762	304.2	42.23	2.762	2.184	300.8	36.99	3.255	305.1	38.4	3.255	2.675	297
15	2009	54	1200	4.41	293	37.66	4.41	3.648	289.8	33.67	5.012	293.3	32.14	5.012	4.376	289
60	2009	54	1200	3.872	299.5	33.98	3.872	3.325	296.4	30.84	4.536	299	30.22	4.536	4.023	295
15	2009	54	1215	3.388	303.9	22.71	3.388	3.184	307.1	19.89	4.047	302.3	29.4	4.047	3.714	302.5
15	2009	54	1230	4.328	302.6	26.64	4.328	3.9	303.5	25.47	4.9	298.9	19.54	4.9	4.658	298.1
15	2009	54	1245	3.68	318.9	31.56	3.68	3.3	314.1	26.04	4.588	318.2	25.95	4.588	4.208	315.7

14. Scroll to the bottom of the 15-Min. Avg. data file to view the most recent data.



15	[redacted]	127	1215	.861	59.26	38.68	.861	.707	55.93	34	1.946	1200	1.017	62.27	27.15	1.017
15	[redacted]	127	1230	2.044	143	25.44	2.044	1.859	143.8	24.35	3.686	1219	1.979	130.1	25.05	1.979
15	[redacted]	127	1245	1.23	154.1	41.32	1.23	.997	145.4	35.25	3.482	1233	1.04	138.7	29.79	1.04
15	[redacted]	127	1300	.577	179.9	72.4	.577	.357	179.4	45.49	2.048	1257	.48	184.9	70.1	.48
15	[redacted]	127	1315	1.629	141	23.65	1.629	1.511	141.7	21.8	3.691	1303	1.63	135.4	26.88	1.63
15	[redacted]	127	1330	2.033	169.7	18.33	2.033	1.965	169.4	14.78	4.301	1327	2.278	169.1	15.82	2.278
15	[redacted]	127	1345	1.058	192.6	78.4	1.058	.551	192.2	55.32	3.482	1336	1.002	53.65	97.6	1.002
15	[redacted]	127	1400	1.836	133.1	34.76	1.836	1.6	126.6	28.37	4.198	1354	1.775	131.1	38.08	1.775
15	[redacted]	127	1415	1.99	174.3	42.91	1.99	1.549	174.7	38.13	4.198	1406	1.968	179.1	36.6	1.968
15	[redacted]	127	1430	3.525	215.9	26.34	3.525	3.198	218	24.66	6.861	1421	3.916	216.3	16.52	3.916
15	[redacted]	127	1445	2.356	226.7	30.95	2.356	2.079	227.2	27.65	5.53	1436	3.047	220.8	26.52	3.047
15	[redacted]	127	1500	3.657	236.4	20.32	3.657	3.453	235.6	19.12	7.88	1455	4.338	235	20.8	4.338
15	[redacted]	127	1515	4.502	272.7	20.28	4.502	4.233	273.3	19.78	9.32	1514	5.571	272.2	17.89	5.571
15	[redacted]	127	1530	5.134	294.3	19.71	5.134	4.844	294.6	19.26	9.22	1524	6.486	292.8	16.89	6.486

15. Relevant data is in the following columns:
    Column 1; Averaging Array
    Column 4; Data Collection Time
    Column 5; 10-Meter Wind Velocity (MPS)
    Column 6; 10-Meter Wind Direction (Degrees)
    Column 14; 30-Meter Wind Velocity (MPS)
    Column 15; 30-Meter Wind Direction (Degrees)
    Column 27; Rainfall (in.)


C:\Campbellsci\LoggerNet\CR10_final_storage_1.dat

File View Help

15

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
15	[illegible]	127	1215	.861	59.26	38.68	.861	.707	55.93	34	1.946	1200	1.017	62.27	27.15	1.017
15	[illegible]	127	1230	2.044	143	25.44	2.044	1.859	143.8	24.35	3.686	1219	1.979	130.1	25.05	1.979
15	[illegible]	127	1245	1.23	154.1	41.32	1.23	.997	145.4	35.25	3.482	1233	1.04	138.7	29.79	1.04
15	[illegible]	127	1300	.577	179.9	72.4	.577	.357	179.4	45.49	2.048	1257	.48	184.9	70.1	.48
15	[illegible]	127	1315	1.629	141	23.65	1.629	1.511	141.7	21.8	3.891	1303	1.63	135.4	26.88	1.63
15	[illegible]	127	1330	2.033	169.7	18.33	2.033	1.965	169.4	14.78	4.301	1327	2.278	169.1	15.82	2.278
15	[illegible]	127	1345	1.058	192.6	78.4	1.058	.551	192.2	55.32	3.482	1336	1.002	53.65	97.6	1.002
15	[illegible]	127	1400	1.836	133.1	34.76	1.836	1.6	126.6	28.37	4.198	1354	1.775	131.1	38.08	1.775
15	[illegible]	127	1415	1.99	174.3	42.91	1.99	1.549	174.7	38.13	4.198	1406	1.968	179.1	36.6	1.968
15	[illegible]	127	1430	3.525	215.9	26.34	3.525	3.198	218	24.66	6.861	1421	3.916	216.3	16.52	3.916
15	[illegible]	127	1445	2.356	226.7	30.95	2.356	2.079	227.2	27.65	5.53	1436	3.047	220.8	26.52	3.047
15	[illegible]	127	1500	3.657	236.4	20.32	3.657	3.453	235.6	19.12	7.88	1455	4.338	235	20.8	4.338
15	[illegible]	127	1515	4.502	272.7	20.28	4.502	4.233	273.3	19.78	9.32	1514	5.571	272.2	17.89	5.571
15	[illegible]	127	1530	5.134	294.3	19.71	5.134	4.844	294.6	19.26	9.22	1524	6.486	292.8	16.89	6.486

APPENDIX 3

Allegany Ballistic Laboratory
Burning Grounds

Burn Residue Removal Procedure

Purpose
This procedure is designed to describe the criteria under which burn pan residue removal is required, to provide step-by-step directions for residue removal, waste analysis, waste accumulation and storage, and container management

Burn Residue Removal Criteria
In general, residue shall be removed before the volume of residue becomes a hindrance to operations. Objects with a diameter larger than one inch should be removed on a weekly basis to prevent the accumulation of material that could become shrapnel in the case of a detonation. Ash and other small burn residue should be removed at least quarterly. Unburned explosives shall not be removed during burn residue removal.

Burn Pan Residue Removal Procedures
Weekly: Objects larger than one inch in diameter should be removed during the first pre-burn inspection of the week. Objects may be removed by hand or with non-sparking tools. Approved gloves shall be worn when removing objects from the pan. Latex/vinyl gloves shall be used for all objects except items that are rough or abrasive. Cotton/canvas gloves shall be used for rough or abrasive items. Objects may be collected in a bucket or other container during the pre-burn inspection, and shall be transferred to an accumulation tote immediately after the inspection is completed.

Quarterly: Accumulated ash should be removed at least once per quarter. Ash and other residue shall be removed using non-sparking tools. The ash may be identified by visual means. If a pan has no visible ash, then no removal is required for that quarter. The ash may be collected in a bucket or other container during the quarterly ash removal effort, and shall be transferred to the accumulation tote immediately after the ash removal effort is completed.

As Needed: Large quantities of residue may be removed by screening. The screen (maximum one-inch mesh) may be placed on the pan, and the soil/residue mixture may be shoveled into the screen. The screen may be manually agitated to sift the soil through the screen. This process should be repeated in a batchwise process until the desired amount of residue has been removed. The residue will be collected in a bucket or other container during the removal effort, and will be transferred to the accumulation tote immediately after the removal effort is completed.

Burn Pan Residue Accumulation and Storage
Residue shall be accumulated in a DOT-approved fiberglass tote. The tote shall be labeled as Hazardous Waste and shall be kept closed except when adding or removing waste. When the tote is full, it shall be moved to Bldg. 372 for storage prior to offsite shipment.

Permit Attachment 4

General Operating Procedure - Rules for Vehicles (Other than Forklifts) Transporting Explosives

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

ALLIANT TECHSYSTEMS OPERATIONS
ROCKET CENTER, WV

GENERAL OPERATING PROCEDURE

TITLE	**Rules for Vehicles (Other than Forklifts) Transporting Explosives**
BUILDINGS	**MULTIPLE BUILDINGS**
REVISION REQUESTED	**MINOR** ☐ **MAJOR** ☒ **NEW** ☐

REVISION	DATE	SUMMARY OF CHANGES	MADE BY	EFFECTIVITY
1	9-18-2007	Added GOP 1-51-24 reference to section 10.13.	JLT	10-3-2007
2	2-4-2011	Updated daily inspections list and check sheet	M. Turcato	2-8-2011
3	7-24-2014	Put on current GOP Template. Valid driver's license required to drive company vehicles.	Doc Control	10-21-2014

This document consists of a cover page, Training Record and pages 1 to 11 inclusive.

ATK	ATK ROCKET CENTER, WEST VIRGINIA	GOP-1-00-70 REVISION: 3

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

Insert OP-242 Rev 2 Here

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

1 SCOPE

1.1. This document describes the safety rules and procedures required for for the operation of vehicles. The requirements herein shall apply to all motorized vehicles, utilized on the ABL facility except forklifts, tractors, earth moving equipment. This document supersedes the requirements of GOP 1-30-04 titled, "INSPECTION OF EXPLOSIVE HAULING VEHICLES", and all referenced documents contained within. The following operations are described herein:

SECTION 6 - OPERATOR TRAINING

SECTION 7 - DAILY INSPECTIONS

SECTION 8 - MAINTENANCE

SECTION 9 - LOADING AND UNLOADING - EXPLOSIVES

SECTION 10 - TRANSPORTATION OF EXPLOSIVES

2 REQUIREMENTS

2.1 The procedures indicated herein are those required for use by Alliant Techsystems, Allegany Ballistics Laboratory.

2.2 In the case of an emergency, an unforeseen event, equipment malfunction, or lack of facilities which would necessitate the deviation from existing procedures, the supervisor shall take whatever action he deems necessary to bring the job to a safe stopping point or to complete the operation. If circumstances permit, an emergency procedure may be written by the supervisor to describe an unforeseen event or circumstance. This procedure shall be labeled EMERGENCY PROCEDURE and shall be assigned a number by the Document Control Group. It shall include an effective date and a termination date and necessary safety instructions. The procedure shall be approved by the Supervisor, Department Superintendent, or his representative, and a representative of the Safety Department. A copy shall be sent to the Document Control Group for the history file and shall be accompanied by a request to revise the procedure if the change is to be permanent. If circumstances do not permit, the action taken by the Supervisor should be documented after the fact, either by a Non Conformance (N/C) Record or by a procedure change.

2.3 All measuring devices that require calibration shall be inspected prior to an operation to verify that calibration intervals have not been exceeded.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

3 APPLICABLE DOCUMENTS

3.1 The following documents form a part of this document to the extent specified.

Specifications	Description
NONE	

Publications	Description
GOP 1-00-01	ABL Safety Rules
GOP 1-00-47	Operations Division – Manufacturing Training

4 MATERIALS AND EQUIPMENT

Materials	Description
NONE	

Equipment	Description
NONE	

5 SAFETY

5.1 All safety precautions and practices established in the General Operating Procedures for the area in which this operation is performed shall be observed.

WARNING

IF AT ANY TIME DURING THIS OPERATION THERE SHOULD BE AN UNUSUAL OCCURRENCE OF A NATURE WHICH WOULD AFFECT THE SAFETY OF THE OPERATION OR THE QUALITY OR COST OF THE PRODUCT, THEN THIS OPERATION SHALL BE BROUGHT TO A SAFE AND ORDERLY STOP AND OPERATIONS SUPERVISION NOTIFIED.

5.2 Seat belts or restraint system should be properly fastened at all times when operating a vehicle.

5.3 All vehicles used for hauling or transporting explosives shall be equipped with a fully charged fire extinguisher.

5.4 All vehicles used for hauling or transporting explosives shall be equipped with an approved red flashing light.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

6 OPERATOR TRAINING

6.1 All operators shall have read and shall thoroughly understand all sections of this procedure prior to being permitted to operate a vehicle.

6.2 Operators shall have a valid state issued driver's license to drive plant vehicles. If at any point an operator no longer obtains a valid state issued driver's license, he or she shall report it to their supervisor.

7 DAILY INSPECTIONS

7.1 Vehicles shall be examined by the operator on a daily basis and shall not be placed in service if the examination shows any condition adversely affecting the safety of the operator, other employees, the vehicle, or the load. Vehicles shall be inspected by the first shift using the vehicle on any given day. Each daily inspection shall be documented by the operator on a Vehicle Inspection Form. The completed inspection form shall remain with the vehicle until the end of the current month and then given to supervision. Supervision shall review forms for completeness and then forward the forms to the Safety Department.

Note: A sample Vehicle Inspection Form is provided at the end of this section.

Note: Supervision shall be responsible to ensure that inspection forms are available each month for each vehicle.

7.2 Defects when found shall be immediately reported to supervision.

7.3 Perform the following daily inspections:

7.3.1 Horn works properly.

7.3.2 Windshield wipers work properly.

7.3.3 A fully charged fire extinguisher is present in the cab. Some vehicles which haul explosives are also equipped with automatic CO2 fire extinguishers for the motor compartment. If so equipped, verify that the release indicator located on the pneumatic control head at the top of the CO2 cylinder, is in the "SET" position and not in the "RELEASED" position. If the indicator is in the "RELEASED" position the system has been discharged and must be recharged prior to the handling of explosives.

7.3.4 The red warning light works properly.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

7.3.5 Turn on the lights and see that the headlights and running lights (rear and/or side) are working.

7.3.6 The cargo bay is free of FOD. Accessories used for the proper transportation of cargo (e.g. restraining devices) shall be in proper working condition. There shall be no exposed or loose electrical wires in the cargo bay.

7.3.7 The tires look properly inflated and in good condition. Make a quick visual inspection that all the lug nuts are present and appear to be fastened securely.

7.3.8 There is no sign of significant fluid loss under or around the vehicle.

7.3.9 If vehicle is equipped with powered lift gate verify that hydraulic lines, cylinders and fittings exhibit no leakage, wear, deterioration or other conditions that could cause loss of control or failure of equipment. Verify that control levers operate smoothly and correctly. Mechanical components should appear to move freely and in good working condition.

7.3.10 The following daily inspections shall be performed by a road test of the vehicle:

7.3.10.1 The engine is running smoothly and no sparks are being emitted from the exhaust.

7.3.10.2 Brakes and emergency brake are operating properly.

7.3.10.3 The steering system works smoothly and properly.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS TRANSPORTING EXPLOSIVES

VEHICLE INSPECTION FORM VEHICLE NO. _____ MONTH _____ YEAR _____

DAY OF MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
OPERATOR'S INITIALS																						
CHECK INSIDE FOR:																						
Test Horn																						
Test Windshield Wipers																						
Fire Extinguisher																						
WALK AROUND FOR:																						
Red Warning Light																						
Head Lights and running lights																						
Cargo Bay clean & no exposed wiring																						
Wheels and tires																						
Fluid leaks																						
Powered Lift Gate																						
TEST DRIVE FOR:																						
Engine running properly																						
Brakes & Parking Brake																						
Steering																						

* SEE GOP 1-00-70 PARAGRAPHS FOR SPECIFIC INSPECTION REQUIREMENTS

INSTRUCTIONS

1) Inspection to be conducted by the first shift that utilizes a vehicle on any given day.

2) Use a **"V"** to designate an item is acceptable. Use an **"X"** to designate an item is not acceptable. Use an **"N/A"** to designate item is not

3) If an item does not meet requirements contact supervision for direction.

4) Reports are to maintained with vehicle until month end. Submit to supervisor at month end.

5) Operators shall be on the alert for the development of mechanical or electrical malfunctions. If a malfunction occurs during the operatio operator shall pull to the side of the road (if possible) and turn off the motor. Any such need of repair, defect or unsafe condition shall be ir to the attention of the supervisor.

OP-163 Rev -

FIGURE 1. Example Vehicle Inspection Form

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

8 VEHICLE MAINTENANCE

8.1 In general, repair and maintenance shall be performed by trained mechanics and not by the operator. The vehicle operator shall be responsible for maintaining proper tire inflation, adequate fluid levels including lubricating oil, transmission, hydraulic and engine coolant, and an ample supply of fuel including diesel or gasoline. Fluid levels shall be checked each time the vehicle is refueled.

8.2 If at any time a vehicle is found to be in need of repair, defective, or in any way unsafe, the vehicle shall be taken out of service until it has been restored to a safe operating condition.

8.3 Operators shall be on the alert for the development of mechanical or electrical malfunctions. If a malfunction occurs during the operation of a vehicle, the operator shall pull to the side of the road (if possible) and turn off the motor. Any such need of repair, defect or unsafe condition shall be immediately brought to the attention of the supervisor.

8.4 Conditions which would render a vehicle in need of repair, defective or unsafe, shall include, but not be limited to:

8.4.1 Failure to meet all requirements as listed in Section 7, DAILY INSPECTIONS (also summarized on the Vehicle Inspection Form), regardless if the condition is observed during the inspection or occurs during operation.

8.4.2 Abnormal conditions occurring during operation, such as:

8.4.2.1 Excessive noise or vibration.

8.4.2.2 The smell of odors not normally present.

8.4.2.3 Failure of any controls to respond correctly or operate smoothly.

8.4.2.4 Leakage of engine, transmission, fuel, hydraulic or coolant fluids.

8.4.2.5 Sparks emitted from the exhaust or electrical components.

8.4.2.6 Failure of the engine to operate smoothly or excessive loss of power.

8.4.2.7 Temperatures of any part of the vehicle when found to be in excess of their normal operating temperature.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

8.4.3 Minor defects (e.g. vehicle running lights) that do not adversely affect the safe operation of the vehicle may be fixed in a timely manner when the vehicle is not in use. Supervision shall have discretion in determining if a defect adversely affects the safe operation of a vehicle.

8.5 Refueling – Diesel or Gasoline

8.5.1 Prior to adding fuel to a vehicle, the vehicle shall be turned off and the parking brake set.

8.5.2 No vehicle shall be refueled within 50 feet of an explosive building.

8.5.3 Exercise care when refueling to prevent the tank from being over flowed or fuel being spilled on any part of the vehicle.

8.5.4 If fuel is over flowed or spilled onto the vehicle, the vehicle shall not be restarted until the fuel is completely cleaned up or allowed to evaporate.

8.5.5 Ensure that the fuel tank cap is replaced.

9 LOADING AND UNLOADING - EXPLOSIVES

9.1 The maximum rated load capacity of the vehicle shall not be exceeded.

9.2 Only stable and safely arranged loads shall be transported.

9.3 Positive protection shall be provided to prevent the vehicle from being moved when dockboards or bridgeplates are in position.

9.4 When a vehicle is being loaded or unloaded or boarded by a forklift or other material handling equipment, the engine shall be turned off, the transmission placed in low gear or park, the parking brakes set and the wheels blocked to prevent movement.

9.5 All loads shall be secured to the vehicle to prevent movement during transportation.

9.6 It shall be the responsibility of the operator to ensure that the vehicle is safely loaded and the load is properly secured prior to moving the vehicle.

9.7 Any load which extends 2 feet or more beyond the body of the vehicle shall have a red flag attached to the extreme end of the load.

10 TRANSPORTATION OF EXPLOSIVES

10.1 Stunt driving and horseplay shall not be permitted.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

10.2 All requirements listed in Section 8, VEHICLE MAINTENANCE and Section 9, LOADING AND UNLOADING – EXPLOSIVES shall be observed.

10.3 Only vehicles specifically designed and approved for the hauling of explosives shall be used for such purposes.

10.4 The cargo compartment of vehicles used to transport explosives or contaminated materials shall have a bed made of non-sparking material (aluminum or wood).

10.5 The vehicle brakes shall be tested immediately prior to being loaded with an explosive load.

10.6 An approved red warning light shall be on at all times when transporting explosives.

10.7 The operator shall travel only over approved roadways when transporting explosives

10.8 While transporting explosives, the operator shall be continuously on the alert for loose objects in the road, potholes, ruts, coarse stones, uneven pavement, bumps, dips, snow or ice, or other road conditions which could jar or shock the load. The vehicle, if possible, shall be maneuvered around such conditions.

10.9 No explosives shall be transported during an electrical storm or other severe weather condition.

Note: Severe weather conditions shall be determined by supervision and Safety.

10.10 No explosives shall be transported in the cab of the vehicle.

10.11 The vehicle operator shall be guided by a second person when operating in reverse with any load which contains liquid explosives.

10.12 When transporting liquid explosives GOP 1-51-24 shall be used.

10.13 When required, an explosive load shall be grounded to the vehicle.

10.14 When two vehicles transporting explosives or one vehicle and a forklift approach each other from opposite directions, both shall pull to the right and stop. By mutual cooperation, one will signal the other to proceed.

10.15 No more than two persons at one time shall ride in a vehicle transporting explosives.

10.16 The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.

10.17 There shall be no riders permitted in the cargo section of the vehicle when hauling explosives or heavy bulky items.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

10.18 A vehicle shall not pass another vehicle which is traveling in the same direction.

10.19 The vehicle shall be maintained in a clean condition. Trash or other materials shall not be permitted to accumulate in the cab. Instrument gauges and controls as well as any name plates or markings shall be legible.

10.20 All traffic regulations including "STOP" or "YIELD" signs, posted speed limits and no parking areas shall be observed.

Note: The maximum plant speed limit is 20 MPH. The speed limit in congested areas is 5 MPH.

10.21 Vehicle speed shall be reduced in congested areas, when snow, ice or fog is present, when driving at night, when roadways are wet, when approaching blind spots or when construction activities are present.

Note: Transportation of explosives when snow or ice is present shall be as directed by supervision and Safety.

10.22 Under all travel conditions, the vehicle shall be kept under control and shall be operated at a speed that will permit it to be brought to a stop in a safe manner

10.23 A safe distance of approximately 3 truck lengths shall be maintained from any vehicle ahead.

10.24 Vehicles shall not be parked such that access to stairways, hydrants or other fire protection equipment is obstructed. Vehicles shall not be parked in fire lanes.

10.25 Vehicles shall be operated only over approved roadways. Vehicles shall not be operated on wet, muddy or soft earth.

10.26 The operator shall be required to slow down and sound the horn at blind spots, or other locations where vision is obstructed.

10.27 The operator shall be required to look in the direction of, and keep a clear view of the path of travel.

10.28 All inclines shall be ascended or descended slowly.

10.29 It shall be the responsibility of the operator to verify that sufficient headroom exists under overhead installations such as lights, pipes, sprinkler systems, doorways, etc.

10.30 The operator shall exercise care to avoid running over objects on the roadway.

10.31 The operator shall anticipate the necessity for and exercise care in shifting gears to avoid damage to the vehicle and/or the load.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

10.32 Gear shifting shall be kept to a minimum that is consistent with the safety of the operation.

10.33 When negotiating turns, speed shall be reduced and the vehicle shall be gradually turned to avoid loss of control and/or the spilling of the load.

10.34 When a vehicle without lights is being operated at night, vehicles with lights shall precede and follow.

10.35 When directed by supervision, chains may be installed on the drive wheels prior to operation on roads containing snow or ice.

Note: The decision to perform operations when snow or ice is on the roadways shall be the responsibility of supervision.

10.36 All accidents involving a vehicle, damage to materials being transported by a vehicle, or damage to plant property shall be reported to supervision and Safety immediately. Failure to do so shall result in disciplinary action. The Safety/Security departments shall investigate all accidents involving a vehicle.

10.37 When a vehicle is parked or left unattended, the transmission shall be placed in the lowest gear or the park position, power shall be shut off and the parking brakes set.

Note: A vehicle is considered unattended when the operator is 25 feet or more away from the vehicle and the vehicle remains in his view, or whenever the operator leaves the vehicle and the vehicle is not in his view

10.38 A vehicle may be permitted to sit and idle if the operator is within 25 feet and the vehicle remains in his view. In this case, the transmission shall be neutralized or in the park position, and the parking brakes set. A vehicle shall not be permitted to sit and idle within 25 feet of an explosive building.

10.39 All loads transported in rain or snow conditions shall be properly covered in such a manner to protect the load from moisture and to prevent the cover from blowing off.

Note: This requirement may be relaxed by supervision if it has been determined that the weather conditions will not adversely affect the load.

RULES FOR VEHICLES (OTHER THAN FORKLIFTS) TRANSPORTING EXPLOSIVES

11 **SETUP**
N/A

12 **OPERATIONS**
N/A

13 **PROCESS MAINTENANCE**
N/A

14 **SHUTDOWN**
N/A

15 **SAFETY DATA SHEET(S)**
N/A

Permit Attachment 5

General Operating Procedure - Waste Classification, Labeling, Storage, and Disposal

ALLIANT TECHSYSTEMS OPERATIONS
ROCKET CENTER, WV

GENERAL OPERATING PROCEDURE

TITLE WASTE CLASSIFICATION, LABELING, STORAGE AND DISPOSAL

BUILDINGS PLANT WIDE

REVISION REQUESTED MINOR ☒ MAJOR ☐ NEW ☐

REVISION	DATE	SUMMARY OF CHANGES	MADE BY	EFFECTIVITY
17	08/22/12	Revised Section 7.6.2, Added CAUTION in Section 7.6.3, Revised Section 7.8.2, Revised Section 15.6, Revised Table IV.	LHM	11/15/12
18	03/18/13	Add paint and chromate treatments as PE waste; minor editorial edits; removed Tables previously numbered I & II; updated format.	JJS	04/22/13
19	7/29/13	Add figures for sawdust squares. Updated figure numbers.	TN	08/29/13
20	3/20/14	Section 4 Change 3M to Scotch tape; 4G box to 11G; Section 5.5 add line to not paint out unused drum labels; Section 8.1.7 add "tighten" to drum closure; Section 8.4.5-7 box closure requirements; Section 8.6.6 Clarify box labels; Section 9.1.1 Clarify container labels; Section 16.2 add sawdust labeling;	JW	04/10/14
21	7/11/14	Updated 8.5 for process changes; Revised 8.6 to change to Lab Pak boxes; Revised 16 to change to Lab Pak boxes	JW	7/21/14
22	10/10/14	Added 7.2 for empty drums; Clarify section 8.4; Clarified 8.6 for new labpak box packing; New OP-157 form; delete 9.2; delete obsolete Figures 5-7 and Table II; delete obsolete sections 13-15	JW	2/16/15

This document consists of a cover page, Training Record and pages 1 to 26 inclusive.

WASTE CLASSIFICATION, LABELING, STORAGE AND DISPOSAL

Insert OP-242 Here

WASTE CLASSIFICATION, LABELING, STORAGE AND DISPOSAL

1 SCOPE

1.1 This document describes the safety rules and procedures required for the collection, storage, sampling, transfer, and shipment of propellant/explosive (P/E) wastes, P/E contaminated wastes, non-P/E regulated hazardous wastes, and non-regulated wastes at ABL.

1.2 It also provides guidelines on segregation of P/E wastes, P/E contaminated wastes, non-P/E regulated hazardous wastes and non-regulated wastes

2 REQUIREMENTS

2.1 The procedures indicated herein are those required for use by Alliant Techsystems, Allegany Ballistics Laboratory.

2.2 In the case of an emergency, an unforeseen event, equipment malfunction, or lack of facilities which would necessitate the deviation from existing procedures, the supervisor shall take whatever action he deems necessary to bring the job to a safe stopping point or to complete the operation. If circumstances permit, an emergency procedure may be written by the supervisor to describe an unforeseen event or circumstance. This procedure shall be labeled EMERGENCY PROCEDURE and shall be assigned a number by the Document Control Group. It shall include an effective date and a termination date and necessary safety instructions. The procedure shall be approved by the Supervisor, Department Superintendent, or his representative, and a representative of the Safety Department. A copy shall be sent to the Document Control Group for the history file and shall be accompanied by a request to revise the procedure if the change is to be permanent. If circumstances do not permit, the action taken by the Supervisor should be documented after the fact, either by a Non Conformance (N/C) Record or by a procedure change.

2.3 All measuring devices that require calibration shall be inspected prior to an operation to verify that calibration intervals have not been exceeded.

2.4 All persons engaged in operations involving hazardous wastes shall be trained in applicable procedures.

2.5 Only designated and trained personnel shall transport waste material to the 366 pad or conduct operations there.

2.6 The Environmental Department is the plant's final authority on any question involving wastes.

3 APPLICABLE DOCUMENTS

3.1 The latest issue of the following documents forms a part of this document to the extent specified.

Specifications	Description
None	

Publications	Description
GOP 1-00-01	ABL Safety Rules
GOP 1-00-47	Operations Division – Manufacturing Training
GOP 1-00-35	Procedure to be followed for Asbestos Abatement and Removal
GOP 1-51-05	Stability Surveillance of Stored Liquid Explosives
ABL/M-132	Emergency Control Plan
40 CFR Part 261, Permit No. HW-X-1	Permit to Operate Open Burning Grounds for the Treatment of Energetic Hazardous Wastes

4 MATERIALS AND EQUIPMENT

Materials	Description
Tape	Clear, Scotch® Shipping Packaging, #3750; two inch, masking
Bottles	Glass with aluminum foil lid,4 or 8 oz.
Tags	Aluminum disc with serial number
Wire Seal	12" galvanized wire with one end embedded in lead disc
Bags	Poly, Antistatic, MIL-PRF-81705
Drums	55-gallon, UN11A, UN11AH, UN31AorAH
	45-gallon poly, UN11H1, 30-gallon AP, 85-gallon, Overpack

Labpak 66 Box	66 gallon, fiberboard, 4G PGI, with liner, S9908225
Zip Ties	7.5 inch, D5902012
Pallets	40 inch minimum, 48 inch square, maximum
Cubic Yard Fiberboard Boxes	1 cubic yard, UN11G
Rags	Clean, cotton
Stencils	One-inch
Labels	Pressure Sensitive Hazardous Waste
	Pressure Sensitive Non-RCRA Regulated Waste
Scrap Tickets	Yellow: Explosive Contaminated Waste - Hazardous Waste
	Blue: Explosive Contaminated Waste - Non-Regulated Waste
	Red: Explosive Hazardous Waste - Burning Grounds Only
Eye Wash Bottle	One quart
Spray Paint	White, tan, or black
Sawdust	Dry
pH Paper	Fisher Alkacid Tester, or equal

Equipment	Description
Drum Mover	McMaster Carr No. 2865T4, or equal
Drum Pump	ATA, Unit A
Mallet	Babbit Hammer
Bung Wrench	McMaster-Carr No. 6496A1, or equal
Drum Lid Opener	McMaster-Carr No. 3776A12, or equal
Pliers	Combination slip joint

Wedge	Steel, 8" minimum long, with 2" of side sharpened
Face Shield	McMaster-Carr No. 5450T15, or equal
Goggles, Chemical Splash	McMaster-Carr No. 9139Y11 or equal
Gloves	Polyvinyl
Respirator	Comfo II with GMA Cartridge or equal
Sampler, Liquid	Coliwasa
Sampler, Liquid	0.5" x 2" Bottle wired to 3' stick
Sampler, Solid	0.5" Diameter tube with slip fit pusher rod
Spill Kit	a) Drum with absorbent b) Two reusable salvage drums c) Spark resistant shovel

5 SAFETY

5.1 All safety precautions and practices established in the General Operating Procedures for the area in which this operation is performed shall be observed.

WARNING

IF AT ANY TIME DURING THIS OPERATION THERE SHOULD BE AN UNUSUAL OCCURRENCE OF A NATURE WHICH WOULD AFFECT THE SAFETY OF THE OPERATION OR THE QUALITY OR COST OF THE PRODUCT, THEN THIS OPERATION SHALL BE BROUGHT TO A SAFE AND ORDERLY STOP AND OPERATIONS SUPERVISION NOTIFIED.

5.2 Safety Data Sheets (SDSs) for chemicals used are provided as an addendum to this procedure. All operating personnel are required to familiarize themselves with the information and safety requirements provided.

5.3 All hazardous materials which are transferred from their original container to other containers are to be labeled as to their contents per GOP 1-00-01.

5.4 When containers are reused for another purpose, all previous labels of contents shall be removed or permanently obliterated. For example, when solvent drums are reused for

waste paint, solvent labels shall be removed or painted out, and any stenciled information blocked out

5.5 Do not obliterate labels on drums that will remain empty.

5.5.1 Never obliterate the Department of Transportation (DOT) drum markings. (See below) Numbers/letters will vary by drum.

UN 1A1/Y1 8/300/05
USA M4921
1.2/1.1/1.2

or

"UN 1A1/Y1 8/300/05 USA M4921 1.2/1.1/1.2"

5.6 All containers shall be labeled to identify contents. Containers for other than immediate use shall also have appropriate hazard warnings attached or hazards shall be identified in operating procedures.

Note: Contents may be indicated by chemical name, approved code names or numbers, or other appropriate means. The Environmental Department is the final authority on what constitutes approved labeling.

5.7 Anytime waste materials are being transferred from one container to another eye wash equipment shall be readily available. When transferring wastes at the 366 pad, eye wash bottles shall be provided.

5.8 Waste materials may be irritating or corrosive to the eyes. If eyes are affected, flush with water for at least 15 minutes and report promptly to First Aid.

5.9 Two persons shall be present during any drum-to-drum transfer of a hazardous waste.

5.10 Skin contact with hazardous materials shall be avoided. In case of contact, flush affected area with water for 15 minutes, if possible. Report to Medical.

5.11 Personnel handling hazardous materials shall maintain good personal hygiene practices.

5.12 Chemical compatibility of materials to be mixed or stored together shall be known. Positive measures shall be exercised to keep incompatible materials separated.

5.13 Empty containers and unneeded materials shall be immediately removed from operating areas.

5.14 Spills of hazardous wastes shall be reported to the supervisor and to the Environmental Department immediately.

5.15 FLAMMABLE OR CORROSIVE WASTE PRECAUTIONS

5.15.1 When transferring flammable liquids from one conductive container to another, the two containers shall be electrically bonded together and one container or the bond shall be grounded.

5.15.2 If necessary to connect a bond or ground to an open vessel containing a liquid, the connection shall first be made to the open vessel and then the bonding or ground connection shall be made.

5.15.3 Drums containing flammable or corrosive liquids should be kept out of direct sunlight when practical.

5.15.4 Open flames or flame producing devices shall not be used during hazardous waste handling operations.

6 SET-UP

6.1 None

7 REUSE OF CONTAINERS

7.1 Containers reused for material other than their original contents shall be thoroughly emptied, cleaned as appropriate, and inspected before being used for a different material. All previous CONTENTS labels shall be removed or permanently painted out before reuse. Do not paint out the DOT label or marking. Material Handling is responsible for all empty drums called in for storage.

Note: Only UN approved 45 gallon drums (UN11H1), 55 gallon drums (UN11A or AH or UN31A or AH), 66 gallon Labpak boxes, cubic yard containers (UN11G), or containers approved by the Environmental Department shall be utilized for storage and disposal of all wastes outlined in this procedure except explosive waste which is sent to the Burning Ground

7.2 Leave original labels on empty, unused drums.

8 ACCUMULATION OF WASTE AT SOURCE

8.1 NON-P/E RELATED DRUM WASTES (HAZARDOUS AND NON-REGULATED)

8.1.1 Only one hazardous waste container of non P/E related waste may be present at the area where the waste is generated.

Note: Only 55 gallons of hazardous waste are permitted. For brief periods not to exceed three days, a second container, full and awaiting removal, may also be present.

8.1.2 Containers shall be labeled showing contents before receiving any waste material and shall be tagged with a metal identification tag which matches the number assigned on the label before being removed from the area for storage at the Bldg. 366 Pad as described in Section 9. Labels and tags are supplied by Environmental (301 697-8621).

8.1.3 Containers shall be visually inspected for proper condition on each operating day during day shift.

8.1.4 Each location where multiple waste streams are generated and placed into the same drum, with the exception of rag drums, shall maintain a "Waste Accumulation Record" (See Form OP-064) for each drum of waste as described in Section 10.

8.1.5 Drums of liquid wastes shall have at least 6 inches free space between the contents and the head of the drum. Drums not having at least 6 inches of free space shall not be picked up or removed from the area by Material Handling.

8.1.5.1 Closed-top drums of liquids shall be filled using a funnel with a latchable lid with a gasket.

8.1.6 All drum shall be marked with the accumulation date before they are removed from the area. The accumulation date shall be the date when the containers are full and ready to be moved to the Bldg. 366 pad. Drums with no accumulation date shall not be picked up by Material Handling.

8.1.7 All containers shall be kept sealed except during the addition or removal of waste. "Sealed" includes replacing rings, latching funnels and tightening bolts or closures on open top drums and bungs tightened with a bung wrench.

8.2 COMPOSITE STRUCTURES RESIDUAL CATALYZED RESIN

Note: In order to minimize the generation of waste, resin systems shall be mixed and reacted to a FULLY cured state such that they may be disposed of in a landfill by the following means. All catalyzed resin mixes shall be optimized to reduce the amount of residual catalyzed resin per application.

8.2.1 All resin systems shall be mixed according to the directions in the specific Unit Operating Procedures that require use of the material being mixed. Follow all instructions provided including mix ratios, mix times, order of addition, personal protective equipment requirements and ventilation controls.

WARNING

FAILURE TO COMPLY WITH UOP INSTRUCTIONS MAY RESULT IN PERSONNEL EXPOSURE TO HAZARDOUS MATERIALS AND MAY RESULT IN AN EXOTHERM. IN THE EVENT OF AN EXOTHERM, WEAR A RESPIRATOR WITH COMBINATION ORGANIC VAPOR, ACID GAS CARTRIDGES, CHEMICAL GOGGLES AND NEOPRENE GLOVES TO APPLY WATER TO THE HOT RESIN MIXTURE. IN THE EVENT OF AN EXOTHERM PROGRESSING TO THE POINT WHERE REACTION GASES ARE BEING PRODUCED, DO NOT ATTEMPT TO QUENCH THE REACTION. EVACUATE THE AREA IMMEDIATELY AND CALL THE FIRE DEPARTMENT AND THE SAFETY DEPARTMENT. REACTION GASES ARE TOXIC!

8.2.2 All residual catalyzed resins shall be poured into an empty designated aluminum or metal pan that has been previously treated with mold release unless stated otherwise by the UOP.

WARNING

RESIN IS PLACED IN ALUMINUM PANS TO INCREASE SURFACE AREA AND MAXIMIZE HEAT DISSIPATION. DO NOT FILL PANS TO A DEPTH EXCEEDING ¼ INCH UNLESS STATED OTHERWISE BY THE UOP. UTILIZE MORE THAN ONE PAN IF NEEDED. EXOTHERM MAY OCCUR IF PAN IS OVERFILLED.

8.2.3 All pans containing residual catalyzed resins are to be placed in the oven with the part/parts for which it was initially mixed for and cured with the part/parts. In the event that the catalyzed resin is a result of disposition, then it is to be cured in an appropriate oven at the maximum temperature and time duration as specified by the cure program for which its intended application would use.

8.2.4 After the cure cycle is complete and appropriate cooling practices have been followed, remove the resin from the pan and dispose of with other ordinary trash.

8.3 COMPOSITE STRUCTURES RESIN CONTAMINATED WASTE

Note: Resin contaminated wastes include, but are not limited to: rags, stirring paddles, containers, roving, cards, gloves, and garments that have been directly exposed to resin as well as pre-preg roving and sheeted pre-preg excluding thermoplastics.

8.3.1 These wastes are to be placed in the typical white trash cans lined with clear garbage bags. When these cans/bags become full, or near the end of each shift, they are to be placed in Building 816 which is heated to 120 - 140°F. Bags should NOT be sealed when placed in this building. Each shift will be assigned one bay of Building 816. Waste should be placed in the appropriate bay at the end of each shift. Cured material shall be removed the following day prior to placing new waste in the bay. Cured materials shall be placed in a dumpster for disposal at the landfill.

8.4 HAZARDOUS WASTE SOLVENT CONTAMINATED MATERIALS

Note: Solvent, paint and chromate treatment contaminated materials include, but are not limited to, rags, gloves, stir sticks, cotton-tipped applicators, sputum cups, filters, etc., directly exposed to solvents such as methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), methylene chloride (MeCl) and toluene; paints such as enamels, lacquers and polyurethanes; and chromate treatments such as Alodine, Rodip, or Westchromate.

Note: Solvent contaminated rags generated in explosive processing areas shall be handled and disposed of as P/E contaminated waste. See Section 8.6.

8.4.1 Solvent, paint and chromate treatment contaminated rags shall be collected during the work shift in safety cans which are lined with pink poly antistatic bags. These rags shall be segregated from other waste.

8.4.2 At the end of each shift, the bags shall be manually compressed and sealed. They shall then be weighed to determine actual weight. After weighing, they shall be placed into a designated 55-gallon drum or cubic yard fiberboard box (or Gaylord box). When going to a box, all bags added MUST be recorded on the Waste Accumulation Record (See Form OP-064) attached to the box. Not required with rag drums. BOXES MUST BE KEPT CLOSED AT ALL TIMES EXCEPT WHILE WASTE IS BEING ADDED.

8.4.3 The Waste Accumulation Record shall be taped on the side of the box.

8.4.4 Boxes containing hazardous waste must be inspected weekly and inspection records (See Form OP-157) shall be forwarded to Environmental at the end of each month.

8.4.5 Boxes containing hazardous waste are considered to be "Less Than 90 Day Storage" and cannot be held in other than Building 366 for greater than 90 days. In order to insure that this storage time is not exceeded, the accumulation date MUST be added to the waste label and visible at all times, when the first waste is added to the box. Building supervision is responsible to get any box older than 85 days to Building 366.

8.4.6 When a solvent rag box is filled, close according to the directions on the box. Contact Powder Service to have it moved to Building 366 and request a new box.

8.4.7 All box labels must be visible and shall be labeled in the same manner as drums as outlined in Section 9 of this procedure. Unlike drums, box labels must be dated WHEN STARTED.

8.5 METAL FABRICATION – ALUMINUM & STEEL RECLAMATION

8.5.1 Aluminum and steel turnings shall be collected at each machine in hoppers. Full hoppers shall be sumped prior to dumping turnings into roll-off located outside Building 376 to remove as much coolant as possible from turnings.

8.5.2 Roll-offs for aluminum and steel turnings shall be equipped with sump pipes. A supervisor or other responsible representative from Metal Fabrication shall oversee all pick-ups to insure that operations are being conducted properly.

8.6 P/E CONTAMINATED WASTES

Note: P/E contaminated wastes are defined as those materials that contain 10% or less propellant or explosive residue by weight. This pertains to each and every item placed into a bag for disposal. This does not mean that a one pound quantity of propellant can be put into a 10-pound bag. Wastes containing 10% or greater energetic material are considered P/E reactive wastes and shall be managed according to Section 8.8 of this procedure.

8.6.1 LABPAK BOX BUILDING AND CLOSURE INSTRUCTIONS

8.6.2 Square-up container. Fold in bottom flaps.

8.6.3 Tape bottom flaps with three strips of 3M-Scotch #375 Shipping Packaging Tape with the tape extending a minimum of 2" over the edges. Tape in an "H" style pattern (in other words across middle seam and ends of flaps).

8.6.4 Insert poly liner bag and stretch around the container interior walls until firmly in place.

8.6.5 Fill the box (bag) with material. Make sure the majority of air is evacuated from bags before sealing.

8.6.6 Twist the top of the bag closed tightly to secure the material and seal the bag with a minimum of 7.5" zip tie.

8.6.7 Carefully compress the bag of material into the container and fold in top flaps.

8.6.8 Tape top flaps with three strips of 3M-Scotch #375 Shipping Packaging Tape with the tape extending a minimum of 2" over the edges. Tape in an "H" style pattern (in other words across middle seam and ends of flaps).

8.6.9 Place four boxes on a pallet before loading. Pallet should be at least 40x40 inches, square. Smaller pallets with only two boxes may be used but only when no other acceptable pallets are available. The Environmental Department may approve other pallet/box arrangements, as needed.

Note: Hybrid and composite boxes shall not be on the same pallet as heptane square boxes.

8.6.10 PREPARING P/E CONTAMINATED WASTES

8.6.11 P/E contaminated material and P/E materials shall be segregated at the time of generation by placing in proper receptacles in operating areas. Exercise caution to avoid adding propellant slugs in the contaminated scrap containers.

8.6.12 Materials which are contaminated with double base propellant shall be placed in appropriate containers and sealed (See Table II for proper bag material selection). Make sure all air is evacuated from bags before sealing. A yellow "Explosive Contaminated Waste - Hazardous Waste" ticket (Form OP-065) shall be affixed firmly to each container and completed with all required information.

8.6.13 Material contaminated with composite propellant, hybrid propellant, warhead (PBX) explosive, or heptane squares from the cleanup of composite propellant, or primary explosives (e.g., RDX, HMX) shall be placed in bags and sealed (See Table II for proper bag material selection). Make sure all air is evacuated from bag before sealing. Bags containing heptane squares shall be placed in 30-gal. Rubbermaid® trash cans which serve as secondary containment. A blue "Explosive Contaminated Waste - Non-RCRA Regulated Waste" ticket (Form OP-066) with one of the above materials written in the "Shipper" line shall be affixed firmly to the bag and completed with all required information.

CAUTION: HEPTANE SQUARES GENERATED DURING THE PRODUCTION OF HELLFIRE MAC WARHEAD (PBXN-112) SHALL BE MANAGED IN ACCORDANCE WITH UOP 1-13528 AND SECTION 8.8 OF THIS PROCEDURE. FAILURE TO DO SO MAY RESULT IN DAMAGE TO PROPERTY OR EQUIPMENT.

8.6.14 Per DOT requirements, bags of P/E contaminated wastes shall not weigh more than 50 lbs and shall not be more than 10 bags per box.

8.6.15 P/E contaminated wastes shall be taken directly to designated storage areas. Once at these locations, the materials shall be packed into labpak boxes. Each box shall have an "Explosive Containing Waste Box Inventory Log" (See Form OP-064) and items shall be logged in as they are packed. Yellow or blue waste tickets shall be removed from containers and placed in folders attached to the boxes.

Note: Hybrid contaminated wastes generated by Research shall be managed in accordance with Section 8.7 of this procedure.

8.6.16 Boxes and Box Inventory Log shall be properly labeled and identified when the first container of scrap is placed in the box. The method for identification shall be a prefix per the propellant designation (Double base "DB", Composite "CO" and Hybrid "HY" followed by the six digit Date "MMDDYY , followed by the count of boxes for that propellant designation that was started on that date "-1".

Note: Labels are supplied by Environmental

8.6.17 Composite and hybrid boxes must have a visible "Non-RCRA Regulated Waste" label. Double base boxes must have a visible "Hazardous Waste" label with that day's date in the "Accumulation Start Date".

8.6.18 The weight of the box shall not exceed 350 pounds. The total weight for each completed box, plus 10 pounds, shall be entered on the Box Inventory Log, and on the outside of the manila folder on the box.

8.6.19 Use two pieces of masking tape about four inches long on the sides of the manila folder to attach to the box. Attach it about two feet below the top of the box.

8.6.20 Boxes must be palletized with like wastes. For example, do not put a heptane squares box on a pallet with a composite contaminated rags box.

8.6.21 If used at all, pallets with double dividers in the center of the fork side must be stacked on top. Many pallet jacks do not work with these pallets.

8.6.22 Wrap two layers of shrink wrap around the tops of four boxes on a pallet. Do not cover the manila folders.

8.6.23 Placement of less than four boxes per pallet requires Environmental Department approval.

8.6.24 All storage areas containing P/E contaminated scrap shall be inspected weekly. Inspections shall be recorded on the "Hazardous Waste Storage Box Weekly Inspection" form (See Form OP-157). Any problems and corrective actions shall be recorded. Inspections shall be completed every week (not to exceed 7 days between inspections). The inspection should indicate when no wastes are present.

8.7 HYBRID CONTAMINATED WASTE FROM RESEARCH AREAS

8.7.1 Sealed bags of hybrid contaminated wastes shall be moved to the designated accumulation point by Research personnel and placed into a blue plastic drum.

8.7.2 When the total waste exceeds 55 gallons it must be moved to, or managed as, a 90-day storage area requiring inspections every seven days.

The drum shall have an Inventory Log Sheet (See Form OP-064) attached to the lid. An entry shall be made on the inventory log sheet each time a bag of waste material is added to the drum.

8.7.3 Once the drum is full, supervision shall schedule pickup by Mix/Cast personnel who will move the drum to Building 372 or 366. The materials shall be removed from the drum and packed into a labpak box (in accordance with 8.6.14.). The inventory log sheet shall be removed from the drum and inserted in the folder attached to eachbox. The empty drum shall be returned to Research for reuse.

8.8 P/E WASTE

8.8.1 P/E contaminated material and P/E materials shall be segregated at the time of generation by placing in proper receptacles in operating areas.

8.8.2 All bulk waste propellants (regardless of type), waste explosive ingredients (i.e., RDX, HMX), acetone squares from P/E cleaning operations or lacquer preparation or cleaning operations, and heptane squares from Hellfire MAC Warhead (PBXN-112) production, shall be considered to be explosive. These materials shall be placed in appropriate containers (See 8.8.6) at the point of generation and sealed (See Table II for proper bag material selection). Bags containing acetone squares shall be placed in 30-Gal. Rubbermaid® trash cans which serve as secondary containment. A red "Explosive Hazardous Waste – Burning Grounds Only" ticket (See Form OP-027) shall be affixed firmly to each container and completed with all required information.

Note: "Bulk" is defined as less than ½ in. in any two dimensions, or less than one teaspoon of a powder or uncured material.

8.8.3 Once bags are sealed and tagged they shall be placed in the appropriate scrap shed for the building. When bags are added to the scrap sheds they must be entered on the "Explosive Containing Waste Inventory Log" and the shed's red flag must immediately be placed in the flag holder outside the shed to be visible from the road. A red flag on the shed indicates there is P/E scrap in the shed. Scrap sheds, Bldgs. 399, 416, 403A, and 807 are emptied daily. (See Form OP-068).

8.8.4 All storage areas containing P/E scrap shall be inspected weekly. Inspections shall be recorded on the "Weekly Inspection 90 Day Hazardous Waste Storage Box" form (See Form OP-067). Any problems and corrective actions shall be recorded. Inspections shall be completed every week (not to exceed 7 days). The inspection should indicate when no wastes are present.

8.8.5 Waste P/E shall be removed from scrap sheds by Burning Ground personnel only. When waste is removed, the operator shall date and initial the log for the material removed. The operator will remove the flag from the holder and stow it in the PVC pipe to indicate the shed is empty. Scrap pickup shall be dictated by conditions set forth in Permit No. HW-X-1. Waste must be removed from the sheds and treated at the Burning Grounds within 90 days of its generation date.

Note: Scrap shed Bldgs. 399 and 416, in the Research area must be emptied daily. Scrap shed Bldgs. 403A and 807 must be emptied daily when conditions allow for treatment.

8.8.6 All bulk propellants and explosives such as RDX, HMX, AP (<45 micron), NG squares, and acetone squares shall be stored and transported in conductive or anti-static bags (See Table II for proper bag material selection). Bags containing NG squares, acetone squares, or other wastes which contain liquid explosives shall be placed in rigid plastic containers which serve as secondary containment.

8.8.7 Bottoms from the still or other explosive/solvent mixtures shall have been desensitized by mixing with sawdust so that no free liquid remains. Casting solvents and lacquers or similar liquid explosives shall have been desensitized in accordance with GOP 1-51-05 by cutting 50/50 with triacetin and mixing with sawdust such that no free liquid remains. A maximum of 25 pounds of cut liquid explosives shall be added to 25 pounds of sawdust. Wastes containing unabsorbed free liquid shall not be accepted for treatment at the Burning Grounds.

8.8.8 "High risk" waste shall be identified by a label which provides information on special handling requirements. High risk items are identified by Plant Process Control Board (PPCB).

8.8.9 Wastes which require segregation during open burning shall be packaged and labeled separately at the point of waste generation. Waste compatibility shall be determined as shown in Table I below.

WASTE CLASSIFICATION, LABELING, STORAGE AND DISPOSAL

Table I. Waste Compatibility Matrix

WASTE TYPE	Aluminized Composite	Non-Aluminized Composite	Double-Base	PBX	Hybrid	NG Squares	Acetone Squares	RDX/HMX	AP	AN	NC	Gas Generators	Lab Waste	Cast Grains	Catocene/Ferrocene/Butacene	Initiating Devices (Dets, Leads, etc.)
Aluminized Composite	C	C	X	C	C	X	X	X	C	C	X	X	X			
Non-Aluminized Composite	C	C	X	C	C	X	X	X	C	C	X	X	X			
Double-Base	X	X	C	X	X	C	C	X	C	C	X	C	X			
PBX	C	C	X	C	C	X	X	X	C	C	X	X	X			
Hybrid	C	C	X	C	C	X	X	X	C	C	X	X	X			
NG Squares	X	X	C	X	X	C	C	C	C	C	X	X	X			
Acetone Squares	X	X	C	X	X	C	C	C	C	C	X	C	X			
RDX/HMX	X	X	X	X	X	C	C	C	C	C	X	C	X			
AP	C	C	C	C	C	C	C	C	C	C	X	C	X			
AN	C	C	C	C	C	C	C	C	C	C	X	C	X			
NC	X	X	X	X	X	X	X	X	X	X	C					
Gas Generators	X	X	C	X	X	X	C	C	C	C		C	X			
Lab Waste[1]	X	X	X	X	X	X	X	X	X	X		X	C			
Cast Grains[2]														C		
Catocene/Ferrocene/Butacene															C	
Initiating Devices (Dets, Leads, etc.)																C

C: *Fully compatible wastes; may be intermixed.*
X: *Wastes may be placed on same pan, but may not be intermixed. Wastes must be physically separated. A trail of starting powder and casting powder shall connect the wastes when required to propagate ignition.*
:Incompatible materials; wastes must be placed on separate pans during treatment

[1] *Lab Waste: Waste generated in gram-quantity from moisture analysis and similar procedure*
[2] *2x4 motors are considered cast grains for the purpose of waste compatibility.*

8.8.10 Each individual container of explosives shall have its own explosive waste ticket.

8.8.11 Large, solid, composite waste items can be no heavier than 150 pounds, and must have at least one dimension less than 13 inches. Large, solid double-base items can be no heavier than 75 pounds, and must have at least one dimension less than 8 inches.

8.9 SPECIFIC PACKAGING REQUIREMENTS

8.9.1 Package (container) requirements for specific waste materials are described in Table II.

Note: Any waste not covered shall be referred to the supervisor and to Safety for proper packaging requirements.

9 LABELING

9.1 GENERAL

9.1.1 All containers for non-explosive hazardous or non-hazardous waste collection, when started, shall be labeled with at least the following information:

a. Name of waste
b. Generic yellow Hazardous Waste, green Non-Regulated Waste, or blue Non-RCRA Regulated label (dependent on waste stream)
c. Container number (as assigned by the Environmental Department; except P/E contaminated and sawdust squares containers)

9.1.2 Waste labels (hazardous, Non-RCRA) shall be obtained from the Environmental Department prior to adding waste to a container. Supervision or a designated area representative shall contact the Environmental Department and provide the name of the waste and the area where the waste is generated and pick up the labels. The label shall be placed on the drum at the start of waste accumulation. The accumulation date shall not be entered until the drum is full and called in for removal to the Bldg. 366 pad.

9.1.3 Containers of used oil, glycol/coolant, EDM water, mop water, and aluminum water or other materials that are pumped out by a waste vendor may be hand labeled by the generator and are not required to have a container number.

9.1.4 Labels shall be placed on the side of the drum and should be on the upper third of the drum. Labels shall NOT be placed directly under the bung of the drum to prevent ruining the label with drips or runs. Drums shall always be positioned so that the labels are clearly visible.

9.1.5 A metal tag bearing an identification number shall be wired and sealed to waste drums before they are called in to Material Handling to be removed to the Bldg. 366 pad (see also section 9.1.).

Note: These consecutively numbered tags are obtained from the Environmental Department with the drum labels (See 9.1.).

10 RECORD KEEPING

10.1 GENERATING AREA

10.1.1 Each location where multiple waste streams from multiple programs are generated and placed into the same drum shall maintain a "Waste Accumulation Record" (See Form OP-064) for each drum of waste as described in Section 10.

10.1.2 The record shall contain the following information:

a. The number of the drum or box being filled.
b. The date waste collection was started.
c. The waste identification (as shown on labels provided by the Environmental Department).
d. Building number where waste is being accumulated.
e. Date of each addition made to drum or box.
f. Name of material added. For materials such as paints and thinners, the name shall include manufacturer, spec number, color, and name (example - Deft Polyurethane 3GN193, MIL-C-85285). For solvent rags at Building 368, this field should identify the solvent(s) used.
g. The work order number for the program generating the waste.
h. Quantity added to drum or box.
i. Date material was removed to Bldg. 366 pad (drums).

10.1.3 Each entry shall be signed by the operator and include their ID number.

10.1.4 Drums of rags are exempt from this requirement.

10.2 MATERIAL HANDLING

10.2.1 Material Handling shall maintain the following records:

a. A file of completed Weekly Inspections (see Form OP-062) of the storage pad and Bldg. 810. These inspection records shall be submitted to the Environmental Department at the end of each month.

b. A Waste Generation Record (see Form OP-063) which records the date the waste is called in, drum number, waste type, generation area, and person calling it in for pickup.

10.3 ENVIRONMENTAL DEPT

10.3.1 The Environmental Department shall maintain the following records:

a. Hazardous Waste Log for all plant waste.
b. Analysis records for all waste characterizations.
c. Inspection reports for all waste storage areas (submitted at the end of each month).
d. Inventory logs from all P/E and P/E contaminated waste storage areas (submitted at the end of each month).
e. Waste Accumulation Records for each drum of waste generated.
f. Manifests and all associated shipping documents for each shipment off-site.
g. Copies of all Corporate, State and EPA required reports.

11 CONTAINER TRANSFER TO STORAGE

11.1 GENERATING AREA

11.1.1 Check that the container is labeled and the metal identification tag is present. (See sections 8.1.2 and 9.1.3) When the drum is full mark the Accumulation Date on the container label (see Step 8.1.6).

11.1.2 The drum exterior must be clean of all waste residues before pick up.

11.1.3 Call in drum pickup request to Material Handling and include the building location, drum number, and description of contents.

11.2 MATERIAL HANDLING

11.2.1 Material Handling is the only department permitted to deliver wastes to building 366.

11.2.2 Material Handling shall inspect each drum to be removed from the generating area for the following:

a. Container is UN approved for the contents.
b. Container is visually in good condition - no dents, leaks, damaged seams, or surface rust.
c. Container is securely sealed.
d. Container is properly labeled for the contents.
e. Container, if hazardous, is labeled with the accumulation date (see Step 8.1.6).

11.2.3 Material Handling shall transport the drum to the appropriate storage

11.2.4 Material Handling shall notify the generator if a container does not meet the above requirements and has not been picked up.

11.2.5 Waste Generation Record (See Form OP-063) shall be maintained by Material Handling and shall record:

a. The date material was called in for pickup;
b. Drum number, when required (see section 9.1)
c. Waste Description;
d. Building where material is to be picked up from; and
e. Person calling for pickup.

11.3 RECEIPT AT BLDG. 366 OR 810

WARNING

FORKLIFTS SHALL ENTER BLDG. 366 AREA FROM THE SOUTHEAST CORNER OF THE BUILDING. DO NOT OPERATE FORKLIFTS ON STEEP APPROACH TO EAST SIDE OF BUILDING.

11.3.1 At Bldg. 366 drums shall be immediately placed inside the appropriate diked area on pallets. Containers shall be arranged so that labels are readily visible. A maximum of eight drums, four cubic yard boxes or 16 Lab Pak boxes shall be stored in each cell. Ensure drum sides do not overhang ends of cells.

11.3.2 At Bldg. 810, drums and buckets must be placed on containment pallets. Smaller containers shall be placed on shelves or containment pallets, whichever is most secure.

12 STORAGE AND INSPECTION

Note: Bldgs. 366 and 810 storage areas are authorized by a permit issued by the WV Department of Environmental Protection. Areas which are designated as less than 90 day storage (P/E and P/E contaminated scrap storage areas, etc.) must be in compliance with regulations for 90 day storage. Regulations are extensive and must be strictly followed. Any deficiency must be immediately detected and corrected.

12.1 WEEKLY INSPECTION OF BLDGS. 366 AND 810

12.1.1 Observe that all container labels are legible.

Note: This includes stenciling, hazardous waste labels, hazard warning labels, and any other such information.

12.1.2 Visually observe each container for leakage.

12.1.3 Check that each container is structurally sound.

CAUTION: ANY PERMANENT DISTORTION OF THE DRUM HEAD OR SHELL OR SEVERE RUSTING SHALL BE CONSIDERED DEFECTIVE.

12.1.4 Observe each diked area for any sign of a leaking container.

Note: Presence of residue may indicate leakage.

12.1.5 Complete the Weekly Inspection Form (See Form OP-062) including recording any observations not covered in the Checklist.

12.1.6 Notify the Material Handling Supervisor and the Environmental Department if any discrepancy or unusual condition is noted.

12.1.7 Any spillage, leakage, or foreign material found at the storage area shall be cleaned up and contained as directed by Material Handling Supervision and the Environmental Department. Damaged drums shall be transferred and the pad shall be cleaned the same day the spill was observed. Supervision shall notify the Environmental Department immediately of any spillage or suspected leakage.

13 PACKAGING OF SAWDUST IN LABPAK BOXES

Note: Sawdust to be packaged shall be of the same type. Example – composite or hybrid

13.1 Obtain a piece of black conductive poly to place on the floor in the area where the sawdust is to be packaged.

13.2 Assemble the labpak box, per instructions in section 8.6 and move to packaging area.

13.3 Attach a "Non-RCRA Regulated" label to the box.

13.4 Insert liner into box.

13.5 Obtain a 2nd liner and place into the box.

13.6 Place four boxes on a pallet. (See section 8.6.9 for alternate pallet/box options)

13.7 Move all containers of sawdust to be packaged to designated area.

Note: All sawdust to be packaged shall have no free standing liquid

13.8 Inspect all cans to ensure there is no free standing liquid, add sawdust if necessary.

WARNING

USE PROPER LIFTING TECHNIQUE WHEN LIFTING CANS TO PLACE THE CONTAMINATED SAWDUST INTO THE BOX. IF THE CONTAINER WEIGHS MORE THAN 35 LBS, BACKBELTS SHALL BE USED. IF THE CONTAINER WEIGHS MORE THAN 50 LBS, TWO PERSONS SHALL BE REQUIRED TO LIFT. PERSONAL INJURY MAY OCCUR.

13.9 Seal the bags closed with tape (see figure 1).

13.9.1 Per DOT requirements, bags shall not weigh more than 50 lbs and shall not be more than 10 bags per box.

Figure 1. Taped Inner Bag With Sawdust

13.10 Lift bags containing the sawdust from container and place into the box with the tape sealed "TOP" of the bag up. Set the scrap ticket from container aside so it can be used later (see figure 2).

Figure 2. Bags in Box

Note: Individual sealed bags are important because the boxes are manually unloaded into drums for incineration

13.11 Repeat this process until box is full. The box shall weigh less than 350 lbs.

13.12 Inspect the contents of the box to ensure all material is absorbed into the sawdust.

13.13 Contact Supervisor to inspect box for proper packaging.

13.14 Seal both bags with a zip tie. Close box and seal with the clear, Scotch® brand tape per section 8.6 .

13.15 Obtain a manila folder and place on the outside of the box and mark it with the weight of the bags plus 10 pounds (for the pallet weight), "sawdust" and proper box identification. The 1st 2 letters of the type of scrap, CO for composite, or HY for hybrid, followed by the date of the oldest square in the box. Attach using two, approximately 4 inch pieces of masking tape about 2 feet below the top of the box.

Example: CO070211 (Square started on 07/02/11)

13.16 Supervisor and operators that verified the box was packaged correctly shall write their badge number on the outside of the manila folder

13.17 Place all the scrap tickets inside the folder along with the proper sheet for the box, and total all of the weights added to the box and write it on the sheet and the outside of the manila folder.

13.18 Clean up area when packaging is complete.

13.19 Move box to area for storage and log it in.

Note: Composite and hybrid sawdust squares boxes can be on the same pallet but not with double base, hybrid or composite contaminated boxes.

14 PROCESS MAINTENANCE

14.1 None

15 SHUTDOWN

15.1 None

16 SAFETY DATA SHEET(S)

Safety Data Sheets (SDSs) and corresponding summary sheets can now be viewed electronically through SiteHawk using the following link in SharePoint:

- http://msportal/ablnet/organization/safety/Pages/SDS.aspx
  - Login Name: ATK
  - Password: msds
  - Company ID: 1510

WASTE CLASSIFICATION, LABELING, STORAGE AND DISPOSAL

Table II
P/E WASTE

	PACKAGE	GROUNDING	NOTES
POWDERS			
Powders (RDX, HMX Aluminum, $BKNO_3$…)	Conductive Velostat	Grounded – Bags	
AP Powder Bulk	Polyethylene bags	Drums grounded	
Mixer Samples or makeup containers	Conductive Velostat	Grounded – Bags or containers	
UNCURED PROPELLANT / EXPLOSIVES			
Sample containers Freezette	Polyethylene	Ungrounded	
Scrap boxes	Polyethylene	Ungrounded	
Scrap tubes	Aluminum lined cardboard	Ungrounded	
Other Plastic Sheeting Drip covers	Conductive Velostat	Grounded	
Follower Plate cover	Antistatic Nylon (Yellow) or Velostat	Ungrounded Grounded	
Diapers	Conductive Velostat	Grounded	
SOLID BLOCKS / SAMPLES			
Sample containers Freezette	Polyethylene non-conductive	Store on grounded surface	Use water to cut when possible.
Blocks	Velostat or aluminum foil	Store on grounded surface	
Cut samples / Strands	Velostat or aluminum foil	Store on grounded surface	
Motors (Packout)	Antistatic Plastic	Ungrounded	
INITIATING DEVICES			
M228 Grenade Fuzes; Complete	Pink Poly Antistat Shipping Container	Ungrounded Ungrounded	
M228 Primers	Pink Poly Antistat	Ungrounded	
M734 Stab Dets	Plywood Trays	Ungrounded	One article per hole
M734 Leads	Plywood Trays	Ungrounded	One article per hole
MOFA Dets	Plywood Trays	Ungrounded	One article per hole
M758 Dets and Leads	Plywood Trays Styrofoam Trays	Ungrounded Ungrounded	One article per hole One article per hole
M758 Rotor Assemblies	Plywood Trays Styrofoam Trays	Ungrounded Ungrounded	One article per hole One article per hole

TABLE II
P/E WASTE BAG MATERIAL SELECTION

M759 Dets and Le	[illegible]	[illegible]	)ne article per hole)ne article per hole
M759 Rotor Assemblies	Plywood Trays Styrofoam Trays	Ungrounded Ungrounded	One article per hole One article per hole

TABLE II
P/E WASTE BAG MATERIAL SELECTION (continued)

SCRAP CONTAINERS			
Uncured Propellant / Explosive scrap bulk	Pink Poly antistatic	Ungrounded	Scrap box liners or bowl excess
Liquid Explosive	Pink Poly antistatic	Ungrounded	Sawdust squares
Cured Propellant / Explosive scrap bulk	Pink Poly antistatic	Ungrounded	Casting tooling clean up
Cured Propellant Fines	Velostat	Grounded - Bags	Small cuttings
Powder scrap	Velostat	Grounded - Bags	
Contaminated Scrap	Pink Poly antistatic	Ungrounded - Bags	Rags, swabs, etc
Gaylord Boxes	Velostat liner	Ground during filling	
Plastic Cans (i.e., 30-Gal. Rubbermaid® Trash Cans)	Pink Poly antistatic liner	Ungrounded	Acetone squares, Heptane squares
Metal Cans	Velostat liner Pink poly liner	Ground can and liner Ground can, liner optional	
Scrap with flammable solvents	Pink Poly antistatic	Ungrounded	No free liquid allowed
Inert Scrap	Regular trash bag	Ungrounded	No solvent vapors

Permit Attachment 6

Procedures to Prevent Hazards

Section F
Procedures to Prevent Hazards

SECTION F

Procedures to Prevent Hazards

This section contains the information required to demonstrate compliance with the preparedness and prevention requirements in 40 CFR 264 Subpart C and the inspection requirements in 40 CFR 264 Subpart I for containers and in 40 CFR 264 Subpart X for miscellaneous units.

F-1 Security [40 CFR 264.14 and 270.14(b)(4)]

ABL is a government-owned defense facility, operated by ATK. Security controls and procedures play a significant role in the operation of ABL, because many operations require constant protection of Department of the Navy classified material and ATK proprietary materials. Security personnel are responsible for controlling access to the facility and for implementing security and safety requirements issued by the Department of the Navy and ATK. Security personnel are also responsible for providing fire protection and emergency services.

F-1a Security Procedures and Equipment [40 CFR 270.14(b)(4) and 264.14]

F-1a(1) 24-Hour Surveillance [40 CFR 264.14(b)(1)]

Alliant Techsystems Operations LLC fulfills the security procedures and equipment requirements through the use of a barrier and other methods to control entry. These facilities will be maintained for the life of the RCRA permit.

At the facility's discretion for operational security purposes, security guards and firefighting guards are on duty 24 hours a day, 7 days a week. Guards are posted at the main plant entrance to control access by personnel and to prevent unauthorized entry to the facility. Other access gates are either identification card access or controlled remotely. Guards patrol and monitor the entire ABL facility, including the Burning Grounds and the hazardous waste storage unit. Lighting is provided around the perimeter and throughout the operating areas. Remotely operated video cameras are mounted in strategic locations throughout the facility. The cameras are operated from the main security building. The video camera surveillance system allows the guards to monitor virtually all portions of the plant. This surveillance system is implemented at the discretion of the facility owner and operator and is not submitted to fulfill the security procedures and equipment requirements for RCRA permitting.

F-1a(2)(a) Barrier [40 CFR 264.14(b)(2)(i)]

A 7-ft-high chain-link fence with a 1-ft top guard consisting of three strands of twisted double-strand barbed wire surrounds the active portion of the facility. Locked gates and attendants control entry through the fence. This fence meets the security requirements of 40 CFR 264.14(b)(2) for an artificial barrier. Both the Burning Grounds and the hazardous waste storage unit are within the fenced perimeter of the facility. The Burning Grounds is also surrounded by its own 7-ft-high chain-link fence.

F-1a(2)(b) Means to Control Entry [40 CFR 264.14(b)(2)(ii)]

Entry to the active portion of the facility is through gates controlled by identification card access and can be remotely controlled by security guards. All employees must display their security badges upon entry to the facility. All visitors and contractors must sign in with the guards and receive and wear an appropriately classed badge. An ABL employee must escort visitors. Unescorted contractors working onsite receive a security and safety briefing, are required to read and sign a "Contractor Safety and Security" handbook, and are given instructions on specific travel routes to and from their job sites. ABL personnel are trained to constantly observe work areas and report all emergencies, unauthorized or unidentified personnel, or anything unusual to the Security Office.

F-1a(3) Warning Signs [40 CFR 264.14(c)]

Signs are placed at 100-ft intervals along the facility's perimeter fence. The signs read "Danger, Keep Out, US Government Reservation, Trespassers will be Prosecuted to the Full Extent of the Law." Signs that describe the "Conditions of Entry" for personnel are posted at the main gate. Signs posted around the Burning Grounds and the hazardous waste storage unit read "Danger, Unauthorized Personnel Keep Out." Signs are legible from at least 25 ft. The signs are written in English. There is no other predominant language in the area surrounding ABL.

F-1b Waiver [40 CFR 264.14(a)]

A waiver from the security requirements of 40 CFR 264.14(a)(1) and (2) is not sought for either the Burning Grounds or the hazardous waste storage buildings.

F-2 Inspection Schedule [40 CFR 264.15, 270.14(b)(5)]

F-2a General Inspection Requirements [40 CFR 270.14(b)(5), 264.15(a) and (b), and 264.33]

The hazardous waste storage unit and the Burning Grounds are inspected for malfunctions and deterioration, operator errors, and discharges. Inspections are conducted in accordance with written SOPs.

All facility communications, emergency alerting system and fire protection, spill control, and decontamination equipment are inspected, tested, and maintained as necessary to assure their proper operation in time of emergency. Where applicable, equipment is inspected to recognized standards. Records and operation logs are maintained for each inspection performed.

Inspection records for both the Burning Grounds and the hazardous waste storage unit are maintained in the Environmental Department. The form includes date, time, inspector's name and signature, observations, and remedial actions taken. Records are kept for 3 years.

A copy of the inspection form for the Burning Grounds is provided in Figure F-1. The frequency of inspection items is indicated on the inspection form.

A copy of the inspection form for the hazardous waste storage units is provided in Figure F-2. The unit is inspected weekly by operating personnel.

F-2a(1) Types of Problems Addressed at the Inspection [40 CFR 264.15(b)(3)]

Burning Grounds

The following types of problems are looked for during inspections of the Burning Grounds:

Burning Pans (before collecting waste)

- Erosion of soil in burn pan
- Foreign objects or debris
- Tall grass or weeds
- Pan temperature
- Pan integrity

Personal Protection (before use)

- Flame resistant coveralls
- Conductive shoes
- Safety glasses

Fire Protection (before use)

- Rubber tamper
- Water hoses
- Two-way communication

Ignition Items (before use)

- Electric matches
- Firing circuit continuity check
- Ignition Control System

Traffic Control (before ignition)

- Gates closed
- Signs posted

Fire Control (after completion of burn)

- Grass fires

Examples of possible problems and remedial actions for the Burning Grounds are presented below.

Problem	Remedial Action
Erosion of burning pan	Submit Work Order to Maintenance for repair
Foreign objects or debris in pan	Remove and dispose
Tall weeds or grass	Contact Grounds Crew and have grass cut
Missing fire protection item	Procure from Stores before proceeding
Missing ignition system item	Procure from Stores before proceeding
Electric match not properly connected to firing circuit	Repair connection before igniting pans
Gates open or signs not posted	Close gates and post signs before burning
Weather conditions unacceptable (See Section D-8)	Postpone burn until weather conditions acceptable

Building 366 and Building 810 Container Storage

The types of problems looked for during inspections of the Building 366 and Building 810 container storage area are listed below:

Containers and Containment Cells

- Absent or illegible labels
- Leaking, bulging, rusted, or distorted drums
- Absence of drum bungs or closure rings
- Accumulated residue, water, or foreign material in cell containment

Structural Equipment and Operating Area

- Roof leaks, physical deterioration of structure
- Cracks or deterioration of concrete base or cell members
- Absent or illegible warning signs
- General housekeeping and cleanliness

Examples of possible problems and remedial actions for the hazardous waste storage unit are presented below.

Problem	Remedial Action
Missing or illegible label	Affix a proper legible label
Leaking drum	Transfer material to new drum or provide over pack.
Missing or insecure bung or lid	Install and tighten bung or lid
Distorted or rusted drum	Notify supervision. Transfer material if conditions affect the structural integrity of the drum.
Foreign residues in diked area disposal	Clean up residue and place in container for disposal

F-2a(2) Frequency of Inspections [40 CFR 264.15(b)(4)]

Burning Grounds

Burning Grounds facilities and equipment are inspected according to the frequencies listed below.

Burn Pans

Burn pans are inspected before waste is collected from the less-than-90-day storage areas to ensure that the pans are safe to receive waste.

Firing Circuit

The firing circuit is checked with a circuit tester before waste is collected to ensure that the control panel is short-circuited. This ensures that the circuit does not have a voltage potential between the two lines of the firing circuit, which in turn prevents premature firing of the electric match when the match is connected to the firing circuit.

Protective Equipment

PPE is inspected before each use.

Fire Protection

Fire protection equipment is inspected before each use.

Ignition items

The firing circuit is checked before each burn using a circuit tester to ensure that the electric match is properly connected to the firing circuit before burning is initiated. Electric matches and the ignition control system are inspected to ensure they are in good condition.

Traffic Control

Traffic control items (gates closed and signs posted) are inspected before each burn to ensure that unauthorized personnel do not enter the unit during a burn event.

Fire Control

The unit is inspected after each burn event to ensure that no grass fires are burning in or around the Burning Grounds.

Building 366 Container Storage

This building is inspected weekly when it contains wastes.

Monitoring Equipment

No permanent monitoring equipment is installed at the container storage building. In the event of a leak or other incident, portable equipment (e.g., air pumps, Draeger tubes, oxygen meters, or flammable vapor meters) is available from the Safety and Environmental Department. All such monitoring equipment is inspected and calibrated before use and maintained in accordance with the manufacturer's recommendations.

Areas Subject to Spills

The loading/unloading area is the center aisle driveway at the container storage building. This area is inspected after each material transfer to or from the area. Containers and containment cells are inspected weekly by operations personnel.

Operating and Structural Equipment

The concrete floor is checked visually during the weekly container area inspection. Forklifts, vehicles, and material transfer equipment (not dedicated to container area use) are on an annual preventive maintenance schedule.

Building 810

This building is inspected weekly when it contains waste.

Monitoring Equipment

There is no permanent monitoring equipment installed at the Building 810 container storage building. In the event of a leak or other incident, portable equipment (e.g., air pumps, Draeger tubes, oxygen meters, or flammable vapor meters) is available from the Safety and Environmental Department. All such monitoring equipment is inspected and calibrated before use and maintained in accordance with the manufacturer's recommendations.

Areas Subject to Spills

Loading and unloading of waste occurs at the front door. This area is inspected after each material transfer to or from the area. Containers and containment cells are inspected weekly by operations personnel.

Operating and Structural Equipment

The concrete floor will be checked visually during the weekly container area inspection.

F-2b Specific Process Inspection Requirements [40 CFR 270.14(b)(4) and 264.15(b)(4)]

F-2b(1) Container Inspection [40 CFR 264.174]

As discussed in Section F-2a, the containers and the container storage area are inspected weekly for leaks, spills, and deterioration caused by corrosion and other factors.

F-2b(2) Tanks System Inspection [40 CFR 264.195]

Not applicable.

F-2b(3) Waste Pile Inspection [40 CFR 270.18(d), 264.254(b)]

Not applicable.

F-2b(4) Surface Impoundment Inspection [40 CFR 270.17(c), 264.226(b), 264.226(c)]

Not applicable.

F-2b(5)(a) Incinerator and Associated Equipment [40 CFR 264.347(b)]

Not applicable.

F-2b(6) Landfill Inspection [40 CFR 264.303(b)]

Not applicable.

F-2b(7) Land Treatment Facility Inspection [40 CFR 264.273(g)]

Not applicable.

F-2b(8) Miscellaneous Unit Inspections [40 CFR 270.14(b)(5) and 264.602]

The general inspection requirements described in Section F-2a ensure compliance with the environmental performance standards discussed in Section D-8.

F-2b(9) Boilers and Industrial Furnaces (BIF) Inspections [40 CFR 264.15, 266.102(a)(2)(ii), 266.102(e)(8), 266.111(e)(3)]

Not applicable.

F-2b(10) Containment Building Inspection [40 CFR 264.1101(c), 264.1101(c)(4)]

Not applicable.

F-3 Waiver or Documentation of Preparedness and Prevention Requirements [40 CFR 270.14(b) and 264.32(a) through 264.32(d)]

A waiver from the preparedness and prevention requirements for the Burning Grounds and the hazardous waste storage units is not sought.

F-3a Equipment Requirements [40 CFR 270.14(b) and 264.32]

F-3a(1) Internal Communications and Alarms System [40 CFR 264.32(a)]

ABL provides internal communications by the following methods: telephones (cellular and fixed), and the plant emergency alerting system. The internal communication system can be utilized to summon the plant security force, fire brigade, supervision, and the plant spill response team.

Burning Grounds

Under normal circumstances, no personnel (other than the Burning Grounds operator) are allowed to perform work activities at the Burning Grounds when waste is present on the burn pans. Grass mowing and other maintenance activities are performed only when the burn pans are empty of untreated reactive wastes. The Burning Grounds operator carries a cellular telephone at all times while performing duties at the Burning Grounds. If other personnel must perform duties within the Burning Grounds alone while waste is present, a cellular telephone is carried. No burning occurs while personnel are within the fenced Burning Grounds.

Building 366 Container Storage

Personnel performing duties at the hazardous waste storage unit have cell phones in their possession. Security personnel with two-way radios are on duty 24 hours per day, 7 days per week to respond to emergencies. If any personnel must perform duties alone at the hazardous waste storage unit, a cellular telephone is carried.

Building 810 Container Storage

The provisions for internal communications and alarms systems at the Building 810 container storage unit are the same as those for Building 366.

F-3a(2) External Communications [40 CFR 264.32(b)]

Only ABL personnel are typically allowed on site in response to emergencies. If outside assistance is needed, communication is made by telephone through the regional Civil Defense office by dialing 911. Security and plant protection would use the telephone to contact ambulances.

F-3a(3) Emergency Equipment [40 CFR 264.32(c)]

Portable fire extinguishers are carried in all explosive-carrying vehicles and are placed strategically throughout the plant operating areas. ABL has a spill response vehicle to respond to any and all spills on location. It is equipped with the following:

Spill Kits: drain blocker, absorbent pads and booms for non-aggressive materials; oil pads and booms; pads and booms for acidic and caustic materials.

Respiratory Equipment: half- and full-face respirators with cartridges, self-contained breathing apparatus (SCBA) units with spare bottles.

Personal Protective Equipment: full complement of Level B and Level C suits.

Spill Prevention Materials: drum bungs (small and large), patch putty, sealant sticks, and puncture repair kit.

Medical Supplies: fully stocked medical "jump kit," oxygen cylinder and cannulas, sterile solutions, eyewash bottles.

Material Transfer Supplies: scoops, funnels (large and small), drum pumps, spatulas, and drum funnels.

Cleanup Supplies: bucket, detergent, shovel, water hose, broom, dustpan, decontamination pools.

Burning Grounds

The following emergency equipment is maintained at the Burning Grounds:

- Water hose
- Plastic rakes
- Rubber fire tampers

Building 366 Container Storage

The following spill response equipment is stored at the Building 366 hazardous waste storage unit:

- Overpack drum
- Oil absorbent pads
- Absorbent

Building 810 Container Storage

The following spill response equipment will be stored at the Building 810 hazardous waste container storage unit:

- Overpack drum
- Absorbent

F-3a(4) Water for Fire Control [40 CFR 264.32(d)]

Water is available in adequate volumes and pressures to supply fire fighting water streams. The reservoir capacity is 1.4 million gallons and is located to give hydrant pressures of 125 psi.

Burning Grounds

Four yard hydrants with water hoses are located within the Burning Grounds. Water is used to fight grass fires and to cool burn pans before waste is placed on the pans, when less than 24 hours have elapsed since the previous burn. Under no circumstances will attempts be made to extinguish fires involving explosives.

Building 366 Container Storage

A fire hydrant is located approximately 100 ft from this building.

Building 810 Container Storage

A fire hydrant is located approximately 80 ft from this building.

F-3b Aisle Space Requirement [40 CFR 264.35]

Burning Grounds

The aisle space requirement is not applicable to the Burning Grounds. As shown on Drawing B-2 in Appendix B, there is sufficient space between the burn pans to allow the unobstructed movement of personnel, fire protection equipment, or spill control equipment in an emergency.

Building 366 Container Storage

Aisle space requirements will be established in accordance with Life Safety Code 101 and in accordance with sound safety practices. Aisle space is maintained in the container storage area to allow unobstructed movement of personnel and material handling, spill control, and decontamination equipment.

Building 810 Container Storage

Aisle space requirements are established in accordance with Life Safety Code 101 and in accordance with sound safety practices. Aisle space is maintained in the container storage area to allow unobstructed movement of personnel and material handling, spill control, and decontamination equipment.

F-4 Preventive Procedures, Structures, and Equipment [40 CFR 270.14(b)(8)]

F-4a Unloading Operations [40 CFR 270.14(b)(8)(i)]

Burning Grounds

Typically, wastes are loaded onto the explosive waste transport truck and unloaded onto the burn pans by hand. Wastes weighing more than 50 lbs in a single container are loaded and unloaded with a minimum of two people to avoid injury and to ensure that the waste is safely handled, unless mechanical equipment is available.

Building 366 Container Storage

Loading and unloading operations are typically conducted using a forklift. The bungs of the drum are tightened before unloading and transfer. This assures that no material is spilled in loading, unloading, or transfer. Waste containers are placed on pallets to be loaded by forklift onto hazardous waste transport trucks for shipment to offsite treatment or disposal facilities.

Building 810 Container Storage

Loading and unloading operations will be conducted by forklift, by hand, or by handtruck. Waste will be moved in small quantities and in the original containers where possible.

F-4b Runoff [40 CFR 270.14(b)(8)(ii)]

Burning Grounds

The Burning Grounds is located in a relatively flat area adjacent to the North Branch Potomac River. No discrete drainage features are present to channel runoff to the river. Runoff from this area would travel by overland flow to the river. Contamination of runoff will be minimized by conducting all treatment in burn pans, which will be placed on paved surfaces and by inspecting the area around the burn pans for the presence of and collection of ejected untreated wastes. Burn pan covers will minimize exposure of the burn pans to precipitation, thereby minimizing the risk of runoff from the waste treatment unit. Standing water is removed from the burn pans as needed to maintain a dry burn pan surface and prevent any accumulated waste from spilling out of the burn pan.

The 100-year flood elevation does not extend to the burn pan locations and is not expected to affect the pans.

Building 366 Container Storage

The hazardous waste storage containment area was designed and constructed in such a manner to prevent run-on. The containment area is protected from rainfall by a roof. Runoff from the roof and surrounding areas drains through the plant drainage ditches to the North Branch Potomac River. No runoff is expected from the waste storage area.

The hazardous waste storage unit is located at an elevation of 680 ft, which is 15 ft above the 100-year flood elevation in that area. No special precautions for flooding are necessary.

Building 810 Container Storage

The building was designed and constructed in such a manner to prevent run-on. The containment area is protected from rainfall by a roof and walls. Runoff from the roof and surrounding areas drains through the plant drainage ditches to the North Branch Potomac River. No runoff is expected from the future waste storage area.

The hazardous waste storage unit is located at an elevation of 669 ft, which is 4 ft above the 100-year flood elevation in that area. No special precautions for flooding are necessary.

F-4c Water Supplies [40 CFR 270.14(b)(8)(iii)]

The surface water and groundwater at the developed portion of ABL are not water supplies and are not upgradient of public or private water supplies. Groundwater extracted by the CERCLA groundwater remediation system is treated before discharge to the North Branch Potomac River and is used onsite for steam generation, as needed. The OB unit is operated to minimize releases, as described in Section D. The container storage units are equipped with secondary containment to prevent releases, also as described in Section D.

F-4d Equipment and Power Failure [40 CFR 270.14(b)(8)(iv)]

Equipment failure would have no adverse effects on either the Burning Grounds or the hazardous waste storage units. Only standard industrial equipment is or will be used, and redundant equipment is available from other areas if needed. In the event of physical failure of a burn pan, use of this pan would be discontinued until its repair.

Power failure should have no adverse effects on either the Burning Grounds or the hazardous waste storage units. Operations are only conducted during the day shift, and no equipment requiring connection to the electrical power grid is required.

F-4e Personal Protective Equipment [40 CFR 270.14(b)(8)(v)]

Burning Grounds

Personnel present during Burning Grounds operations are required to wear safety shoes, safety glasses, and flame-retardant coveralls. The Burning Grounds operator is required to wear latex or vinyl gloves when handling all waste except rough or abrasive items. The operator is required to wear canvas gloves when handling rough or abrasive items.

Building 366 Container Storage

During loading and unloading operations at the hazardous waste storage unit, personnel are required to wear protective clothing, safety glasses, and safety shoes. For hazardous

waste sampling and transfer operations, operators are also required to use face shields or goggles and protective gloves.

Building 810 Container Storage

Procedures and equipment used to prevent undue exposure of personnel to hazardous waste at the Building 810 container storage unit are the same as those for Building 366.

F-5 Prevention of Reaction of Ignitable Reactive, and Incompatible Wastes [40 CFR 270.14(b)(9)]

F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes [40 CFR 270.14(b)(9) and 264.17(a)]

Plant safety rules prohibit matches, lighters, flash bulbs, open flame, or heat-producing devices at the plant except by specific authorization. Smoking is prohibited in all operating areas and is permitted only in specific areas designated by signage. Written permits are issued for use of heat producing devices and portable power tools. These rules apply throughout the plant, including the Burning Grounds and the container storage building.

The source of ignition for open burning (i.e., electric matches) is not transported in the same vehicle as waste explosives. Starting powder and electric matches are stored in separate containers in the isolation box located within the fenced area of the Burning Grounds.

F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [40 CFR 270.14(b)(9) and 264.17(b)]

Burning Grounds

Wastes treated at the Burning Grounds may exhibit the characteristic of reactivity.

Containers for reactive wastes are lined with conductive or anti-static bags. Reactive wastes are kept out of direct sunlight until placement on the burn pan to prevent solar heating or material degradation.

Reactive wastes treated by open burning are segregated according to compatibility. The reactive wastes are evaluated for compatibility before they can be treated. Incompatible wastes are not placed on the same pan.

Building 366 Container Storage

Explosive reactive wastes are not stored at Building 366.

Ignitable wastes are stored in sealed containers, in a covered, non-enclosed area to prevent direct exposure to sunlight but allow natural ventilation. No additional precautions for prevention of waste ignition are required at the hazardous waste storage unit.

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and

F005) and corrosive (D002 wastes). Other wastes are evaluated for compatibility before they are placed in the unit.

Building 810 Container Storage

Explosive reactive wastes are not stored at Building 810.

Ignitable wastes are stored in sealed containers, in a covered, non-enclosed area to prevent direct exposure to sunlight but allow natural ventilation. No additional precautions for prevention of waste ignition are required at the hazardous waste storage unit.

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Other wastes are evaluated for compatibility before they are placed in the unit.

F-5c Management of Ignitable or Reactive Wastes in Containers [40 CFR 270.15(c) and 264.176]

Building 366 Container Storage

Explosive reactive wastes are not stored in containers at the hazardous waste storage area. The hazardous waste storage area is located at least 50 ft from the facility's property line and therefore meets the 50-ft setback requirement for management of ignitable waste.

Building 810 Container Storage

Explosive reactive wastes are not stored in containers at the hazardous waste storage building once permitted. The hazardous waste storage building is located at least 50 ft from the facility's property line and therefore meets the 50-ft setback requirement for management of ignitable waste.

F-5d Management of Incompatible Wastes in Containers [40 CFR 270.15(d) and 264.177]

Burning Grounds

Incompatible wastes are not stored in containers at the Burning Grounds.

Building 366 Container Storage

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Combination of these wastes could cause a fire or explosion. Fire extinguishers are available in both buildings 366 and 810. In addition the facility maintains its own fire station for response. Other wastes are evaluated for compatibility before they are placed in the unit.

Building 810 Container Storage

No containers that may have held incompatible materials are used for waste storage. Incompatible wastes are not stored in the same cell. The only potential compatibility issues among the most commonly stored wastes at the unit are between ignitable (D001, F003, and F005) and corrosive (D002 wastes). Combination of these wastes could cause a fire or explosion. Fire extinguishers are in both building 366 and 810. In addition the facility maintains its own fire station for response. Other wastes are evaluated for compatibility before they are placed in the unit.

F-5e Management of Ignitable or Reactive Wastes in Tank Systems [40 CFR 270.16(j), 264.198]

Not applicable.

F-5f Management of Incompatible Wastes in Tank Systems [40 CFR 270.16(j), 264.199]

Not applicable.

F-5g Management of Ignitable or Reactive Wastes Placed in Waste Piles [40 CFR 270.18(g), 264.256]

Not applicable.

F-5h Management of Incompatible Wastes Placed in Waste Piles [40 CFR 270.18(h), 264.257]

Not applicable.

F-5i Management of Ignitable or Reactive Wastes Placed in Surface Impoundments [40 CFR 270.17(h), 264.229]

Not applicable.

F-5j Management of Incompatible Wastes Placed in Surface Impoundments [40 CFR 270.17(h), 264.230]

Not applicable.

F-5k Management of Ignitable or Reactive Wastes Placed in Landfills [40 CFR 270.21(f), 264.312]

Not applicable.

F-5l Management of Incompatible Wastes Placed in Landfills [40 CFR 270.21(g), 264.313]

Not applicable.

F-5m Management of Ignitable or Reactive Wastes Placed in Land Treatment Units [40 CFR 270.20(g), 264.281]

Not applicable.

F-5n Management of Incompatible Wastes Placed in Land Treatment Units [40 CFR 270.20(h), 264.282]

Not applicable.

F-5o Management of Incompatible Wastes in Containment Buildings [40 CFR 264.1101(a)(3)]

Not applicable.

Figures

Figure F-1

ABL BURNING GROUNDS
DAILY INSPECTION CHECK SHEET

Inspector's Name _____ **Signature** _____

Date _____ **Time** _____ AM/PM

Item	Frequency	Condition	Acceptable?		
			Yes	No*	N/A
Burn Pans	Prior to Collecting Waste/Loading Pans	Erosion of Liner Material Foreign Objects/Debris Tall Weeds/Grass (Max. height: 6-8 in.) Pans Cooled[3]			
Cage (Pan F)	Prior to Using Pan F	Frame; No visible damage (e.g. cracks, holes, sags) Fabric/Clips; Attached to frame, No visible damage Doors/Hinges; Present, Functional			
Rocket Motor Tie-Down Fixture (Pad D Bunker)	Prior to Using Fixture	Fixture; No visible damage to fixture or mounting hardware Bolts and Eye Bolts; Present and secured Chains (2); No visible damage Load Binders (2); No visible damage, Functional Backing Plate; No visible damage to plate or mounting hardware			
Personal Protective Equipment (PPE)	Prior to Collecting Waste/Loading Pans	Flame Resistant Coveralls Conductive Shoes Safety Glasses Gloves (as needed)			
Fire Protection	Pre-Burn	Rubber Fire Beater; Present, Serviceable Water/Hoses; Present, Serviceable Two-Way Communications; Present, Serviceable			
Ignition Items	Pre-Burn	Electric Matches; Present Starting/Casting Powder; Present Blasting Machine; Present, Serviceable			
Traffic Control	Pre-Burn	Gates Closed Sign Posted			
Fire Control	Post-Burn	Grass Fires; No flames or smoke visible			

***REPORT ALL UNACCEPTABLE CONDITIONS OR SUSPECTED DAMAGE TO SUPERVISION IMMEDIATELY UPON DISCOVERY.**

Observations/Comments/Corrective Action:

NOTES:
1. All tools shall be non-sparking type as specified by the procedure.
2. If an unexpected fire or explosion incident occurs, Burning Grounds personnel shall notify the Security Department in accordance with the ABL Emergency Control Plan.
3. If less than 24 hours has elapsed since previous burn, pans shall be wetted and shall pass a safety inspection.

Figure F-2

WEEKLY INSPECTION HAZARDOUS WASTE STORAGE

	BLDG_____	YES	NO
1.	Container labels are present and legible	_____	_____
2.	Containers are free of leaks	_____	_____
3.	Container bungs or lids are installed and tight/secure	_____	_____
4.	Containers contain no distortion of shape or severe rust	_____	_____
5.	No foreign residues inside diked areas of 366 or 810	_____	_____
6.	Aisle space clear and free of spills	_____	_____
7.	Structure in acceptable condition (roof, containment cells, concrete floor, etc.)	_____	_____
8.	Housekeeping and cleanliness acceptable	_____	_____

9. *Observations:

_____

_____

11. *Remedial Actions Taken

_____

_____

12. *Area supervisor must be notified of discrepancies
Supervisor Name_____Date_____

_____ _____

Inspector's Name Signature

Date _____ Time _____AM/PM

*May be left blank