ATTACHMENT 2

WASTE ANALYSIS PLAN

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1.0. Hazardous Wastes Managed at TEAD and Stored in Building 528

1.1. Background and Scope

1.1.1. Hazardous Wastes, except explosive wastes, requiring storage for more than ninety days, shall be stored in Building 528. Hazardous wastes managed at TEAD and stored in Building 528 shall be described by one or more of the following EPA waste codes; no other hazardous wastes of other codes can be handled or stored in Building 528:

D001, D002, D003*, D004, D005, D006, D007, D008, D009, D011, D018, D019, D020, D022, D023, D025, D026, D028, D029, D030, D032, D033, D035, D036, D037, D039, D040, D042, D043, F001, F002, F003, F004, F005, K047, P030, P098, P106, U002, U003, U019, U031, U041, U044, U051, U069, U075, U080, U127, U131, U151, U154, U188, U211, U220, U226, U239.

* Indicates reactivity as defined in Utah Administrative Code R315-261-23(5), regarding cyanide and sulfide bearing wastes. It does not include reactivity as defined in Utah Administrative Code R315-261-23(6), (7) or (8), regarding wastes capable of detonating (i.e. explosive wastes). D003 Reactive (explosive) wastes are managed at Igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, and K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205;, Building 1320; the OB/OD area; the 1236 Deactivation Furnace (incinerator located at Building 1320); the Small Caliber Disassembly Lines (Buildings 1325 and 1335), and the Hydrolysis Facility (Building 1400).

NOTE: Waste described by the above listed characteristic (D) and listed (F) EPA waste codes are generated by processes that operate intermittently and on a continual basis by TEAD operations. K, P, and U waste codes are included based on a review of past operating records and are not generated on a continual basis.

1.2. Previously Identified Waste Streams & Associated EPA Waste Codes

1.2.1. Detailed chemical analyses shall be performed by the Permittee in order to identify and manage hazardous waste during storage, and to provide the correct notification to off-site treatment, storage and disposal facilities (TSDF) as required under the Land Disposal Restrictions found in Utah Administrative Code R315-268.

1.2.2. Specific waste streams grouped under nine general waste stream titles are presented in Table 1, along with the EPA Waste Code(s) that describe each group.

1.2.3. The parameters of analysis shall be those constituents described by EPA waste codes D001 through D043, the constituents included in the listed waste codes F001 through F005, and Total Organic Halides.

1.2.4. TEAD's Environmental Management Division (EMD) shall select the parameters to be analyzed for as noted in the next paragraph using knowledge as to how the waste was generated, and past analytical results of similar waste streams.

1.3. Parameters and Rationale [Utah Administrative Code R315-264-13(b)(1)]

The parameters of chemical/physical analyses and rationale for their selection are described by general waste title in the following paragraphs.

1.3.1. Surface Coatings/Related Wastes: These wastes are generated during surface coating and removal activities. Wastes categorized under this waste stream title shall be analyzed for the characteristics of Ignitability, Toxicity Characteristic Leaching Procedures (TCLP) Metals and Organics, and Total Organic Carbon (TOC). Constituents of concern contained in the EPA listed waste codes F001 through F005 shall not be analyzed for if they are known to be in the waste stream. These codes are assigned to wastes based on the Permittee's knowledge. If there is any possibility of these constituents being in the waste stream, analysis shall be conducted to verify their presence or absence.

1.3.2. Batteries: Wastes included under this general waste stream include various spent batteries to include lithium, nickel-cadmium, and lead-acid. These wastes need not be analyzed unless the information available, safety data sheets or Army disposal guidance, does not allow a determination to be made. If a determination is required, the waste battery shall be analyzed for Toxicity Characteristic Metals.

1.3.3. Chemical Cleaning/Related Wastes (organics): Wastes categorized under this general waste stream title are generated from the degreasing and treatment of metal parts. Listed waste codes F001 through F005 will be assigned to these wastes based on the Permittee's knowledge. If a determination is required, these wastes shall be analyzed at a minimum for the characteristics of Ignitability, Toxicity Characteristic Metals, and Toxicity Characteristic Organics.

1.3.4. Petroleum Oil and Lubricant Wastes (POL): Wastes in this category include those from automotive and other mechanical operations. Wastes categorized under this general waste stream category will be analyzed for Total Metals, Total Organic Halides (TOX) and Ignitability. Wastes in this category are managed as Used Oil in accordance with Utah Administrative Code R315-15.

1.3.5. Thermal Treatment Residues: Wastes categorized under this general waste stream title are generated in the deactivation furnace, the Small Caliber Disassembly Line, and the open burn and open detonation units. This waste shall be analyzed for Toxicity Characteristic Metals, and for the Toxicity Characteristic Organics 2,4, dinitrotoluene (D030), and hexachlorobenzene (D032) and if necessary, explosives.

1.3.6. Hydrolysate: Spent hydrolysate is generated from the destruction of munition items in a hot caustic bath. This waste will be analyzed for Corrosivity (D002), Reactivity (D003), the Toxicity Characteristics Metals, and Organics: nitroglycerine, 2,4 dinitrotoluene (D030) and hexachlorobenzene (D032).

1.3.7. Spent Blast Grit: Spent blast grit is generated from blast grits made of walnut shells, glass, or steel. The blast grit becomes contaminated with paint chips, the pigment formulations of which contain heavy metals. Past analyses of this waste stream show this waste to be hazardous for Toxicity Characteristic Metals. Therefore, the only analysis that is required to be performed on this waste stream is Toxicity Characteristic Metals.

1.3.8. Installation Restoration Program (IRP) Derived Wastes: Wastes included in this general waste stream title are generated from the investigation and remediation of sites contaminated by past operations. The type of analysis for each waste shall depend upon the operations previously conducted at the site and previous investigative or remedial work performed. The parameters for determination that shall be considered include the characteristics of Ignitability, Corrosivity, and Reactivity. Determinations shall also be made for Toxicity Characteristic Metals, Toxicity Characteristic Organics, and Toxicity Characteristic Organics (pesticides and herbicides). The results from these determinations shall be placed in the Permittee's Operating Record.

1.3.9. Discarded Commercial Products: If the waste is a discarded commercial product or residue collected from a spill of hazardous material, a Safety Data Sheet (SDS) shall be used to determine if the waste is a listed P or U waste or if the waste exhibits any hazardous characteristics.

1.3.10. Miscellaneous (Orphan) Wastes: These wastes are materials which are not currently or routinely generated from processes not currently in operations at the Facility and/or are limited in quantity. A determination shall be made for the characteristics of Ignitability, Corrosivity, and Reactivity. Also, determinations shall be made for Toxicity Characteristic Metals, Toxicity Characteristic Organics, and/or Toxicity Characteristic Organics (pesticides and herbicides) depending on the Permittee's knowledge of the process and materials that generated the wastes. Those characteristics which could not be generated will not be analyzed for.

1.3.10.1. If there is no knowledge as to the origin of the waste or how the waste was generated then the parameters of analysis shall include the characteristics of Ignitability, Corrosivity, Reactivity, plus Toxicity Characteristic Metals, Toxicity Characteristic Organics, Toxicity Characteristic Organics (pesticides/herbicides). Constituents of concern contained in the EPA listed codes F001 through F005 shall be analyzed for.

1.3.10.2 The results from these determinations shall be placed in the Permittee's Operating Record.

1.4. Parameter Test Methods [Utah Administrative Code, R315-264-13(b)(2)]

1.4.1. Table 1 contains the EPA waste codes for hazardous waste managed at the Facility, Building 528, and the approved SW-846 analytical method(s) for each waste code listed. In addition, the EPA waste numbers have been grouped into analyte groups.

1.4.2. More than one method of analysis may appear since analytical contracts are awarded to various labs. Labs performing the analysis shall be certified by the State of Utah for the parameters to be analyzed for.

1.5. Sampling Method [Utah Administrative Code R315-264-13(b)(3)]

1.5.1. Wastes generated on a continual basis at the Facility are sampled in the 90-day storage yard, or at the point of generation. Wastes are either managed in open top or closed top drums, gondolas, or in some instances discharged to a bulk tanker for transport to a Treatment Storage and Disposal Facility (TSDF).

1.5.2. The sampling method selected for a given waste stream shall be based on the physical properties the waste exhibits and the location or method of storage of the waste. Table 2 is a summary of sampling and analytical methodologies for each general waste stream title.

1.5.3. One sample per waste stream is taken, using a sampling tool that will insure the most representative sample. For waste streams generated at a rate greater than 55 gallons per month, the sample to be analyzed shall be a composite sample comprised of equal amounts taken from all the drums filled with the same waste stream that are in storage in the 90-day storage yard (in any given month).

1.6. Frequency of Analyses [Utah Administrative Code R315-264-13(b)(4)]

1.6.1. An analysis shall be performed whenever the process generating a waste stream has changed. Waste streams generated on site and on a continual basis shall be analyzed (at a minimum) once per year if the process generating the waste stream has not changed. Waste streams shall be reviewed on an annual basis to determine if a process change (such as using different materials such as paints or chemicals or a change in the operation has occurred such as a change in operating temperature or the use of equipment of new design) has occurred (see Figure 1). If the waste stream is changed, it shall be sampled within one week of the change and the sample analyzed and a determination made. Any changes in the waste stream will be documented in the Operating Record.

1.6.2. Waste streams generated from non-process sources (e.g., spill, leaks) shall be analyzed at the time of generation, if the constituent of concern is not identified as a listed waste. The determination shall be made on a case-by-case basis and includes both the application of the Permittee's knowledge (in the event of hazardous substance spills, and spills of wastes from existing waste streams) and chemical analysis if necessary. These determinations shall be documented in the Operating Record.

1.6.3. Waste streams generated from non-continuous sources shall be analyzed on an annual basis. These determinations shall be documented in the Operating Record.

1.7. Additional Requirements for Ignitable, Reactive or Incompatible Wastes [Utah Administrative Code R315-264-13(b)(6)]

1.7.1. Hazardous wastes shall be stored so as to prevent the mixing of incompatible waste should a release occur. In Building 528 the bays are numbered 1 through 4. With the orientation of the observer standing beneath the overhead door, facing into the building, bays 1 and 3 are to the observer's left, bays 2 and 4 are to the observer's right. Bays 1 and 2 are the first bays encountered upon entering Building 528 through the overhead door.

1.7.2. Bay 1 shall be used to store wastes that are sludges or solids and that are hazardous wastes by Toxicity Characteristic Metals D004 through D011. Bay 2 shall be used to store corrosive (D002 alkaline) wastes. Bay 3 shall be used to store ignitable and solvent wastes (D001 and F001 through F005). Bay 4 shall be used to store corrosive (D002, acidic) wastes.

1.7.3. The Permittee shall determine the most appropriate bay for wastes with EPA codes D018 through D043 or the U or P codes listed in paragraph 1.1 above based on the characteristics of each waste. Any wastes placed into storage that are reactive (D003, sulfide or cyanide producing) shall be stored in Bay 2.

1.8. Land Disposal Restrictions [Utah Administrative Code R315-268]

1.8.1. The Permittee shall arrange for the disposal of hazardous waste managed on site through the Defense Logistics Agency Disposition Services (DLADS). DLADS holds and administers the contract for the ultimate treatment and disposal of hazardous wastes managed at the Facility. The Permittee shall ensure that contracts are written in such a manner as to ensure the proper treatment and disposal of hazardous wastes generated at the Facility. This includes the notifications required under the Land Disposal Restrictions (LDR) found in Utah Administrative Code R315-268.

1.8.2. The Permittee shall provide a notification with each shipment of hazardous waste that is being sent off site for storage, treatment, and/or disposal. The Permittee shall make the receiving facility aware of any LDRs and/or treatment methods that may be required before the hazardous waste can be disposed of. The Permittee shall include this notification with each shipment of hazardous waste transported off site in addition to, and in association with, the hazardous waste shipping manifest.

1.8.3. The Permittee shall determine:

1.8.3.1. All applicable EPA hazardous waste codes associated with each waste stream managed at the Facility.

1.8.3.2. Treatment standards, or prohibition levels that apply to the waste code(s) used to characterize each waste stream based on waste classification (i.e., wastewaters or non-wastewaters) and waste code, or (in the case of listed wastes) subdivisions found within waste codes referring to specific constituent(s) of concern.

1.8.3.3. What regulated constituents and what concentrations are present in each waste stream.

1.8.4. From a comparison of information contained in paragraph 1.8.3.2. and 1.8.3.3. above, the Permittee shall determine which waste streams require treatment before disposal.

1.8.5. Table 3 is a compilation of tables CCWE (Constituent Concentration in Waste Extract, Utah Administrative Code R315-268-41), Table 2 (Technology-Based standards by RCRA Waste Code, Utah Administrative Code R315-268-42), and Table CCW (Constituent Concentration in Wastes, Utah Administrative Code R315-268-43) for hazardous wastes generated and managed at the Facility.

1.8.6. Should a hazardous waste or discarded commercial product be described by an EPA waste code that does not appear in Table 3, the Permittee shall review all three sections of Utah Administrative Code R315-268 referenced above to determine which treatment standard, or treatment technology applies.

1.8.7. The Permittee shall determine whether or not a hazardous waste or waste stream is restricted from land disposal by comparison of the waste analysis and the applicable tables mentioned above. If it is determined that the waste does not meet the treatment standards, a notice containing the following information will be sent with each shipment to the receiving facility:

1.8.7.1. The EPA hazardous waste code(s);

1.8.7.2. The applicable treatment standard(s), or if the treatment standard is expressed as a treatment, the applicable five letter treatment code;

1.8.7.3. The manifest number associated with the waste shipment; and

1.8.7.4. The waste analysis data used to make the determination.

1.8.8. If the Permittee determines that the waste meets the treatment standards, and can therefore be disposed of without further treatment, a notice containing the information listed above shall be sent with each shipment of hazardous waste to the receiving facility. In addition, the following certification will be sent with the waste shipment and will be signed by a representative of the Facility:

"I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in Utah Administrative Code R315-268-40 and all applicable prohibitions set forth in Utah Administrative Code R315-268-32 through 35. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."

1.8.9. If it is determined that a waste is exempt from LDR regulations, or has been given an exemption under the nationwide capacity variance, in addition to information contained in items 1.8.7.1 through 1.8.7.4 above, the generator must include the date the waste is subject to prohibitions (i.e., the date the variance expires).

2.0. Waste Ammunition Igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369. 1370, and 1371; Above Ground Magazine 1205; and Building 1320

2.1. Background and Scope

2.1.1. Ammunition Igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320 are used to store hazardous waste. The igloos and service magazines were designed for the purpose of storing munitions; however, these structures have been designated Hazardous Waste Management Units (S01, storage) in order to comply with federal and state regulations and support the conventional ammunition demilitarization mission conducted by TEAD's Directorate of Ammunition Operations.

2.1.2. The hazardous waste that is stored in the above-mentioned igloos and service magazines can be described by the EPA waste code and subcategory D003 Reactive (explosive). In addition, some explosives can be further described as toxicity characteristic metals (EPA codes D004 through D011) and toxicity characteristic organics (D030 and D032).

2.1.3. Military Propellant, Explosive, and Pyrotechnics (PEP) formulations in general are comprised of the elements lead, sulfur, chlorine, carbon, hydrogen, oxygen, and nitrogen in the form of organic compounds, halogenated organic compounds, and lead compounds.

2.2. Waste Streams

2.2.1. The waste streams contributing to the D003 (explosive) hazardous waste that will be stored in the ammunition storage igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320 are:

2.2.2. Waste PEP: This waste stream is comprised of munitions that are determined to be obsolete and/or have undergone formulation degradation to the point that their performance characteristics are in question (in essence, discarded commercial or off spec product).

2.2.2.1. Waste PEP items are generated on site and received from off site. The only off-site facility/organizations the Permittee will receive off-site waste reactive (explosive subcategory) wastes from will be Tooele Army Depot South Area (TEAD-S), U.S. Army Explosives Ordnance Personnel, and DOD facilities shipping waste munitions for treatment in the deactivation furnace. No hazardous wastes that have the State of Utah Waste codes P999 or F999 will be transferred from TEAD-S or any other facility to TEAD.

2.2.2.2. Munitions that are usable stock are not considered discarded or off-spec product (hazardous waste) until an approved Department of Defense destruction document is signed by the operator of the treatment unit where the redesignated D003 (explosive) hazardous waste will undergo deactivation. Waste PEP items are treated at the APE 1236 Deactivation Furnace, the Small Caliber Disassembly Line, the Hydrolysis Facility, or the Open Burn/Open Detonation (OB/OD) area located at the Facility.

2.2.2.3. In the event that the availability of the treatment unit the munitions are intended to be treated at changes (due to weather conditions in the case of OB/OD, or equipment operational status in the case of the deactivation furnace), thereby preventing the munitions that have been designated hazardous waste from undergoing treatment, these wastes explosives shall be stored in igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320. Waste munitions received at an OB/OD unit may be stored in place in accordance with Condition VI.C.1.f.

2.2.3. Debris/Liquids contaminated with D003 reactive (explosive) Hazardous Waste: These wastes are generated on site by ammunition maintenance (i.e., disassembly of munitions) and demil operations, or samples of these types of waste are sent from off site. In many instances, these wastes are not reactive in the sense that they will detonate but are contaminated with PEP residues.

2.3. Parameters and Rationale [Utah Administrative Code, R315-264-13(b)(1)]

The parameters of chemical/physical analysis, and the rationale for their selection, are described in the following paragraphs:

2.3.1. Waste PEP in Munitions: This waste stream is generated as: 1) munitions currently in storage as usable stock become obsolete; 2) PEP fillers found in munitions degenerate and become unstable or lose their performance characteristics; and 3) damaged, defective, or obsolete ammunition components are discarded and replaced with new components during ammunition maintenance operations.

2.3.1.1. Regardless of the reason the PEP item became a hazardous waste, the Army has knowledge as to the chemical make-up of the PEP filler, the correct method of storage, and the intended method of deactivation. Therefore, no chemical analysis will be done on waste PEP. In addition, PEP shipping containers are clearly marked and labeled. Further testing will not provide any useful information to the operator for storage than does already exist in munition specification data. The munition specification data for each munition shall be reviewed before being placed in hazardous waste storage to ensure that the required information is available at the time of treatment. The parameters that shall be calculated are; 1) the heat content of the waste on a Btu/lb basis, and 2) the sulfur, halogen (specify halogen type), lead, and mercury content on a weight percent basis.

2.3.2. Debris/Liquids Contaminated with PEP Residue: No chemical analysis will be performed on these waste items. The generator has knowledge as to what raw materials were used in the process that generated the waste. Further analysis will not provide the operator with any useful knowledge for the purpose of storing the waste. This user knowledge includes knowing whether the waste contains free liquids. A visual inspection shall be performed at the time the waste is placed into storage to verify that the contents of the container match the physical description found on the container label.

2.4. Parameter Test Methods [Utah Administrative Code, R315-264-13(b)(2)]

2.4.1. For wastes stored in Ammunition Igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320, the parameters of concern are heat content, sulfur, halogen, lead, and mercury content. As noted before, the concentrations of these parameters can be determined by review of manufacturer and/or munition specifications and no chemical analysis is done.

2.4.2. Calculations are conducted on the basis of one munition item (round), or on the basis of one pound of propellant. In all cases only the reactive PEP filler will be considered; the inert metal munition casing will not be considered.

2.5. Frequency of Analysis [Utah Administrative Code, R315-264-13(b)(4)]

2.5.1. The review and determinations as noted in paragraphs 2.3 and 2.4 above shall be performed each time a new waste, or munition is demilitarized (deactivated), or a munition with a different NSN number is programmed for deactivation. The analysis shall be prepared prior to the waste being deactivated.

2.6. Sampling Methods [Utah Administrative Code, R315-264-13(c)(2)]

2.6.1. No sampling methods shall be employed because the analysis of the parameters of concern is based on a review of manufacturer literature (i.e., generator knowledge) which is then used to determine the concentrations of the parameters of concern.

2.7. Analysis Supplied by Off-site Facilities [Utah Administrative Code, R315-264-13(b)(5)]

2.7.1. The Permittee may receive, in accordance with Condition II.P., reactive (explosive) hazardous wastes that are generated off site. The only facility/organizations TEAD will receive

off-site generated hazardous waste from will be TEAD-S, U. S. Army Explosive Ordnance Personnel, and DOD facilities shipping waste munitions for treatment in the deactivation furnace, small caliber disassembly line or the hydrolysis facility. The only hazardous wastes the Permittee will receive from TEAD-S will be reactive (explosive subcategory). No hazardous wastes that have the State of Utah waste codes P999 or F999 shall be transferred from TEAD-S or any other facility to TEAD-N.

2.7.2. The TEAD Environmental Management Division (EMD) will ensure that the waste analysis for wastes to be transferred is available, and includes, at a minimum, the analysis of the same parameters wastes generated in a similar manner at the Facility.

2.8. Additional Requirements for Wastes Generated Off-Site [Utah Administrative Code, R315-264-13(c)]

2.8.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

2.8.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

2.8.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

2.8.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement shall not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

2.8.1.4. Verify that the waste analysis for the waste received is available, and the EPA waste codes that the waste is described by are permitted to be stored in igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320.

2.8.2. If a discrepancy is found with the manifest, the TEAD EMD shall be called (ext. 3504) for direction.

2.9. Land Disposal Restriction & Notification, Waste Analysis [Utah Administrative Code, R315-268]

2.9.1. Wastes stored in Ammunition Igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320 are reactive (D003, explosive subcategory), and are treated at either the 1236 Deactivation Furnace or at the OB/OD area operated by the Permittee and are not land filled. These methods of treatment comply with the treatment technology specified in Utah Administrative Code R315-268 for D003 (explosive subcategory) wastes.

3.0. APE 1236 Deactivation Furnace

3.1. Background and Scope

3.1.1. The Permittee operates a hazardous waste incinerator located in building 1320. The Army refers to the type of incinerator operated at the Facility as an Ammunition Peculiar Equipment (APE) 1236 Deactivation Furnace. Incinerators of this type are operated at Army Depots throughout the country and were designed specifically to deactivate discarded/obsolete military PEP.

3.2. Waste Streams

3.2.1. Incinerator Waste Feed: The only wastes that shall be treated in the APE 1236 Deactivation Furnace (hazardous waste incinerator) located in Building 1320 are defined as reactive (D003, explosive subcategory) hazardous waste as per Utah Administrative Code R315-261-23. The incineration of waste PEP meets the treatment technology required in Utah Administrative Code R315-268.

3.2.1.1. Hazardous wastes generated from industrial operations at the Facility (sump sludges, wastewater treatment sludges, paint waste, spent degreasers, etc.) shall not be treated in the APE 1236 Deactivation Furnace.

3.2.2. Incinerator Treatment Residues: Residues from the treatment of discarded/obsolete PEP consist of ash, scrap metal, and slag.

3.2.2.1. During operation, incinerator ash accumulates in the cyclone, and high temperature ceramic baghouse. Ash is removed from each of these pieces of process equipment as it is generated and collected in the drums. There is a collection drum associated with, and located below each piece of process equipment mentioned above. Each drum is connected to its associated component either by flexible ducting or hard fittings. This arrangement allows for the transfer and collection of incinerator residues from process equipment to storage drums, and insures that residues will not be released to the environment.

3.2.2.2. Drums filled with incinerator treatment residues (ash) shall be removed to one of the 90-day container storage areas and, if necessary, stored at Building 528 until they are transported to an off-site TSDF.

3.2.2.3. Metal introduced into the treatment process as ammunition casings and projectiles is removed from the kiln on a continual basis by the interior staggered flights (that act like an auger) that are fabricated into the kiln wall. As metal ammunition casings exit the incinerator at the burner end of the kiln, they fall on to a conveyor and are transferred to scrap metal collection drums for recycling.

3.2.2.4. Scrap metal is recycled.

3.2.3. Incinerator Systems Maintenance Generated Wastes: Wastes generated from maintenance of the APE 1236 Deactivation Furnace and its associated Pollution Abatement System (PAS) consist of treatment residues (ash) that has accumulated in the duct work, and discarded surface-contaminated process equipment.

3.3. Parameters and Rationale [Utah Administrative Code R315-264-13(b)(1)]
The parameters of chemical/physical analysis, and the rationale for their selection, are described in the following paragraphs:

3.3.1. PEP: Propellants, Explosives, and Pyrotechnics comprise the only waste stream that will be treated in the APE 1236 Deactivation Furnace. This waste stream is characterized as reactive (subcategory explosive) hazardous waste. No chemical analysis will be performed on this waste stream because the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah Administrative Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. The waste analyses for the PEP hazardous wastes to be treated in the APE 1236 Deactivation Furnace are included in the Munition Items Disposition Action System (MIDAS) database.

3.3.1.1. The analysis that shall be performed on hazardous waste PEP to be treated at the APE 1236 Deactivation Furnace is: 1) a visual inspection of the material contained in the shipment received at Building 1320 to ensure the material delivered matches the material described on the 4508 form accompanying the shipment, and 2) a review of the waste analysis contained in the MIDAS database to ensure that the PEP delivered to the APE 1236 Deactivation Furnace is included.

3.3.2. Treatment Residues (ash): Treatment residues collected in the cyclone and baghouse are managed as one waste stream. These residues shall be sampled and analyzed in accordance with Section 1 of this Attachment.

3.3.3. Treatment Residues (metal scrap): Metal is introduced to the treatment process as ammunition casings and cartridge projectiles. Metal that does not melt as it passes through the rotary kiln is collected and sold as scrap metal and is therefore exempt from regulation. No chemical analysis will be performed on the scrap metal.

3.3.3.1. All pieces of metal exiting the kiln shall be visually inspected to ensure that the deactivation of the PEP component contained in the items fed to the incinerator is complete.

3.3.4. Treatment Residue (slag): Slag accumulating in the rotary kiln is comprised of melted aluminum ammunition casings and/or melted lead projectiles. Metal slag removed from the APE 1236 Deactivation Furnace is recycled as scrap metal, and therefore exempt from regulation. No analysis will be performed on metal slag exiting the rotary kiln.

3.3.5. Discarded Process Equipment: Discarded process equipment that comes in direct contact with waste feeds or incinerator treatment residues may have its surface contaminated by residues that are Toxicity Characteristic hazardous waste. The surface of discarded process equipment will be decontaminated either by grit blasting, wire brushing, or compressed air jet. No chemical analysis will be performed on discarded process equipment.

3.3.5.1. This equipment is inorganic debris with surface contamination. Residues removed from the surface of discarded process equipment shall be collected and managed along with the waste stream described in paragraph 3.3.2 of this section.

3.3.5.2. Discarded process equipment will be visually inspected to ensure that no surface contamination remains on the item. Components made of metal will be recycled as scrap metal.

3.3.5.3. Discarded process equipment that cannot be surface decontaminated, and that has no recycle value, will be characterized as inorganic debris contaminated with characteristic hazardous waste treatment residues (ash). The characterization of the ash will be applied to the debris it contaminated.

3.4. Analysis Supplied by Off-site Facilities [Utah Administrative Code R315-264-13(b)(5)]

3.4.1. The Permittee may receive, in accordance with Condition II.P., reactive (explosive) hazardous wastes that are generated off-site. The only facility/organizations the Permittee will receive off-site generated hazardous waste from will be TEAD-S, U. S. Army Explosive Ordnance Personnel, and DOD facilities shipping waste munitions for treatment in the deactivation furnace, the Small Caliber Disassembly Line, and the Hydrolysis Facility. The only hazardous wastes TEAD will receive from TEAD-S will be reactive (explosive subcategory). No hazardous wastes that have the State of Utah waste codes P999 or F999 shall be transferred from TEAD-S or any other facility to TEAD-N.

3.4.2. The TEAD Environmental Management Division (EMD) will ensure that the waste analysis for wastes to be transferred is available and includes at a minimum the analysis of the same parameters wastes generated in a similar manner at the Facility.

3.5. Additional Requirements for Wastes Generated Off Site [Utah Administrative Code R315-264-13(c)]

3.5.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities will be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

3.5.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

3.5.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

3.5.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement shall not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

3.5.1.4. Verify that the waste analysis for the waste received is available, and the EPA waste codes that the waste is described by are permitted to be burned in the APE 1236.

3.5.2. If a discrepancy is found with the manifest, the TEAD EMD shall be called (ext. 3504) for direction.

3.6. Land Disposal Restriction & Notification, Waste Analysis [Utah Administrative Code R315-268]

3.6.1. The management method of each waste stream treated or generated at the APE 1236 Rotary Kiln is as follows:

Waste Stream	Management Method
Military PEP	Deactivation (DEACT)
Treatment Residues (ash)	Off-site treatment/disposal
Treatment Residues (metal scrap)	Recycled as scrap metal (not regulated)
Discarded Process Equipment	Recycled as scrap metal, or disposed of as hazardous waste if material is un-recyclable

3.6.2. Hazardous wastes generated from operations of the APE 1236 Deactivation Furnace that will be further treated and eventually disposed of at an off-site TSDF are the treatment residue (ash), and discarded process equipment/components. These waste streams shall first be transferred to the central 90-day storage area or Building 528. From there these wastes shall be managed in accordance with the procedures for waste stored in Building 528 found in Section 1 of this Attachment. This plan discusses the methods used to ensure hazardous wastes leaving the Facility and bound for off-site TSDF are managed properly. This includes requirements found in Utah Administrative Code R315-268.

4.0. Small Caliber Disassembly Line

4.1. Background and Scope

4.1.1. The small caliber disassembly line separates the projectile from the cartridge case, collects the propellant, and initiates the primer.

4.2. Waste Streams

4.2.1. Small Caliber Disassembly Line Waste Feed: The only wastes that will be treated in the small caliber disassembly line located in building 1325 are primers from various size cartridges that are defined as reactive (D003, explosive subcategory) hazardous waste in accordance with Utah Administrative Code R315-261-23. The initiation of the primers meets the treatment technology required in Utah Admin Code R315-268.

4.2.2. Small Caliber Disassembly Line Treatment Residues: Residues from the treatment operation consist of projectiles, scrap metal casings, and casings with primers that failed to initiate.

4.2.2.1 The projectiles that are removed from the casings and determined to be waste shall be treated in the deactivation furnace in accordance with Section 3 of this Attachment.

4.2.2.2. Projectiles that have been classified as reusable through the Departments of Defense (DOD) Supply Conditional Code (SCC) Standards will be packaged for reuse.

4.2.2.3. As metal ammunition casings exit the primer-firing module, they are collected in drums for recycling.

4.2.2.4. Primers that fail to initiate in the primer-firing module are returned to the primer firing module or collected for processing through the deactivation furnace.

4.2.3. Small Caliber Disassembly Line Maintenance Generated Wastes: Wastes generated from maintenance of the disassembly line and its associated Pollution Abatement System (PAS) consist of treatment residues (ash) that have accumulated in the duct work, and discarded surface-contaminated process equipment. The residues from the pollution abatement system shall be removed to one of the 90-day container storage areas and, if necessary, stored at Building 528 until they are transported to an off-site TSDF. Scrap metal that has been decontaminated is recycled.

4.2.4. Propellant: Reusable propellant will be repackaged and stored as product for future use and is therefore exempt from hazardous waste regulation. Propellant that is determined to be waste by the Designated Disposition Authority (DDA) shall be managed in accordance with the Army Propellant Management Guide. Once the propellant is removed from storage in a military magazine or other storage area for the purpose of being disposed of, burned or incinerated, or treated prior to disposal it shall be handled as hazardous waste.

4.2.4.1. Waste propellant is treated at the Open Burn/Open Detonation (OB/OD) area located at the Facility or sent to a permitted hazardous waste treatment facility for off-site disposal.

4.2.4.2. In the event that the availability of the treatment unit the munitions are intended to be treated at changes (due to weather conditions in the case of OB/OD, or equipment operational status in the case of the deactivation furnace), thereby preventing the munitions that have been designated hazardous waste from undergoing treatment, these wastes explosives shall be stored in igloos A-101, C-514, C-815, C-816, K-401, K-402, K-403, K-404, K-801, K-802, K-803; Service Magazines 1368, 1369, 1370, and 1371; Above Ground Magazine 1205; and Building 1320, or treated off-site. Waste munitions received at an OB/OD unit may be stored in place in accordance with Condition VI.C.1.f.

4.3. Parameters and Rationale [Utah Administrative Code R315-264-13(b)(1)]

The parameters of chemical/physical analysis and the rationale for their selection are described in the following paragraphs:

4.3.1. Projectiles: Projectiles shall be characterized in accordance with Section 3 of this Attachment.

4.3.2. Primers: No chemical analysis of primers will be performed because: 1) the materials comprising this waste stream were manufactured to government specifications and are already well characterized, and 2) the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah Administrative Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. The PEP analysis of the primers is on file at the Facility.

4.3.3. Shell Casings: The casings are scrap metal and are therefore exempt from hazardous waste regulation.

4.3.4. Pollution Abatement System Residue: Residues collected in the pollution abatement system shall be managed as one waste stream. The residue shall be sampled and analyzed in accordance with Section 1 of this Attachment.

4.3.5. Discarded Process Equipment: Any discarded process equipment shall be inspected to ensure it is free of explosive contamination and is therefore exempt from hazardous waste regulation.

4.4. Additional Requirements for Wastes Generated Off Site [Utah Administrative Code R315-264-13(c)]

4.4.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

4.4.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

4.4.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

4.4.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement will not apply to unused ammunition shipped in its original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

4.4.1.4. Verify that the waste analysis for the waste received is available.

4.4.2. If a discrepancy is found with the manifest, the TEAD EMD shall be called (ext. 3504) for direction.

4.5. Land Disposal Restriction & Notification, Waste Analysis [Utah Administrative Code R315-268]

The management method of each waste stream generated at the small caliber disassembly line is as follows:

Waste Stream	Management Method
Primers	Deactivation (DEACT)
Propellant	Sold as product (not regulated)
Casings (metal scrap)	Recycled as scrap metal (not regulated)
Pollution System Residue	Off-site treatment/disposal
Discarded Process Equipment	Recycled as scrap metal (not regulated)

5.0. Hydrolysis Facility

5.1. Background and Scope

5.1.1. The Hydrolysis Facility treats energetic material containing items such as cartridge activated devices (CADs), propellant activated devices (PADs), or other munitions for which the energetic material can be accessed. The energetic--containing items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material.

5.1.2. The process provides indiscriminate de-activation of energetic constituents. The precise configuration of the munition to be treated is not required due to the nature of the process. When available, manufacturing drawings and data are used to define critical characteristics of the munition to be processed. Important variables include energetic type and content, aluminum content and surface area, and accessibility of the energetic constituents. Based upon the information, the caustic consumption by the waste is calculated. In instances where specific manufacturing data is not available, the required munition characteristics may be assumed by Department of Defense Identification Code (DODIC) and National Stock Number (NSN) groups. For example, many CADs possess comparable mass, size, and constituent quantities. However, their NSNs differ due to their location of use (e.g., "left side" or "right side"). The chiral nature of the munition configuration will have no impact on its processing requirements.

5.1.3. Bench scale tests are performed on representative munitions to demonstrate the efficacy of the process and to determine the treatment time to access the energetic material. The treatment time is established as the accessing time plus 30 minutes plus a 25% margin to assure destruction of all energetic material. The operating conditions are verified by the initial runs of each munition item in the hydrolysis tank and a thorough inspection of the effluent.

5.2. Waste Streams

5.2.1. Hydrolysis Waste Feed: The wastes that will be treated in the Hydrolysis Facility located in Building 1400 are CADs and PADs and are defined as reactive (D003, explosive subcategory) hazardous waste in accordance with Utah Administrative Code R315-261-23. The destruction of the CADs and PADs meets the treatment technology required in Utah Administrative Code R315-268.

5.2.2. Hydrolysis Facility Residues: Residues from the treatment operation consist of hydrolysate, scrap metal, plastic and sludge remaining from the reaction of the sodium hydroxide and the munition components.

5.2.2.1. The spent hydrolysate is transferred to a tanker truck or other suitable container and shipped to an off-site TSDF. Other residues removed from the process shall be containerized and stored for disposal in a 90-day container storage area and, if necessary, stored at Building 528 until they are transported to an off-site TSDF.

5.3. Parameters and Rationale [Utah Administrative Code, R315-264-13(b)(1)]

The parameters of chemical/physical analysis and the rationale for their selection are described in the following paragraphs:

5.3.1. Munitions (CADs and PADs): No chemical analysis of CADs and PADs or other munitions will be performed because: 1) the specifications for the materials comprising this waste stream are typically available from various databases, such as MIDAS, or in various repositories of the manufacturing information; and 2) the waste stream is characterized by the definition found in federal and state regulations (reactive), the treatment standard for the

explosive subcategory of reactive wastes is technology based (DEACT), not concentration based, and treatment standards found in Utah Administrative Code R315-268 expressed as technologies take precedence over treatment standards expressed as concentrations. In addition, due to the similarity of various CADs and PADs, detailed characterization of each item is not necessary nor will be performed as characterizing one item may adequately represent a group as large as 100 having separate NSNs. A review of like items will be done to determine which item or items will be characterized as necessary to conduct the bench scale and validation test(s). The important data needed to conduct the bench scale tests and treat an energetic material containing item are the accessibility of the energetic material, the energetic material content, and the aluminum content and surface area. As stated above, this information is typically available from various databases such as the MIDAS database.

5.3.1.1. Bench scale tests are conducted by placing the munition item in a bath of caustic at a temperature of 212 °F or higher and measuring the time to access the energetic to determine its accessibility. Successfully tested munitions will be processed at varying quantities in the hydrolysis system to validate efficacy of the process.

5.3.1.2. The objective of the validation tests is to set and confirm the final operating conditions. The important criteria are to maintain the hydrogen concentration in the off-gas at less than 2% which represents 50% of the lower flammability limit and to produce energetic-free solid and liquid effluents. Excessive hydrogen production may limit the batch size or require initial reaction at a lower temperature followed by heating to 212°F or greater as the final soak temperature. A 25% margin shall be added to the time required to achieve energetic-free effluents to assure destruction of energetic material in all production runs. The initial test is performed at ¼ batch size with submersion for the access time plus 30 minutes. If the concentration of hydrogen in the off-gas is less than 2%, then no adjustment in batch size or initial temperature is required. If the concentration is greater than 2%, then the batch size must be reduced to 100% / 4*C_{H2} (C_{H2} is the concentration of hydrogen gas) of the original size, or the starting temperature must be adjusted downward and the test repeated. Note that the bath temperature will still be raised to 212°F or greater for the time required for accessing plus 30 minutes after the aluminum reaction slows down. The solid and liquid effluents shall be analyzed to verify that the energetic material concentrations are low enough that they do not present a potential reactive hazard.

5.3.2. Hydrolysis Residue: Residues collected in the hydrolysis tanks shall be managed as one waste stream. The residue shall be sampled and analyzed in accordance with Section 1 of this Attachment.

5.3.3. Discarded Process Equipment: Any discarded process equipment shall be inspected to ensure all contamination has been removed and is therefore exempt from regulation.

5.4. Analysis Supplied by Off-site Facilities [Utah Administrative Code, R315-264-13(b)(5)]

5.4.1. The Environmental Management Division (EMD) shall ensure that the waste analysis for wastes to be transferred is available and includes at a minimum the analysis of the same parameters wastes generated in a similar manner at TEAD are analyzed for.

5.5. Additional Requirements for Wastes Generated Off-Site [Utah Administrative Code, R315-264-13(c)]

5.5.1. Hazardous waste (explosives) received from TEAD-S or other DOD facilities shall be inspected at the time of arrival to ensure that containers in the shipment match information included in the accompanying manifest. The operator who receives the shipment of hazardous waste shall:

5.5.1.1. Verify the manifest document number on each container label matches the unique number assigned to the manifest accompanying the shipment.

5.5.1.2. Verify that the number and type(s) of containers in the shipment match the number and type(s) of containers specified on the shipping document.

5.5.1.3. Verify that the explosive type and quantity of the contents of the container match the physical description found on the container label. Every container in the shipment shall be opened to verify this. This requirement will not apply to unused ammunition shipped in their original containers. Type and quantity of unused munitions shall be verified by the nomenclature marked on the outside of the containers.

5.5.1.4. Verify that the waste analysis for the waste received is available.

5.5.2. If a discrepancy is found with the manifest, the TEAD EMD shall be called (ext. 3504) for direction.

5.6. Land Disposal Restriction & Notification, Waste Analysis [Utah Administrative Code, R315-268]

The management method of each waste stream generated at the hydrolysis facility is as follows:

Waste Stream	Management Method
Munitions	Deactivation (DEACT)
Tramp Material	Recycled as scrap metal (not regulated)
Hydrolysate Residue	Off-site treatment/disposal
Discarded Process Equipment	Recycled as scrap metal (not regulated)

Table 1. SW-846 Approved Analytical Methodologies (TEADN shall use the most current method version

CHARACTERISTIC	WASTE CODE	DEFINITION CONSTITUENT OF CONCERN	Managed at TEAD	SW-846 ANALYTICAL METHOD(S)
Ignitability	D001	Flash Point less than 140 □F	□	1010 or 1020
Corrosivity	D002	pH less than or equal to 2	□	9040 or 9045
		or greater or equal to 12.5	□	
Reactivity	D003	Total Cyanide greater than 590 mg/kg	□	9010 or 9012
		Total Sulfide greater than 500 mg/kg		9030
Toxicity (Metals)	D004	Arsenic		6010, 6020 or 7061
	D005	Barium		6010 or 6020
	D006	Cadmium	□	6010 or 6020
	D007	Chromium	□	6010, 6020, 7195, 7196, 7197, 7198 or 7199
	D008	Lead	□	6010 or 6020
	D009	Mercury	□	6020, 7470 or 7471
	D010	Selenium		6010, 6020, 7741 or 7742
	D011	Sliver	□	6010 or 6020
Toxicity	D012	Endrin		8081
(Pesticides/Herbicides)	D013	Lindane		8081
	D014	Methoxychlor		8081
	D015	Toxaphene		8081
	D016	2,4 D		8151
	D017	2,4,5- TP (Silvex)		8151
	D020	Chlordane		8081
	D031	Heptachlor & (hydroxide)		8081
Toxicity (Organics)	D018	Benzene	□	8015, 8021 or 8260
	D019	Carbon Tetrachloride	□	8021 or 8260
	D020	Chlordane	□	8081
	D021	Chlorobenzene		8021 or 8260
	D022	Chloroform	□	8021 or 8260
	D023	o-Cresols	□	8041 or 8270
	D024	m-Cresol		8041 or 8270
	D025	p-Cresol	□	8041 or 8270
	D026	Cresol (Total)	□	8041 or 8270
	D027	1,4 Dichlorobenzene		8021, 8121, or 8260
	D028	1,2 Dichloroethane	□	8021 or 8260
	D029	1,1 Dichloroethylene	□	8021 or 8260
	D030	2,4 Dinitrotoluene	□	8091 or 8270
	D032	Hexachlorobenzene		8121 or 8270
	D033	Hexachloro 1,3 butadiene	□	8121 or 8270
	D034	Hexachloroethane		8270
	D035	Methyl Ethyl Ketone	□	8015
	D036	Nitrobenzene	□	8091 or 8270
	D037	Pentachlorophenol	□	8041 or 8270
	D038	Pyridine		8015, or 8260
	D039	Tetrachloroethylene	□	8021 or 8260
	D040	Trichloroethylene	□	8021 or 8260
	D041	2,4,5 Trichlorophenol		8041 or 8270
	D042	2,4,6 Thichlorophenol	□	8041 or 8270
	D043	Vinyl Chloride		8021 or 8260

CHARACTERISTIC	WASTE CODE	DEFINITION CONSTITUENT OF CONCERN	Managed at TEAD	SW-846 ANALYTICAL METHOD(S)
Spent Halogenated Solvents used in Degreasing	F001	Carbon Tetrachloride	✓	8021 or 8260
		Methylene Chloride	✓	8021 or 8260
		1,1,1 Trichloroethane	✓	8021 or 8260
		Tetrachloroethylene	✓	8021 or 8260
		Trichloroethylene		8021 or 8260
		Chlorinated Fluorocarbons		8021 or 8260
Spent Halogenated Solvents	F002	Chlorobenzene		8021 or 8260
		Methylene Chloride	✓	8021 or 8260
		Ortho-Dichlorobenzene		8021, 8121 or 8260
		Tetrachloroethylene	✓	8021 or 8260
		1,1,1 Trichloroethane	✓	8021 or 8260
		Trichloroethylene	✓	8021 or 8260
		Trichlorofluoromethane	✓	8021 or 8260
		1,1,2 Trichloroethane		8021 or 8260
		1,1,2 Trichloro-1,2,2 trifluoroethane		8260
Spent nonhalogenated Solvents	F003	Acetone	✓	8015 or 8260
		n-Butyl Alcohol	✓	8260
		Cyclohexanone	✓	8260
		Ethyl acetate	✓	8015 or 8260
		Ethyl Benzene	✓	8015, 8021 or 8260
		Ethyl Ether	✓	8015 or 8260
		Methanol	✓	8015 or 8260
		Methyl Isobutyl Ketone	✓	8260
		Xylene	✓	8021 or 8260
Spent nonhalogenated Solvents	F004	Cresols	✓	8041 or 8270
		Cresylic Acid		8041 or 8270
		Nitrobenzene	✓	8091 or 8270
Spent nonhalogenated Solvents	F005	Carbon Disulfide	✓	8260
		Isobutanol	✓	8260
		Methyl Ethyl Ketone	✓	8015 or 8260
		Pyridine		8015 or 8260
		Toluene	✓	8021 or 8260
		Benzene	✓	8021 or 8260
		2 Ethoxy ethanol		8260
		2 Nitropropane		8260
California List Land Ban Restrictions	TOX	Total Organic Halides	✓	9020 or 9022
	TOC	Total Organic Carbon	✓	9060

Table 2. Sampling/Analytical Methodology Summary

GENERAL WASTE STREAM TITLE	POSSIBLE PHYSICAL STATES	SAMPLING METHOD	CHEMICAL/PHYSICAL ANALYSIS*	ANALYTICAL METHOD(S)
Surface Coating/Related Wastes	· Sludge	Trier	· Ignitability	1010, or 1020
	· Solid	Auger	· TC Metals	7000 series
	· Liquid	Coliwasa or glass tube	· TC Organics	8260 and/or 8270
			· Total Organic Carbon	9060
Chemical Cleaning/Related Wastes (organics)	· Debris			
	· Sludge	Trier	· Ignitability	1010, or 1020
	· Liquid	Coliwasa or glass tube	· TC Metals	7000 series
			· TC Organics	8260 and/or 8270
	· Moist granules	Trier	· Spent Solvents F001-F005	8260 and/or 8270
Petroleum Oil & Lubricant Wastes	· Sludge	Trier	· Total Organic Halides	9020 or 9022
	· Liquid	Coliwasa or glass tube	· Ignitability	1010 or 1020
Chemical Cleaning/Related Wastes	· Liquid	Coliwasa or glass tube	· Corrosivity	9040, or 9045
			· TC Metals	7000 series
	· Sludge	Trier	· Reactivity (cyanide)	9010, or 9012
Thermal Treatment Residues	· Dry powder	Trier	· TC Metals	7000 series
	· Packed powder	Auger	· Reactivity (explosive)	See notes below
Spent Blast Grit	· Dry powder	Trier	· TC Metals	7000 series
IRP Derived Wastes	· Liquid	Coliwasa or glass tube	· Generator Knowledge	
			· Ignitability	1010 or 1020
	· Dry powder	Trier	· Corrosivity	9040 or 9045
	· Packed powder	Auger	· Reactivity (cyanide)	9010 or 9012
	· Sludge	Trier	· Reactivity (sulfide)	9030
	· Moist granules	Trier	· TC Metals	7000 series
			· TC Organics	8260 and/or 8270
			· TC Pesticides	8250
Miscellaneous (Orphan) Wastes	· Liquid	Coliwasa or glass tube	· Generator Knowledge	Material Safety Data Sheet
			· Ignitability	1010 or 1020
	· Dry powder	Trier	· Corrosivity	9040 or 9045
	· Packed powder	Auger	· Reactivity (cyanide)	9010 or 9012
	· Sludge	Trier	· Reactivity (sulfide)	9030
	· Moist granules	Trier	· TC Metals	7000 series
			· TC Organics	8260 and/or 8270
			· TC Pesticides	8270

* Refer to Table 1 , SW-846 Approved Analytical Methodologies for constituents of concern contained in each analyte group (Latest version of test methods are to be used) TC refers to Toxicity Characteristic

Table 3. Land Disposal Restrictions Standards/Technologies

	Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
					CCWE*	CCW*	TBS*
□	D001	Ignitability	Flash point less than 140 □F	High TOC ignitable liquids TOC greater than 10%			FSUBS; RORGS; or INCIN
□				Ignitable compressed gases			DEACT
□				Oxidizers			DEACT
□	D002	Corrosivity	pH less than or equal to 2 or	Acid			DEACT
□			pH greater than or equal to 12.5	Alkaline			DEACT
	D003	Reactivity	Sulfide producing	Reactive sulfides			DEACT (may not be diluted)
			Cyanide producing	Total		590 mg/kg	
			Cyanide producing	Amenable		30 mg/kg	
			Class A or B explosive	Explosive			DEACT
	D004	Arsenic	5.0 mg/l (TCLP)		5.0 mg/l		
	D005	Barium	100 mg/l (TCLP)		100 mg/l		
□	D006	Cadmium	1.0 mg/l (TCLP)		1.0 mg/l		
□				Cadmium containing batteries			RTHRM
□	D007	Chromium(total)	5.0 mg/l (TCLP)		5.0 mg/l		
□	D008	Lead	5.0 mg/l (TCLP)		5.0 mg/l		
□	D009	Mercury	0.2 mg/l (TCLP)	Low mercury- less than 260 mg/kg	0.2 mg/l		
				High mercury- greater than or equal to 260 mg/kg, containing organics also, and not an incinerator residue			RMERC
	D010	Selenium	1.0 mg/l (TCLP)		1.0 mg/l		
□	D011	Silver	5.0 mg/l (TCLP)		5.0 mg/l		
□	D018	Benzene	0.5 mg/l (TCLP)		0.5 mg/l		

	Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
					CCWE*	CCW*	TBS*
□	D019	Carbon Tetrachloride	0.5 mg/l (TCLP)		0.5 mg/l		
□	D020	Chlordane	0.03 mg/l(TCLP)		0.03 mg/l		
	D021	Chlorobenzene	100 mg/l (TCLP)		100 mg/l		
□	D022	Chloroform	6.0 mg/l (TCLP)		6.0 mg/l		
□	D023	o-Cresol	200 mg/l (TCLP)		200 mg/l		
□	D025	p-Cresol	200 mg/l (TCLP)		200mg/l		
□	D026	Cresol (total)	200 mg/l (TCLP)		200 mg/l		
	D027	1,4 Dichlorobenzene	7.5 mg/l (TCLP)		7.5 mg/l		
□	D028	1,2 Dichloroethane	0.5 mg/l (TCLP)		0.5 mg/l		
□	D029	1,1 Dichloroethylene	0.7 mg/l (TCLP)		0.7 mg/l		
□	D030	2,4 Dinitrotoluene	0.13 mg/l (TCLP)		0.13 mg/l		
	D031	Heptachlor & epoxide	.008 mg/l (TCLP)		.008 mg/l		
□	D032	Hexachlorobenzene	0.13 mg/l (TCLP)		0.13 mg/l		
□	D033	Hexachlorobutadiene	0.5 mg/l (TCLP)		0.5 mg/l		
	D034	Hexachloroethane	3.0 mg/l (TCLP)		3.0 mg/l		
□	D035	Methyl Ethyl Ketone	200 mg/l (TCLP)		200 mg/l		
□	D036	Nitrobenzene	2.0 mg/l (TCLP)		2.0 mg/l		
□	D037	Pentachlorophenol	100 mg/l (TCLP)		100 mg/l		
	D038	Pyridine	5.0 mg/l (TCLP)		5.0 mg/l		
□	D039	Tetrachloroethylene	0.7 mg/l (TCLP)		0.7 mg/l		
□	D040	Trichloroethylene	0.5 mg/l (TCLP)		0.5 mg/l		
	D041	2,4,5 Trichlorophenol	0.5 mg/l (TCLP)		0.5 mg/l		
□	D042	2,4,6 Trichlorophenol	2.0 mg/l (TCLP)		2.0 mg/l		
□	D043	Vinyl chloride	0.2 mg/l (TCLP)		0.2 mg/l		
□	F001	Acetone	Detectable (TCLP)		0.59 mg/l		
	-F005	n-Butyl alcohol	Detectable (TCLP)		5.00 mg/l		
□		Carbon disulfide	Detectable (TCLP)		4.81 mg/l		
□		Carbon tetrachloride	Detectable (TCLP)		0.96 mg/l		

	Code	Characteristic/ Constituent of Concern	Regulatory Level	Waste Classification Subcategory	Land Disposal Restriction based on		
					CCWE*	CCW*	TBS*
		Chlorobenzene	Detectable (TCLP)		0.05 mg/l		
□		Cresols	Detectable (TCLP)		0.75 mg/l		
□		Cyclohexanone	Detectable (TCLP)		0.75 mg/l		
		1,2 Dichlorobenzene	Detectable (TCLP)		0.125 mg/l		
□		Ethyl acetate	Detectable (TCLP)		0.75 mg/l		
□		Ethylbenzene	Detectable (TCLP)		0.053 mg/l		
□		Ethyl ether	Detectable (TCLP)		0.75 mg/l		
		2 Ethoxy ethanol	Detectable (TCLP)				INCIN
□		Isobutanol	Detectable (TCLP)		5.00 mg/l		
□		Methanol	Detectable (TCLP)		0.75 mg/l		
□		Methylene chloride	Detectable (TCLP)		0.96 mg/l		
□		Methyl ethyl ketone	Detectable (TCLP)		0.75 mg/l		
□		Methyl isobutyl ketone	Detectable (TCLP)		0.33 mg/l		
□		Nitrobenzene	Detectable (TCLP)		0.125 mg/l		
		2-Nitropropane	Detectable (TCLP)				INCIN
		Pyridine	Detectable (TCLP)		0.33 mg/l		
□		Tetrachloroethylene	Detectable (TCLP)		0.05 mg/l		
□		Toluene	Detectable (TCLP)		0.33 mg/l		
□	F001 -F005	1,1,1 Trichloroethane 1,1,2 Trichloro-1,2,2 tetrafluoroethane	Detectable (TCLP)		0.41 mg/l 0.96 mg/l		
□		Trichloroethylene	Detectable (TCLP)		0.091 mg/l		
□		Trichlorofluoromethane	Detectable (TCLP)		0.96 mg/l		
□		Xylene	Detectable (TCLP)		0.15 mg/l		

California List

Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals or compounds of these metals at concentrations greater than or equal to those specified: Thallium => 130 mg/l
Nickel => 130 mg/l

□ Liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm

Hazardous wastes containing Halogenated Organic Compounds (TOX) at concentrations greater than or equal to 1000 mg/kg or 1000mg/l

NOTES: □ indicates managed at TEAD

CCWE* => Constituent Concentrations in Waste Extract (40 CFR 268.41)
TBS* => Technology Based Standards (40 CFR 268.42)
CCW* => Constituent Concentrations in Waste (40 CFR 268.43)
The above mentioned sections in section 268 should be consulted if further information is required

Figure 1

WASTE STREAM EVALUATION FORM

Waste Stream Name _____ Date _____

Waste Stream Number: _____

Current Waste Stream Analytical Date: _____

EPA Waste Codes: _____

Brief Process Description:

_____
_____
_____
_____

Material(s) Used (paint, solvent, etc.)

_____
_____

Changes In Process Since Last Analytical (material or procedural):

_____
_____

Comments:

_____
_____
_____
_____
_____

Is a New Waste Stream Analytical Necessary? YES _____ NO _____

Signature_____

6.0. OB/OD

6.1. Waste Appropriate for Treatment

6.1.1. Open burning (OB)/open detonation (OD) operations at TEAD are limited to the treatment of energetic wastes. The energetic wastes meet one or more of the following conditions:

6.1.1.1. The waste is capable of detonation explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

6.1.1.2. The waste is readily capable of detonation or explosive decomposition or reaction at standard temperatures and pressure.

6.1.1.3. The waste is considered a forbidden explosive as defined by 49 CFR 173.51.

6.1.1.4. The waste is one of the following Class 1 explosives as defined by 49 CFR 173.50.

6.1.2. Class 1 explosives that are appropriate for treatment by OB/OD are:

6.1.2.1. Division 1.1 (Class A) – consists of explosives that have a mass explosion hazard. A mass explosion hazard is one that affects almost the entire load instantaneously.

6.1.2.2. Division 1.2 (Class A or B) – consists of explosives that have a projection hazard but not a mass explosion hazard.

6.1.2.3. Division 1.3 (Class B) – consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both.

6.2. Physical and Chemical Characteristics of Wastes

6.2.1. The wastes treated by OB/OD at TEADN consist primarily of military energetic materials that have exceeded their shelf life and off-specification versions of these same materials. These munitions are no longer serviceable and need to be destroyed. The off-specification items generally are composed of the same raw material as the usable items, but for one or more reasons they do not meet some performance specifications. For off-specification items, the same conclusions can be drawn regarding appropriate treatment based on published data. It is not likely that a difference in the composition of off-specification materials will render them unacceptable for OB/OD treatment, since in all cases they will be reactive.

6.2.2. When ordnance items are demilitarized because shelf lives have been exceeded or because deterioration of the energetic compound or container (casing) has occurred, any change in chemical or physical characteristics of the energetic constituents would not affect the choice of treatment technique. The overall chemical composition and resulting combustion products will not be affected, because the energetic materials are composed chiefly of carbon, hydrogen, and nitrogen. Concentrations of inorganics such as metallic compounds also will not change, nor

will the likely combustion products.

6.2.1. Waste Constituents

6.2.1.1. Process knowledge and munitions specifications are used to obtain the necessary chemical and physical data for treatment of explosive material at the OB/OD Unit. A summary of the primary chemical constituents of energetic material items that might be treated in OB/OD is presented in Table 4.

6.2.1.2. A complete munitions and/or ordnance item includes several components. Typical components may include a projectile, a propellant charge, and a primer that ignites the propellant. Other components such as a casing, fuzes, and bursting charge are frequently included. With few exceptions, these components contain one single energetic compound or a mixture of energetic compounds. The U.S. Army has been conducting a study to compile a computerized database of the composition of individual military energetic material items as a component of the Munitions Items Disposition Action System (MIDAS). The MIDAS database is developed by the U.S. Army Defense and Ammunition Center School. Information available from MIDAS on item-specific specifications is used to characterize items treated in the OB/OD Unit. The MIDAS computerized database includes complete composition information (energetic and non-reactive components) for over 3,000 munitions.

6.2.1.3. Munitions and ordnance items that may be treated at the OB/OD Unit can be grouped into the following consolidated families. They are:

6.2.1.3.1. Small arms, fuzes, and primers.

6.2.1.3.1.a. Small arms ammunition less than or equal to 50 caliber, all types;
6.2.1.3.1.b. Fuzes, all types;
6.2.1.3.1.c. Primers, squibs, detonators, and other devices used to initiate detonation.

6.2.1.3.2. Smokes and dyes

6.2.1.3.3. Pyrotechnics

6.2.1.3.4. High-explosive loaded projectiles

6.2.1.3.4.a. Gun ammunition greater than 50 caliber and less than or equal to 40 mm, all types except smoke, riot control agents, or chemical;
6.2.1.3.4.b. Gun ammunition greater than 40 mm, all types except smoke, riot control agents, or chemical.

6.2.1.3.5. Rockets and missiles

6.2.1.3.6. Bombs, torpedoes, and depth charges.

6.2.1.3.7. Riot control agents.

6.2.1.3.8. Bulk explosives (except fuzes, detonators, and related items).

6.2.1.3.9. Grenades and mines (all types except smoke, riot control agents, chemical, or fuzes)

6.2.1.3.10. Navy gun ammunition (all types except propellant charges)

6.2.1.3.11. Special function projectiles

6.2.1.3.12. Propellants and propellant charges

6.2.1.3.12.a. Propellants
6.2.1.3.12.b. Propellant charges

6.2.1.3.13. Inert loaded items (no energetics and not appropriate for OB/OD)

6.2.1.3.14. Miscellaneous Items

6.2.1.3.14.a. Miscellaneous items (primarily related to aircraft ejection systems)
6.2.1.3.14.b. Miscellaneous items (primarily not related to aircraft ejection systems)

TABLE 4. GENERAL CHEMICAL COMPOSITION OF MILITARY ITEMS TREATED AT THE OB/OD UNIT

PROPELLANTS

Name	Chemical Formula
Nitrocellulose	$C_{12}H_{16}(ONO_2)_4O_6$
Nitroglycerine	$C_3H_5N_3O_9$
Nitroguanidine	$CH_4N_4O_2$

These three primary constituents can be used singly or in various combinations along with metals, metallic salts, and organic polymer binders.

PRIMARY EXPLOSIVES

Name	Chemical Formula
Lead Azide	H_6Pb (71% Pb)
Mercury Fulminate	$C_2HgN_2O_2$ (70.5% Hg)
Diazodinitrophenol (DDNP)	$C_6H_2N_4O_5$
Lead Styphnate	$C_6HN_3O_8Pb$ (44.2% Pb)
Tetracene	$C_2H_8N_{10}O$
Potassium Dinitrobenzofuroxane (KDNBF)	$C_6H_2N_4O_6K$
Lead Monomitroresorcinate (LMNR)	$C_6H_5NO_{4X}Pb$ (57.5% Pb)
Ingredients to Rocket Propellant:	
Copper Monobasic Salicylate	$C_{14}H_{12}Cu_2O_8$
Lead Salicylate	$C_{14}H_{10}O_6Pb$
Fuels:	
Lead Thiocyanate	$Pb(SCN)_2$ (64% Pb)
Antimony Sulfide	S_5Sb_2
Calcium Silicide	$CaSi_2$
Oxidizers:	
Potassium Chlorate	$KClO_3$
Ammonium Perchlorate	NH_4ClO_4
Barium Nitrate	N_2O_6Ba
Calcium Resinate	$Ca(C_{44}H_{62}O_4)_2$
Strontium Peroxide	SrO_2
Barium Peroxide	BaO_2
Strontium Nitrate	$Sr(NO_3)_2$
Potassium Perchlorate	$KClO_4$

Primary compositions include a mixture of primary explosive (as shown above), fuels, oxidizers, and binders (e.g., paraffin wax).

TABLE 4. (Continued)

BOOSTER AND SECONDARY EXPLOSIVES
(High Explosives)

Name	Chemical Formula
Aliphatic Nitrate Esters:	
1,2,4-Butanetriol Trinitrate (BTN)	$C_4H_7N_3O_9$
Diethyleneglycol Dinitrate (DEGN)	$C_4H_8N_2O_7$
Nitroglycerine (NG)	$C_3H_5N_3O_9$
Nitrostarch (NS)	$C_6H_7(OH)_X(ONO_2)_Y$ where X - Y = 3
Pentaerythritol Tetranitrate (PETN)	$C_5H_8N_4O_{12}$
Triethylene Glycol Dinitrate (TEGDN)	$C_6H_{12}N_2O_8$
1,1,1-Trimethylethane Trinitrate (TMETN)	$C_5H_9N_3O_9$
Nitrocellulose (NC)	$C_{12}H_{16}(ONO_2)_4O_6$
Nitramines:	
Cyclotetramethylene Tetranitramine (HMX)	$C_4H_8N_8O_8$
Cyclotrimethylene Trinitramine (RDX)	$C_3H_6N_6O_6$
Ethylenedimine Dinitrate (EDDN, Haleite)	$C_2H_6N_4O_4$
Nitroguanidine (NQ)	$CH_4N_4O_2$
2,4,6-Trinitrophenylmethylnitramine (Tetryl)	$C_7H_5N_5O_8$
Ammonium Picrate (Explosive D)	$C_6H_3N_3O_7H_3N$
1,3-Diamino-2,4,6-Trinitrobenzene (DATB)	$C_6H_4N_5O_6$
2,2'4,4'6,6'-Hexanitroazobenzene (HNAB)	$C_{12}H_4N_8O_{12}$
Hexanitrostilbene (HNS)	$C_{14}H_2N_6O_{12}$
1,3,5-Triamino-2,4,6-Trinitrobenzene (TATB)	$C_6H_6N_6O_6$
2,4,6-Trinitrotoluene (TNT)	$C_7H_5N_3O_6$
Ammonium Nitrate	HNO_3H_3N

TABLE 4. (Continued)

COMPOSITIONS

Binary Mixtures:
Amotols (ammonium nitrate + TNT)
Composition A (RDX + Desensitizer)
Composition B (RDX + TNT)
Composition C (RDX + Plasticizer)
Ednatols (Haleite + TNT)
LX-14 [HMX (95.5%) + Estane 5702-F1]
Octols (HMX + TNT)
Pentolite (PETN + TNT)
Picratol [Ammonium Picrate (52%) + TNT (48%)]
Tetrytols (TNT + Tetryl)
Tritonal [TNT (80%) + Flaked Aluminum (20%)]

Ternary Mixtures:
Amatex 20 [RDX (40%) + TNT (40%) + Ammonium Nitrate (20%)]
Ammonals (Ammonium Nitrate + Aluminum and TNT, DNT, or RDX)
HBX - High Blast Explosives (TNT + RDX + AlD_2 Wax + Calcium Chloride)
HTA-3 (HMX + TNT + Al Mixture 3)
Minol-2 (TNT + Ammonium Nitrate + Aluminum)
Torpex [RDX (41.6%), TNT (39.7%), Al (18.0%) Wax (0.7%)]

Quaternary Mixtures:
DBX [TNT (40%), RDX (21%), Ammonium Nitrate (21%), Al (18%)

Plastic Bonded Explosives (PBX):
Basic Explosive [RDX, HMX, HNS, or PETN + Polymeric Binder (Polyester, Polyurethane, Nylon, Polystyrene, Rubbers, Nitrocellulose, Teflon)]

Pyrotechnics:
Combination of:
Oxidizer-Oxygen or Fluorine
Fuel - Powdered Aluminum or Magnesium
Binding Agents - Resins, Waxes, Plastics, Oils, Retardants
Waterproofing, Color Intensifier

Source: Military Explosives, Department of the Army, Technical Manual TM9-1300-214, September 1984

6.2.2. Items Prohibited from Treatment

6.2.2.1. Certain items shall not be treated by OD. OD of hexachloroethane (HC), colored smoke, white phosphorus (WP), bulk red phosphorous (RP), depleted uranium (DU), and riot control munitions are prohibited, except in emergency situations as approved by the installation commander and the Director of the Division of Waste Management and Radiation Control (Director).

6.2.2.2. Certain items shall not be treated by OB. OB of spent halogenated solvents and non-halogenated solvents that are not constituents in an explosive is forbidden (i.e., diesel fuel, gasoline, paint thinner, trichloroethene, solvents, etc.). OB of HC, colored smoke, WP, RP, and riot control munitions (CS, CN) is forbidden. OB of WP and RP munitions will be allowed only for emergency destruction purposes and by authorization of the installation commander and the Director.

6.3. Waste Analysis

6.3.1. TEAD-N may thermally treat any form of conventional munitions waste at any given time except the prohibited items discussed elsewhere in this Permit.

6.3.2. This waste analysis plan also provides information on characterizing the ash residue remaining in the burn pans after OB operations and determining the appropriate handling, storage, and disposal of ash residual. The most recent analytical result of the OB ash is available at the Facility.

6.3.3. Analysis of the OD treatment residue is not conducted at TEAD-N. TEAD-N periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow, based on the Demil Supervisor's judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency Disposition Services (DLADS). The Demil Operations Team will inspect and document that the recovered material is explosive free. The Ammunition Surveillance Inspector will verify the documentation.

6.3.4. All residue from the OB grounds is required to be containerized. The waste/residue needs to be packaged in containers that are compatible with the waste. Waste/residue must be stored in appropriate containers that are in good physical condition. There shall be no free liquid permitted in solid waste containers (if free liquids are encountered, they must be removed by siphoning, draining, decanting, solidification, etc.). Free liquids removed or generated must be containerized in an approved liquid container (e.g., steel closed-top drum with threaded bung and special liner, or ABS, polyurethane, or similar inert plastic drum with threaded bung). All containers must have a 3-inch head space between lid and contents in the drum. All steel-top drums must be sealed with metal lids, gaskets, and rings. All containers must be labeled with the name of the waste, waste stream number and the 12-digit container number.

6.3.5. Drums need to be placed on pallets that are in good physical condition and free of wastes, spills, or any other contamination. Four-way pallets must be utilized. Waste must be placed three drums to a pallet and banded together using steel banding.

6.3.6. Parameters and Rationale

6.3.6.1. Wastes Treated

Unless an emergency or priority treatment is necessary, TEAD-N does not treat any wastes at the OB/OD Unit unless adequate chemical and physical information is available to treat the waste material safely.

6.3.6.2. Treatment Residue

The only hazardous wastes treated at the OB pans are those that possess the RCRA characteristic of reactivity. The burn pan treatment residue shall be sampled and analyzed for reactivity prior to being removed for disposal. In addition, although not expected to be present, the burn pan treatment residue shall be sampled and analyzed for the toxicity characteristic (TC) metals using the toxicity characteristic leaching procedure (TCLP). Table 5 lists the parameters analyzed for and the rationale for the analysis.

6.3.7. Test Methods

6.3.7.1. Waste Treated

Reactive hazardous wastes are not tested prior to treatment at the OB/OD Units because of safety concerns. The physical and chemical characteristics of the reactive hazardous wastes have already been determined prior to treatment as they are included in the MIDAS database.

6.3.7.2. Treatment Residue

The analytical methods for analyzing the treatment residue in burn pans are shown in Table 6. Analytical procedures are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (SW-846), unless otherwise referenced. Laboratories performing these analyses will operate in conformance with the TEAD Quality Assurance Program Plan (QAPP).

6.3.8. Sampling Methods

6.3.8.1. Waste Treated

Sampling and analyses of reactive hazardous wastes treated at the OB/OD Unit are not performed.

6.3.8.2. Treatment Residue

The treatment residue is collected only after the burn pans have cooled to ambient temperatures.

Typically, the burn pans are cleared of ash at least 24 hours after the OB. The residual ash from OB shall be sampled to ensure that the treatment has been successful in rending the waste non-reactive. The ash is collected and placed into an appropriate container. Ash is tested for TCLP metals and reactivity criteria for energetics (i.e., concentrations greater than 10%). Analytical results are kept for 3 years at the EMD office.

6.3.9. Frequency of Analyses

6.3.9.1. Wastes Treated

Sampling and analyses of reactive hazardous wastes treated at the OB/OD Unit are not performed.

6.3.9.2. Treatment Residue

Because of the low volume of OB ash and waste stream consistency these tests shall be conducted every 3 years.

6.3.10. Additional Requirements for Waste Generated Off-Site

Currently, TEAD does not accept waste from off-site for treatment at the OB/OD Unit except from Tooele Army Depot South Area (TEAD-S) and, on an emergency treatment basis from the 62nd Ordnance Group. Munitions are treated the same day (weather permitting) that they are received at the OB/OD Unit. In the case of weather delays, the munitions will be stored in place, in accordance with the OB/OD/SF Standard Operating Procedures, until conditions permit treatment to commence.

6.3.11. Additional Requirements for Ignitable, Reactive or Incompatible Wastes

All ordnance items treated at the OB/OD Unit are reactive. Ignitable and corrosive wastes shall not be managed at the OB/OD Unit unless they are primarily reactive; therefore, there is no need for additional requirements to handle ignitable or corrosive waste.

6.3.12. Land Disposal Restrictions

6.3.12.1. The explosive wastes treated at the OB area have the RCRA characteristic of reactivity (D003). The Land Disposal Restrictions (LDR) treatment requirements listed in Utah Administrative Code R315-268-40 for explosives subcategory D003 wastes is deactivation and attainment of the treatment standards listed in Utah Administrative Code R315-268-48. Underlying hazardous constituents that may be present in the wastes treated are listed in Utah Administrative Code R315-268-48. OB achieves the LDR treatment standard for deactivation. Ash from OB is analyzed to determine whether it is a hazardous waste because of reactivity or exhibits the TCLP. These analyses are also used to determine whether LDR treatment standards are met or whether treatment in accordance with the LDR is required.

6.3.12.2. Analytical results from the OB ash residues in conjunction with TCLP criteria for metals and reactivity criteria for energetics (i.e., concentrations greater than 10%) shall be used to determine if waste from OB that is being disposed of off-site are hazardous.

TABLE 5. RATIONALE FOR PARAMETERS ANALYZED

Wastes	Parameters	Rationale
Burn pan treatment residue	TC leaching procedure	Generate leachate
Burn pan treatment residue	TC arsenic	Determine if treatment residue exceeds TC level for arsenic
Burn pan treatment residue	TC barium	Determine if treatment residue exceeds TC level for barium
Burn pan treatment residue	TC cadmium	Determine if treatment residue exceeds TC level for cadmium
Burn pan treatment residue	TC chromium	Determine if treatment residue exceeds TC level for chromium
Burn pan treatment residue	TC lead	Determine if treatment residue exceeds TC level for lead
Burn pan treatment residue	TC mercury	Determine if treatment residue exceeds TC level for mercury
Burn pan treatment residue	TC selenium	Determine if treatment residue exceeds TC level for selenium
Burn pan treatment residue	TC silver	Determine if treatment residue exceeds TC level for silver
Burn pan treatment residue	TC 2,4-dinitrotoluene	Determine if treatment residue exceeds TC level for 2,4-dinitrotoluene
Burn pan treatment residue	Reactivity	Determine if explosive has been treated

TABLE 6. ANALYTICAL TEST PROCEDURES AT TEAD FOR ASH

Parameter	Method	Regulatory Level (mg/L)
TCLP METALS		
Arsenic	6010, 6020 or7061	5.0
Barium	6010 or 6020	100.0
Cadmium	6010 or 6020	1.0
Chromium	6010, 6020, 7195, 7196, 7197, 7198 or 7199	5.0
Lead	6010 or 6020	5.0
Mercury	6020, 7470 or 7471	0.2
Selenium	6010, 6020, 7741 or 7742	1.0
Silver	6010 or 6020	5.0
ENERGETICS		
HMX	8330	*
RDX	8330	*
TNB	8330	*
DNB	8330	*
NB	8330	*
TNT	8330	*
DNT	8330	*
2NT	8330	*
3NT	8330	*
4NT	8330	*
Tetryl	8330	*

* No regulatory level has been promulgated.

6.3.12.3. If the ash does not meet the LDR treatment standards for TCLP, with each shipment of waste, TEAD shall notify the facility receiving the waste in writing of the appropriate treatment standards. The notice will include the following information:

6.3.12.3.1. EPA hazardous waste number(s);
6.3.12.3.2. The corresponding treatment standard(s);
6.3.12.3.3. The manifest number associated with the shipment of waste; and
6.3.12.3.4. Waste analysis data.

6.3.12.4. If the ash meets LDR treatment standards, and the waste no longer exhibits characteristics of a hazardous waste (reactivity or toxicity), it may be disposed of as a nonhazardous waste at a Subtitle D landfill. Required notifications and certifications shall be submitted to U.S. EPA. The notification will include the following information:

6.3.12.4.1. Name and address of the facility receiving the waste shipment;
6.3.12.4.2. Description of the waste as initially generated, including applicable EPA hazardous waste number; and
6.3.12.4.3. Treatment standards applicable to the waste at the initial point of generation.

6.3.12.5. The certification shall be signed by an authorized representative of TEAD and shall state the following:

"I certify under the penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that complies with the treatment standards specified in Utah Administrative Code R315-268-40, and all applicable prohibitions set forth in Utah Administrative Code R315-268-32. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."

6.3.13. Quality Assurance

QA procedures for laboratory analysis of wastes shall be followed according to the latest edition of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, (SW-846) and Attachment 22 Quality Assurance Program Plan (QAPP). Chain-of-custody procedures that conform to the U.S. EPA requirements contained in SW-846 shall be applied.

6.4. Management of Ash and Residues

This section contains the practices and procedures for the management of ash and residue generated by the OB/OD of waste munitions and components at the OB/OD unit.

6.4.1. Open Burning Ash and Residue Management

6.4.1.1. The SOP for OB (SOP No. TE-0000-H-012) specifies the procedure for containerizing the ash and residue from the OB grounds. All ash and residue from OB is required to be containerized. The ash and residue shall be packaged in containers that are compatible with the waste and in good physical condition. Free liquids are not allowed in the containers. If free liquids are encountered, they shall be removed by siphoning, draining, decanting, solidification, or other appropriate process. Free liquids removed or generated shall be containerized in an approved liquid container (i.e., steel closed-top drum with threaded bung and special liner, or ABS, polyurethane, or similar inert plastic drum with threaded bung). All containers shall have a 3-inch head space between the lid and contents. All steel-top drums shall be sealed with metal lids, gaskets, and rings with 5/8 inch bolts. All containers shall be labeled with the following information: name of the waste, waste stream number and 12-digit container number.

6.4.1.2. After OB, pans shall be inspected and any ash collected in an appropriate container. This container is temporarily stored at the burn pan area. When the container is full, a composite sample is collected and analyzed, and within three working days the container is taken to a TEAD storage facility.

6.4.1.3. All notifications, analytical results, demonstrations, certifications, and other relevant documentation shall be retained on site in the facility operating record for at least three years. Copies of all manifests shall be retained for at least three years after the waste is shipped off site.

6.4.1.4. After OB activities are completed, the burn pans shall be inspected for partial burns. If unburned material is discovered, it shall be reburned, provided the pan is safe. Otherwise, reburning operations will be delayed overnight and conducted in accordance with SOP No. TE-0000-H-012.

6.4.1.5. Drums of ash and residue shall be placed on pallets that are in good physical condition and free of wastes, spills, or any other contamination. Four-way pallets shall be utilized. A maximum of three drums shall be placed on a pallet and banded together using steel banding.

6.4.1.6. The containers shall be stored in a Satellite Accumulation Area (SAA) at the OB/OD unit. Drums shall be locked and keys kept with the Demil Supervisor. When necessary, drums will be moved from the SAA to a 90-day accumulation area. Most wastes will be sent off site within 90 days. However, wastes that are not sent off site within 90 days shall be moved to the Building 528 permitted hazardous waste storage area. The ash and residue shall be sampled for TCLP metals and energetics. Sampling shall be performed once every 3 years. Sampling more often is not necessary due to the low generation rate of OB ash and residue and the consistency of the waste stream. The ash and residue shall be sent off-site for disposal in accordance with RCRA regulations.

6.4.1.7. Analytical Parameters and Rationale

The only hazardous wastes treated at the OB pans are those that possess the RCRA characteristic of Reactivity. The burn pan treatment residue is sampled and analyzed for reactivity prior to being removed for disposal. In addition, although not expected to be present, the burn pan treatment residue is sampled and analyzed for the toxicity characteristic (TC) metals using the Toxicity Characteristic Leaching Procedure (TCLP). Tables 5 and 6 list the parameters analyzed and the rationale for the analysis.

6.4.1.8. Test Methods

The methods for analyzing the ash and residue in the burn pans are shown in Table 1. Analytical procedures are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (SW-846), unless otherwise referenced. When necessary, samples shall be screened for high level explosive concentrations using Methods 8510 and/or 8515 of SW 846. Laboratories performing these analyses shall operate in conformance with Attachment 22 QAPP.

6.4.1.9. Sampling Methods

Ash and residue from a burn pan is collected and sampled after the pan has cooled to ambient temperatures. Typically, the burn pans are cleared of ash within 24 hours of an OB event. The residual ash is sampled to ensure that the treatment has been successful in rendering the waste nonreactive. Collection, preservation and handling of ash and residue shall be conducted in accordance with Attachment 22 QAPP.

6.4.1.10. Frequency of Analysis

Because of the low volume of OB ash produced and the waste stream consistency these tests shall be conducted every 3 years.

6.4.2. Open Detonation Residue Management

6.4.2.1. OD is a very efficient method of treatment; very little shrapnel is generated. After each day of detonation operations, a search of the surrounding area shall be made for unexploded munitions and items. Items or materials such as lumps of explosives or unfuzed ammunition may be picked up and prepared for the next detonation. Recovery and detonation of fuzed ammunition or suspected live munitions items are treated in accordance with SOP No. TE-0000-G-010. All items or materials (fuzed, unfuzed, or live munitions) found must be detonated on the day they are found, or if they are safe to handle they shall be put into permitted storage until they are detonated.

6.4.2.2. Analysis of OD treatment residue is not conducted at TEAD. TEAD periodically recovers scrap metal, casing, fragment, and related items from the OD grounds as resources allow and based on the Range Supervisor's judgment regarding safe operation of the range. The recovered material is disposed of through the Defense Logistics Agency Disposition Services (DLADS). The Demil Team shall inspect and document that the recovered material is explosive free.