

ATTACHMENT IV

AMMUNITION PECULIAR EQUIPMENT (APE)
1236 INCINERATOR

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|---|-----------|
| ATTACHMENT IV: AMMUNITION PECULIAR EQUIPMENT 1236 INCINERATOR | 1 |
| A. PART A APPLICATION | 1 |
| B. FACILITY DESCRIPTION | 1 |
| B-1 General Description | 1 |
| B-2 Topographic Map/General Requirements | 1 |
| B-3 Location Information (Seismic/Floodplain) | 2 |
| B-4 Traffic Information | 2 |
| C. WASTE CHARACTERISTICS | 2 |
| C-1 Chemical and Physical Analyses | 3 |
| C-2 Waste Analysis Plan | 3 |
| C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions | 4 |
| D. PROCESS INFORMATION | 6 |
| D-1 Containers | 8 |
| D-2 Tank Systems | 8 |
| D-3 Waste Piles | 8 |
| D-4 Surface Impoundments | 8 |
| D-5 Incinerators | 8 |
| D-6 Landfills | 13 |
| D-7 Land Treatment | 13 |
| D-8 Miscellaneous Units | 13 |
| D-9 Boilers and Industrial Furnaces (BIFs) | 13 |
| D-10 Containment Buildings | 13 |
| E. GROUND WATER MONITORING | 14 |
| E-1 Exemption from Ground Water Protection Requirements | 14 |
| E-2 Interim Status Ground Water Monitoring Data | 14 |
| E-3 General Hydrogeologic Information | 14 |
| E-4 Topographic Map Requirements | 14 |
| E-5 Containment Plume Description | 14 |
| E-6 General Monitoring Program Requirements | 14 |
| E-7 Detection Monitoring Program | 14 |
| E-8 Compliance Monitoring Program | 14 |
| E-9 Corrective Action Program | 14 |
| F. PROCEDURES TO PREVENT HAZARDS | 14 |
| F-1 Security | 14 |
| F-2 Inspection Schedule | 15 |
| F-3 Waiver of Documentation of Preparedness and Prevention Requirements | 17 |
| F-4 Preventive Procedures, Structures, and Equipment | 19 |
| F-5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste | 21 |
| G. CONTINGENCY PLAN | 22 |
| H. PERSONNEL TRAINING | 23 |
| H-1 Outline of the Training Program | 23 |

| | | |
|------|--|----|
| H-2 | Implementation of Training Program..... | 24 |
| I. | CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS..... | 24 |
| I-1 | Closure Plans..... | 24 |
| I-2 | Post-Closure Plan/Contingent Post-Closure | 30 |
| I-3 | Notices Required for Disposal Facilities | 30 |
| I-4 | Closure Cost Estimate | 30 |
| I-5 | Financial Assurance Mechanism for Closure..... | 30 |
| I-6 | Post-Closure Cost Estimate..... | 30 |
| I-7 | Financial Assurance Mechanism for Post-Closure Care..... | 30 |
| I-8 | Liability Requirements | 30 |
| I-9 | Use of State-Required Mechanisms | 30 |
| I-10 | Closure Plan Amendment | 30 |
| J. | CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS..... | 31 |
| J-1 | Solid Waste Management Units | 31 |
| J-2 | Releases | 31 |
| K. | OTHER FEDERAL LAWS..... | 31 |
| L. | PART B CERTIFICATION | 31 |

ATTACHMENT IV: AMMUNITION PECULIAR EQUIPMENT 1236 INCINERATOR

A. PART A APPLICATION

The Part A application precedes the introduction of the entire application. There is no separate Part A application for the individual units at CRANE.

B. FACILITY DESCRIPTION

B-1 General Description

The Ammunition Peculiar Equipment 1236 (APE 1236) Incinerator is a rotary kiln system designed for thermal destruction of ammunition ranging from small arms through 20mm. The facility number for the APE 1236 Incinerator is Building 3343, and the Incinerator is located in the same general area as the Mobile Plasma Treatment System (Building 3345) and the White Phosphorus to Phosphoric Acid Conversion Plant (Building 69) in the western-central portion of CRANE.

B-2 Topographic Map/General Requirements

| <u>Requirements</u> | <u>Location</u> |
|--|-----------------|
| <i>Topographic Map</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Legal Boundaries</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Access Control</i> | |
| APE 1236 | Figure D-10 |
| <i>Surface Waters Including Intermittent Streams</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Surrounding Land Use</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Windrose (Relevant to all units/facilities)</i> | Exhibit B-11 |
| <i>100-year Floodplain</i> | |
| APE 1236 | Exhibit B-13 |
| <i>Injection/Withdrawal Wells</i> | |
| APE 1236 | Not Applicable |
| <i>Building, Structures within 1,000 ft.</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Sewers (Storm, sanitary, process)</i> | |
| APE 1236 | Exhibit B-5 |
| <i>Loading and Unloading Areas</i> | |
| APE 1236 | Not Applicable |
| <i>Barriers for Drainage or Flood Control</i> | |
| APE 1236 | Not Applicable |
| <i>Operational Units in HWM Facility Locations</i> | |
| APE 1236 | Not Applicable |

Topography of each site is addressed in each Attachment. Exhibit B-5 depicts the topographic map, surface waters including intermittent streams, building and structures, and Hazardous Waste Management (HWM) facility locations within 1,000 feet of the APE 1236, at a scale of one inch = 100 feet and contour intervals of five feet.

The surrounding land usage within 1,000 feet of the APE 1236 is completely contained within the installation (e.g., the military reservation).

The APE 1236 is completely located within the security perimeter of the installation; therefore, additional access control and fencing are not necessary at the APE 1236.

There are no water test wells within 1,000 feet of the APE 1236.

There are no sewerage systems within 1,000 feet of the APE 1236.

Exhibit B-13 depicts the 100-year floodplain within 1,000 feet of the APE 1236. The APE 1236 is not located within a 100-year floodplain; therefore, additional barriers for drainage or flood control are not necessary.

The watersheds and drainage area boundaries at CRANE are provided in Exhibits B-10 and V.B-12. Of particular interest for this operation is a drainage divide which occurs immediately south of the APE 1236, placing the facility inside the Boggs and Turkey Creek drainage basin.

B-3 Location Information (Seismic/Floodplain)

The APE 1236 is not located in a 100-year floodplain. The 100-year floodplain map is shown on Exhibit B-13. The floodplain information was taken from Flood Insurance Maps 180470 0001-0007, published by the Federal Emergency Management Agency (FEMA). A watershed map is also included in Exhibit V.B-12.

Therefore, the requirement of 40 CFR §264.18(a) does not apply to the APE 1236 because it is not located in the 100-year floodplain.

B-4 Traffic Information

Traffic information related to movement of hazardous materials at CRANE is presented in the Section B-4, Introduction.

Materials are transported from Conditionally Exempt storage magazines or trucked directly from the generation, transfer, or accumulation site to the APE 1236 for treatment. Once at the APE 1236, materials handling equipment is used to bring the materials to the loading building. The items are then packaged and placed into the APE 1236 feed system. As needed after treatment, the residues from the cyclone, afterburner, and baghouse are sent to the CSF for storage and eventual disposal by contractor at an off-site facility.

C. WASTE CHARACTERISTICS

The DOD has developed a classification system for military munitions and explosives. The classifications were developed as part of the Munitions Items Disposition Action System (MIDAS). MIDAS groups military munitions into various Major Families and Sub-group Families. Table C-6 includes a listing of the MIDAS families and sub-group families which may be treated in the APE 1236. Each waste item treated in the APE 1236 Incinerator must be within the specifications of the feed system. The maximum weight limit of the scale is 80 lbs. Limiting measurements are maximum 24 inches long and less than 8 inches in diameter.

C-1 Chemical and Physical Analyses

All sampling and analysis procedures are general in nature and thus apply to all operations at the installation. Accordingly, these procedures are provided in the introduction. Only those requirements specific to this operation are provided here.

C-2 Waste Analysis Plan

Waste analyses, in general, follow the procedures described in detail in the Introduction, Section C-2. Area-specific aspects of the waste analysis plan are provided in the following paragraphs.

C-2a(1) Parameters - Wastes Treated

Process knowledge is utilized to obtain information on the physical and chemical characteristics of wastes treated in the APE 1236 Incinerator. Sampling and analysis of well-documented ordnance and PEP material is not proposed and is not necessary for the following reasons:

- The composition of military ordnance is well described by military specifications, and the reactive properties are well known. The military specifications essentially constitute the waste specification.
- Sampling of military ordnance items presents an acute safety hazard and is not necessary to obtain the necessary physical and chemical information to safely treat ordnance items.
- Off-specification or obsolete military ordnance items and explosives are also incinerated, but differ little from that of the accepted product due to the inherent quality control standards required during production. Incineration of off-specification or obsolete items results in hazards that are substantially indistinguishable from that of the military ordnance items and components that do meet DOD specifications. Therefore, additional data is not required for incineration of off-specification or obsolete military ordnance, components, and explosives.

C-2a(2) Parameters - Treatment Residuals

APE 1236 Incinerator treatment residuals include dust generated from the APCS cyclones and baghouse, and ash generated from the kiln. **Table C-4** includes the parameters to be tested in the APE 1236 Incinerator APCS and kiln residues along with the rationale for the parameters.

The kiln also generates metallic shrapnel. Shrapnel is not tested. It is visually inspected for the presence of explosive material. Visual evidence that explosives are not present includes deformation of the casing and holes in the casing. Once the shrapnel is certified as free of explosives it is sold as scrap metal.

C-2b(1) Test Methods - Wastes Treated

Process knowledge is used for information on the physical and chemical characteristics of wastes treated in the APE 1236 Incinerator. Therefore, testing procedures are not applicable.

C-2b(2) Test Methods - Treatment Residues

Table C-5 lists the test procedures for the constituents listed in **Table C-4** along with method numbers. All methods referenced are from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846," latest revision. The Quality Assurance/Quality Control Plans for the laboratory currently performing analytical work for the hazardous waste program is included by reference (See Test America Quality Assurance Manual, dated November 1, 2011).

C-2d(1) Frequency of Analyses - Wastes Treated

As noted above in Section C-2(a), process knowledge is used to characterize all APE 1236 Incinerator waste feed streams prior to treatment. All wastes are characterized by process knowledge prior to treatment.

C-2d(2) Frequency of Analyses - Treatment Residues

APE 1236 Incinerator treatment residues consist of dusts and kiln ash. The frequency of analysis for these residues will depend on the types of waste feed streams and the rate at which residue containers are filled. The composition and hazard characteristics of residues will depend on the composition of the waste feed streams. Therefore, treatment residues will be sampled the first time that a particular type of waste is fed into the APE 1236 Incinerator. Thereafter, containers of treatment residues will be sampled only when changes in waste feed compositions may result in changes in residue composition and hazard characteristics. In some cases, a container may have residues from several types of waste feeds. In these cases each container will be sampled.

Shrapnel will be generated from the kiln. All shrapnel (100 percent) will be visually inspected prior to certification as free of explosives and then sold as scrap metal.

C-2e Additional Requirements for Waste Generated Off-Site

This unit could treat wastes generated from off-site. This information is covered in the Introduction, Section C-2e.

C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

Most of the waste military ordnance/explosives treated in the APE 1236 Incinerator are reactive and some are ignitable. The reactivity characteristic is the primary characteristic of concern for treatment. Therefore, all waste characterization procedures have been developed considering the reactivity, ignitability, and potential incompatibilities of the waste munitions/explosives that are treated in the APE 1236 Incinerator. There are no additional waste characterization requirements for wastes treated in the APE 1236 Incinerator that must be addressed for ignitable, reactive, or incompatible wastes.

C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions

All hazardous wastes including treatment residues must meet land disposal restriction (LDR) standard prior to land disposal. Treatment standards for hazardous wastes are contained in 40 CFR 268.40.

The waste analysis plan (Introduction, Section C-2) provides information necessary to determine whether wastes treated in the APE 1236 Incinerator and treatment residues are being managed properly under LDR requirements.

C-3a(1) Spent Solvent and Dioxin Wastes

This section is not applicable to MPTS operations.

C-3a(2) California List Wastes

This section is not applicable to MPTS operations.

C-3a(3)(4) Listed and Characteristic Wastes

The primary hazard characteristic associated with the waste military munitions/explosives treated in the APE 1236 Incinerator is reactivity (D003) due to the presence of energetic materials. Some of these wastes may also be classified as toxicity characteristic wastes, due to the presence of metals (D004 through D0011), 2,4-dinitrotoluene (D030), and hexachlorobenzene (D032). The land disposal restriction (LDR) treatment standard for D003 wastes [explosives subcategory based on 40 CFR §§261.23(a)(6), (7), and (8)] is deactivation and meet 40 CFR 268.48 standards for underlying hazardous constituents.

Treatment in the APE 1236 Incinerator deactivates the reactivity characteristic. Therefore, APE 1236 Incinerator treatment residues (shrapnel, kiln ash, and APCS dust) are not reactive and meet the LDR

treatment standard. Shrapnel is sold as scrap after certification as free of explosives and is not subject to LDR treatment standards. However, hazardous kiln ash and APCS dust may contain underlying hazardous constituents. No hazardous APE 1236 Incinerator treatment residuals are disposed onsite at CRANE. All hazardous APE 1236 Incinerator kiln ash and APCS dusts are shipped to off-site treatment, storage, and disposal facilities.

C-3a(5) Radioactive Mixed Waste

CRANE does not manage radioactive mixed wastes. Therefore, this section is not applicable.

C-3a(6) Leachates

Leachates are not land disposed at this site. Therefore, this section is not applicable.

C-3a(7) Lab Packs

Lab packs are not land disposed at this site. Therefore, this section is not applicable.

C-3a(8) Contaminated Debris

Contaminated debris is not land disposed at this site. Therefore, this section is not applicable.

C-3a(9) Waste Mixtures and Waste with Overlapping Requirements

This section is not applicable to APE operations.

C-3a(10) Dilution and Aggregation of Wastes

This section is not applicable to CRANE operations.

C-3b Notification, Certification, and Recordkeeping Requirements

C-3b(1) Retention of Generator Notices and Certification

CRANE may receive wastes that do not meet LDR treatment standards from off-site facilities for treatment at the CRANE treatment facilities. Copies of generator notifications required under 40 CFR §268.7(a) will be retained in the files.

C-3b(2) Notification and Treatment Requirements for Treatment Facilities

Hazardous waste residues from the treatment of waste military munitions/explosives at the CRANE treatment facilities that meet LDR requirements may be sent to off-site land disposal facilities. Hazardous waste residues that do not meet LDR requirements may be sent to off-site storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

C-3b(3) Notification and Certification Requirements for Land Disposal Facilities

CRANE does not manage hazardous wastes in onsite land disposal facilities. Therefore, this section is not applicable.

C-3b(4) Wastes Shipped to Subtitle C Facilities

Hazardous waste residues that do not meet LDR requirements may be sent to off-site Subtitle C storage or treatment facilities to be further managed. Records of notices provided to off-site storage, treatment and land disposal facilities will be maintained in CRANE records.

C-3b(5) Wastes Shipped to Subtitle D Facilities

CRANE treatment residues that are not hazardous may be sent to off-site Subtitle D facilities for further management. Records of notification to IDEM and certification that the waste residue is not hazardous will be placed into the CRANE files. Information specified in 40 CFR 268.9(d) will be supplied.

C-3b(6) Recyclable Materials

CRANE does not use recyclable materials in a manner constituting disposal. Therefore, this section is not applicable.

C-3b(7) Recordkeeping

CRANE maintains records of all treatment, storage, and/or disposal facilities that manage wastes generated onsite, make determinations if the waste is restricted from land disposal and keep

documentation of that determination and maintain documentation to indicate where, if any restricted wastes were treated, stored, and/or disposed.

D. PROCESS INFORMATION

The APE 1236 Incinerator is a rotary kiln system designed by Tooele Army Depot. The unit is described in detail in Section B-1. A brief description is provided here for completeness.

The incinerator system consists of a waste feed system, several conveyors, a natural gas-fired rotary kiln, and air pollution control devices. Operating conditions are monitored at various points throughout the system utilizing temperature, flow rate, differential pressure, and flue gas-composition measurement devices. The major system components of the APE 1236 Incinerator are:

- Rotary kiln feed system;
- Rotary kiln;
- Cyclone;
- Afterburner;
- Baghouse;
- Induced draft (ID) fans; and;
- Continuous emission monitoring system (CEMS).

The waste feed system consists of a feed monitoring device and a kiln feed conveyor. The feed monitoring device weight sensor ensures proper feed rates to the kiln. The feed monitoring device weighs each feed increment and pushes the increment onto the kiln feed conveyor. An overweight increment is not pushed to the kiln feed conveyor preventing a "feed overload" condition. The kiln feed conveyor transports the feed increment to the rotary kiln.

The rotary kiln is approximately 30.5 inches in diameter with a chromium-molybdenum steel construction. The kiln is fired utilizing natural gas. An ID fan and openings around the feed systems and discharge housing provide primary and secondary combustion air.

The air emission pollution control devices include fugitive emissions enclosure around the APE 1236 Incinerator, cyclone separator, afterburner, and a baghouse.

Fugitive emissions from the rotary furnace are controlled by the draft fan and retort combustion air fan. The draft fan is used to maintain negative pressure at the feed end of the furnace. If the pressure goes above -0.1 inches W.C. the WFRMS shuts down until the pressure is returned below -0.1 inches W.C. The retort combustion air fan located at the burner end is a Hauck TBA-16-5, 5HP, 750-CFM blower.

As discussed above, during normal operations, the APE 1236 Incinerator equipment is under a negative pressure. This negative pressure directs gas flows from areas of lower pressure to areas of higher pressure. By definition, a vacuum is lower than atmospheric pressure. Therefore, any openings in the system (i.e., gaps, valve packing glands, pump seals, etc.) would result in the flow of ambient air into the APE 1236 Incinerator (i.e., flow of ambient air at atmospheric pressure into the APE 1236 Incinerator equipment that is operating at a negative pressure). Under normal operating conditions there are no fugitive emissions from the APE 1236 Incinerator.

Partial removal of PM from the off-gas stream from the kiln occurs in the cyclone separator. The PM precipitate reduced off-gas then flows into an afterburner where it is heated from 350°F to 1,600°F utilizing natural gas in preparation for flow through the high-temperature baghouse. Additional, PM off-gas reduction occurs in the high-temperature baghouse, the final air pollution control device prior to atmospheric discharge.

One ID fan is located in the exhaust gas stream prior to off-gas atmospheric discharge. This ID fan creates a vacuum (e.g., a negative operating pressure) throughout the APE 1236 Incinerator operating equipment. The ID fan is designed to maintain a vacuum between 0.10 to 0.25 inches of water in the kiln.

Exhibit B-5 shows the building and the topography of the area associated with the APE 1236 Incinerator. Exhibit B-9 shows the layout of the APE 1236 Incinerator.

The APE 1236 Incinerator is completely enclosed within the installation's fenced perimeter. The APE 1236 Incinerator rotary kiln and a feed room are contained within a building. The feed room contains the feed conveyor, feed monitoring system, and the kiln control panels. The rotary kiln and feed room are separated by a blast wall as shown in Exhibit B-9.

The rotary kiln section of the APE 1236 Incinerator (i.e., the kiln) is constructed within a 48-foot long by 26-foot wide rectangular enclosure (i.e., the enclosure). The 48-foot long side of the enclosure is constructed of ½-thick steel plate wall that is approximately 10-foot high. The 26-foot wide sides of the enclosure are two 1-foot thick blast walls. The kiln feed end blast wall is approximately 12-feet high. The kiln discharge end blast wall is approximately 10-feet high. The enclosure is constructed on an 8-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The main gas supply to the kiln runs through a 10-inch wide by 17.5-feet long concrete trench located at the discharge end of the kiln. The enclosure includes two 3-foot wide by 7-foot high doors for personnel egress and regress. Exhibit B-9 shows the layout of this enclosure.

The kiln feed conveyor system is enclosed in a 26-foot long by 20-foot wide pre-engineered building (i.e., the feed room). The feed room is constructed on a 6-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The feed room includes two 8-foot by 8-foot insulated doors for easy of transferring the waste feeds into the building.

Exhibit B-9 shows the layout of this building.

Explosive proof lighting, equipment, and fixtures are installed in the APE 1236 Incinerator feed room. The building is constructed with insulated walls and ceiling, fire alarm system, fire suppression system and a telephone for emergency use.

The APE 1236 Incinerator's discharge conveyor, cyclone, afterburner, exhaust duct, induced draft (ID) fan, and exhaust stack are located outside feed room and the rotary kiln enclosure. The discharge conveyor, cyclone, afterburner, and exhaust duct are located on a 6-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The baghouse, ID fan, and exhaust stack are located on an 18-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade.

Waste Treated

Section C describes the wastes military munitions treated in the APE 1236 Incinerator, and the particle size and weight limitations for the feed system.

Treatment Residues

Explosion and heat in the APE 1236 Incinerator rotary kiln results in the destruction of the energetic portion of the munitions/component and deactivation of the reactivity characteristics of the materials. The treated munitions/components exit the kiln as a mixture of shrapnel and ash. Shrapnel and ash are collected at the exit end of the kiln. After cooling, the shrapnel is visually evaluated for the presence of explosives and after being certified as explosive free, the shrapnel is sold as scrap metal. Kiln ash is collected and evaluated for RCRA hazardous characteristics and managed appropriately.

Air pollution control equipment residue from the cyclone, afterburner chamber, and baghouse is collected into 55-gal drums. These residues are also evaluated for RCRA hazardous characteristics and managed appropriately.

D-1 Containers

This section applies to the APE 1236 operations to the extent that materials that are treated in these operations arrive at the locations in various containers and remained stored in those containers until they are treated. Temporary storage, or staging, of these wastes prior to incineration will be allowed for a period of ten (1) hours at the APE 1236 facility location. Any wastes that are not incinerated within the ten (10) hours will be returned to a permitted or exempt storage facility.

Waste military munitions to be treated at CRANE's thermal treatment units are contained in cardboard boxes and drums; wooden crates; metal drums, cans, and containers; lined plastic cans and containers; cloth containers; shell; projectile; and component bodies that are Performance Oriented Packaging as regulated under the Department of Transportation (DOT). Waste Military Munitions are never placed in containers which previously held incompatible wastes. Waste military munitions are typically placed in containers that previously held military munitions.

Exhibit V.D-5 is a label that is used by CRANE to meet labeling requirements for reactive/explosive waste, PEP-contaminated materials, and Waste Military Munitions (WMM) that are generated on Center from the various demilitarization, renovation and production of military ordnance items. This label is used on containers that are used in transport. It is also used on containers that are used in the temporary storage of materials to be incinerated, open burned or open detonated at any of the treatment facilities at CRANE.

All labels must have four pieces of information completed on the label. They are as follows:

- Hazardous Waste – regulatory requirement
- Contents – describes the material;
- Contact – the building Supervisor, and
- Date – the date the material is placed into the containers.

D-2 Tank Systems

This section does not apply to the APE 1236 operations.

D-3 Waste Piles

This section does not apply to the APE 1236 operations.

D-4 Surface Impoundments

This section does not apply to the APE 1236 operations.

D-5 Incinerators

The Ammunition Peculiar Equipment 1236 (APE 1236) Incinerator is a rotary kiln system designed by Tooele Army Depot for thermal destruction of ammunition ranging from small arms through 20 mm. Ammunition larger than 20 mm must be sectioned or disassembled prior to feeding into the furnace. The APE 1236 Incinerator treats the following types of waste materials:

- Cartridges, markers, and projectiles,
- Munitions containing hexachloroethane,
- Riot control agents,
- Smoke producing munitions,

- Incendiary ammunition/devices,
- Various pyrotechnics, illumination grenades and flares,
- Small high explosive devices,
- Bulk high explosives,
- High explosive grenades,
- High explosive ICMs and CBUs,
- Demolition materials (cratering charges, shrapnel charges, flexible sheet explosives, etc.),
- Propellant charges and increments,
- 20 millimeter (mm), 22 mm, 40 mm, ammunition, and 40 mm rifle grenade ammunition,
- Small components of ammunition,
- Small caliber munitions,
- Miscellaneous and incinerable munitions and components, and
- Fuzes.

The incinerator system consists of three major sections, which are the feed room, the rotary furnace and supporting equipment, and the air pollution control equipment. Operating conditions are monitored at various points throughout the system utilizing temperature, flow rate, differential pressure, and flue gas-composition measurement devices. Figure D-4 presents the process flow for the APE 1236 Incinerator. The major system components of the APE 1236 Incinerator, as shown in the process flow diagram, are:

- Rotary kiln feed system;
- Rotary kiln;
- Cyclone;
- Afterburner;
- Ceramic baghouse;
- Induced draft (ID) fan; and;
- Continuous emission monitoring system (CEMS).

Exhibit B-9 presents the APE 1236 Incinerator equipment layout. Figure D-5 presents the APE 1236 Incinerator feed handling system certified engineering drawing.

The feed room contains the main control panel, the continuous emissions monitoring unit, the waste feed rate monitoring system, and the feed conveyor. The main control panel contains various pieces of control equipment to monitor and control the furnace operation. Process controllers are used to control the rotary furnace feed end temperature, negative pressure in the rotary furnace, and afterburner temperature.

The APE 1236 Incinerator rotary kiln and a feed room are contained within a building. The feed room contains the primary feed conveyor, feed monitoring system, and the kiln control panels. The rotary kiln and feed room are separated by a blast wall.

The rotary kiln section of the APE 1236 Incinerator is constructed within a 48-foot long by 26-foot wide rectangular enclosure. The 48-foot long side of the enclosure is constructed of ½-thick steel plate wall that is approximately 10-foot high. The 26-foot wide sides of the enclosure are two 1-foot thick blast walls. The kiln feed end blast wall is approximately 12-feet high. The kiln discharge end blast wall is

approximately 10-feet high. The enclosure is constructed on an 8-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The main gas supply to the kiln runs through a 10-inch wide by 17.5-feet long concrete trench located at the discharge end of the kiln. The enclosure includes two 3-foot wide by 7-foot high doors for personnel egress and regress. Exhibit G-4 shows the layout of this enclosure.

The kiln feed conveyor system is enclosed in a 26-foot long by 20-foot wide pre-engineered building (i.e., the feed room). The feed room is constructed on a 6-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The feed room includes two 8-foot by 8-foot insulated doors for easy of transferring the waste feeds into the building.

Exhibit B-9 shows the layout of this building.

Explosive proof lighting, equipment, and fixtures are installed in the APE 1236 Incinerator feed room. The building is constructed with insulated walls and ceiling, fire alarm system, and a telephone for emergency use.

The control system is equipped with two burner control systems to monitor and control the rotary furnace and afterburner burners. The burner controllers are sequence controllers that supervise the pre-ignition air purge, ignition, main flame operation, and post operation air purge. The flame status is monitored by a flame detector.

Logic control for the furnace is performed by a programmable logic controller (PLC). The PLC receives both discrete (on/off) inputs from switches and analog inputs from transmitters. The PLC controls the motor starters, the waste feed rate monitoring system, safety interlocks, and alarms.

The computer system is an industrial PC based machine running data acquisition software called WonderWare, which provides centralized and integrated data management, process graphics, operator interface, and report generation. Through an Ethernet data link, the WonderWare communicates with the PLC. All process parameters and information contained in the PLC is available to WonderWare. The WonderWare generates reports, logs data, develops historical trends, displays process parameters, and logs alarms received from the PLC. The primary function of the WonderWare is to provide a man machine interface to record process data for internal use and regulatory compliance.

The APE 1236 Incinerator's discharge conveyor, cyclone, afterburner, exhaust duct, baghouse, induced draft (ID) fans, and exhaust stack are located outside feed room and the rotary kiln enclosure. The discharge conveyor, cyclone, afterburner, and exhaust duct are located on a 6-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade. The baghouse, ID fans, and exhaust stack are located on an 18-inch concrete pad with a vapor barrier and a 6-inch compacted capillary water barrier between the concrete pad and the subgrade.

The rotary furnace system is equipped with a continuous emissions monitoring (CEM) system which measures oxygen and carbon monoxide in the exhaust stack. The CEM system includes a sampling system, which continuously pulls a stack gas sample and transports it to the analyzers. The sample extraction point is located in the stack approximately 20 feet (6 meters) above grade. The following are included in the sampling system:

1. Sample extraction probe
2. Heat traced sample lines
3. Calibration ports
4. Dual stage sample cooler
5. Sample pump
6. Flow meter

The CEM system is automatically calibrated by the PLC every 24 hours, which allows the analyzers to be calibrated periodically without operator intervention.

The percent oxygen is continuously monitored by the oxygen analyzer located in the gas monitoring enclosure. The analyzer is a multi-range unit, which includes a 0-25% scale. The output from the analyzer is recorded at the main control panel and is used by the PLC to correct the carbon monoxide measurement to 7% oxygen content in the stack gas.

The parts per million (PPM) level of carbon monoxide in the stack is continuously monitored by the carbon monoxide analyzers located in the gas monitoring enclosure. The analyzers are non-dispersive infrared (NDIR) analyzers. One analyzer is a 0-200 PPM range and the other is a 0-3000 PPM range model. The outputs from the analyzers are corrected to 7% oxygen by the PLC. The corrected value is used in controlling the feed rate of ammunition into the rotary furnace.

The waste feed rate monitoring system (WFRMS) controls how fast and how much ammunition is fed into the furnace. The WFRMS major components are an explosion proof scale for weighing the ammunition, a push off box, and a slide chute. The scale reports the measured weight to the PLC via a serial signal. The PLC verifies that the weight is equal to or below the established limit for the item being incinerated. Once the PLC has verified that the weight is correct, the push off box pushes the ammunition item onto the slide chute, which is over the feed conveyor. The WFRMS is capable of cycling every 15 seconds. If an out of parameter condition arises, the WFRMS is stopped until the out of parameter condition is corrected. During a waste feed cut-off, all waste feed equipment will stop immediately, and there will not be waste on the feed system. The input conveyor speed is set so there will only be one feed increment on the conveyor at a time.

The feed conveyor is used to move the ammunition from the feed room through the concrete barricade wall into the barricade area. The feed conveyor then deposits the ammunition into the rotary furnace feed chute.

The Barricaded Area is the area containing the rotary furnace, the cyclone, the afterburner, and the discharge conveyor.

The rotary furnace is designed to ignite the ammunition items and effectively burn out reactive components from the metal shells. The heat to ignite the ammunition is initially provided by natural gas firing countercurrent to the movement of the ammunition through the rotary furnace. Combustion gases and entrained ash exit the furnace adjacent to the ammunition feed chute. Non-entrained ash and the metal components of the ammunition are discharged at the burner end of the rotary furnace.

The retort is level in the horizontal position. The ammunition is propelled through the furnace toward the flame at the burner end by means of spiral flights, which are an integral part of the furnace castings. As the ammunition approaches the flame and becomes heated, they either detonate or burn freely, depending upon the ammunition configuration and characteristics. High order detonations are contained by the thick cast steel walls. The spiral flights provide physical separation of ammunition or groups of ammunition, discouraging sympathetic propagation of detonations and defeating fragments generated by the detonations. Ammunition feed rates, residence time within the furnace (determined by speed of revolution of the furnace), and operating temperatures have been established for each ammunition item by controlled testing.

The rotary furnace is 20 feet long with an average integral diameter of 30.5 inches. The rotary furnace is made of four 5-foot long sections, called retorts, which are bolted together. The two center sections have a wall thickness of 3.25 inches and the two end sections have a wall thickness of 2.25 inches. The retorts are constructed of ASTM A217 chromium molybdenum steel for high strength and ductility at elevated temperatures. For additional personnel safety, the rotary furnace is surrounded by barricade walls.

The rotary furnace is equipped with a Hauck 783 proportioning burner at the discharge end of the rotary furnace. The burner has a capacity of 3 million BTU/hr and a nominal turndown ratio of 4:1.

The feed end temperature of the furnace ranges between 350°-500°F (177°-260°C) while the discharge end temperature ranges from 800°-1200°F (427°-593°C) during normal operation.

The rotary furnace is operated under a slight negative pressure, typically -0.15 to -0.25 inches of water column. The negative pressure in the rotary furnace is determined by the flue gas flow rate and pressure drops through the air pollution control system and draft fan. A draft damper located upstream of the draft fan is automatically adjusted during operation to maintain the proper negative pressure.

The rotation speed of the furnace is automatically controlled so that the munitions achieve detonation or burn in the center of the furnace.

Fugitive emissions from the rotary furnace are controlled by the draft fan and retort combustion air fan. The draft fan is used to maintain negative pressure at the feed end of the furnace. If the pressure goes above -0.1 inches W.C. the WFRMS shuts down until the pressure is returned below -0.1 inches W.C. The retort combustion air fan located at the burner end is a Hauck TBA-16-5, 5 HP, 750-CFM blower.

The rotary furnace flue gases are transported to the cyclone by 24-inch (610-mm) diameter carbon steel ducting. The cyclone is placed between the rotary furnace and afterburner to remove particulate from the flue gas. The cyclone has a 90-95% removal efficiency for particles 10 microns and larger. The pressure drop across the cyclone is 2 to 5 inches of water column. Particles are removed from the cyclone at the bottom by a double tipping valve. The valve has two gates that are motor driven. The gates open alternatively so that only one gate is open at any time, thus the negative pressure is maintained. The particulate is deposited in a collection container for disposal.

The flue gases from the cyclone are transported to the afterburner by 24-inch (610-mm) diameter carbon steel ducting. The afterburner is custom-built to AED specifications by Southern Technology, Inc. The afterburner is designed to heat up to 4,000 SCFM (standard cubic feet per minute) of flue gas from 350°-500°F (177°-260°C) to an exit temperature range of 1400°-1600°F (760°-871°C) with a minimum flue gas residence time of 2 seconds. This increase in temperature further destroys any organics in the flue gas.

The afterburner is equipped with a Hauck WRC164 wide range natural gas burner. The burner has a capacity of 8 million BTU/hr and a nominal turndown ratio of 10:1.

The solid waste exits the rotary furnace at the discharge/burner end. The solid waste is typically the metal casings (brass or steel), melted lead projectiles, and residual ash. This waste is removed from the barricaded area via a wide belt, S shaped, discharge conveyor. The low end of the discharge conveyor is located underneath the discharge/burner end of the rotary furnace. The high end of the conveyor passes through the concrete barricade wall and deposits the waste into containers for disposal.

The Air Pollution Control Equipment area contains equipment for managing the exhaust gases and consists of the model JTS-GE-CF-154-HC high temperature cast ceramic filters baghouse, and the high temperature draft fan and stack.

JT Systems, Inc. built this baghouse to AED requirements. It is a Model JTS-GE-CF-154-HC Pulse Jet Dust Collector. This baghouse is a design that is new for TEAD. A munitions site that operates a rotary kiln furnace in the United Kingdom has two ceramic filter plants with these kind of ceramic candles and has reported that particulates were around 2 mg per cubic meter or 0.0008 grains per scf. They note that this level is right at the limits of the monitoring probes' ability. The flue gases from the afterburner are transported to the baghouse by 120 feet of 30 inch (762mm) diameter stainless steel ducting. The steel ducting is long enough to produce a temperature drop from 1600°F at the exit of the afterburner to 750°F entering the baghouse. The baghouse is designed to filter small particulate ash and heavy metals from the flue gas. The baghouse is capable of filtering below 0.03 gr/dscf using cast ceramic candles. The baghouse contains 154 candles that are 5.75 inches in diameter and 10 feet long. They are made of Cerafil ceramic material. This results in a total filter area of 2,330 square feet with a filtration velocity of 4.97 ft/sec. The baghouse operates with a delta pressure range of 0.5 to 6.0 inches of water column and a temperature of 800°F (427°C).

Fan Equipment Co., Inc manufactures the draft fan. It is a Model M-21 I.E. The flue gases from the baghouse are transported to the high temperature draft fan by 20-inch (508-mm) diameter steel ducting. The flue gases are drafted through the entire furnace system by an induced draft fan, which is located down stream of the baghouse. The draft fan is used to produce a negative pressure throughout the entire furnace system. The draft fan is capable of producing 6700 ACFM (Actual Cubic Feet per Minute) at 30 inches of water column.

The cleaned and cooled flue gases from the draft fan are discharged into the exhaust stack and then the atmosphere. The stack is 20 inches (508 mm) in diameter and 37 feet (11.28 meters) tall. The exhaust stack has various instrumentation ports. The ports for continuous flue gas analyzers and gas velocity are located approximately 20 feet (6 meters) above grade. The flue gas analyzer port services the sampling system, which supplies the continuous oxygen and carbon monoxide analyzers. These analyzers are used to indicate incineration performance and are interlocked with the automated control system. The gas velocity port accommodates a mass flow meter, which provides the gas velocity in the stack and a stack gas temperature.

Additional items that are a part of the furnace system are as follows:

Environmental Unit: The environmental unit is used to keep the main control panel and gas monitoring enclosure at a constant temperature of 70°F (21°C) year round.

480 Volt 60 Hz Power Panel: The 480-volt power panel provides power to the draft fan, the afterburner combustion air fan and the rotary furnace combustion air fan.

Step down Transformer: A 112.5 KVA, 3 phase, 480-volt delta 208/120-volt wye, dry type transformer is required to provide the needed power to the control system.

208 Volt 60 Hz Power Panel: The 208-volt power panel provides power to all of the conveyor motors, all of the double tipping valve motors, fuel oil pump, air compressor, and the retort rotation motor.

110 Volt 60 Hz Power Panel: The 110 volt power panel provides power to the WFRMS, the PLC, all of the controllers, the gas monitoring enclosure, power supplies in the main control enclosure, all of the actuators, the heat trace sample line, and the environmental control unit.

Air Compressor: The air compressor provides compressed air to the baghouse, the gas monitoring enclosure, and the WFRMS. The air compressor is rated for 100-125 psig, 33.6 CFM, with an 80-gallon horizontal tank and a 7.5 HP, 208-volt motor.

D-6 Landfills

This section does not apply to the APE 1236 Incinerator operations.

D-7 Land Treatment

This section does not apply to the APE 1236 Incinerator operations.

D-8 Miscellaneous Units

This section does not apply to the APE 1236 Incinerator operations.

D-9 Boilers and Industrial Furnaces (BIFs)

This section does not apply to the APE 1236 Incinerator operations.

D-10 Containment Buildings

This section does not apply to the APE 1236 Incinerator operations.

E. GROUND WATER MONITORING

This is a new process; there is no ground water monitoring.

E-1 Exemption from Ground Water Protection Requirements

This section does not apply to the APE 1236 operations.

E-2 Interim Status Ground Water Monitoring Data

This section does not apply to the APE 1236 operations.

E-3 General Hydrogeologic Information

This section does not apply to the APE 1236 operations.

E-4 Topographic Map Requirements

This section does not apply to the APE 1236 operations.

E-5 Containment Plume Description

This section does not apply to the APE 1236 operations.

E-6 General Monitoring Program Requirements

This section does not apply to the APE 1236 operations.

E-7 Detection Monitoring Program

This section does not apply to the APE 1236 operations.

E-8 Compliance Monitoring Program

This section does not apply to the APE 1236 operations.

E-9 Corrective Action Program

This section does not apply to the APE 1236 operations.

F. PROCEDURES TO PREVENT HAZARDS

F-1 Security

F-1a Security Procedures and Equipment
Much of the security provisions for areas affected by this permit are addressed in the Introduction, Section F-1. Only those items specific to the APE 1236 Incinerator are addressed here.

F-1(a)(2)(a) Barrier
The APE 1236 is completely enclosed within the installation's fence perimeter. Building 3343 contains the APE 1236 Incinerator rotary kiln and a feed room. The feed room contains the primary feed conveyor, feed monitoring system, and the kiln control panels. The building doors are kept locked when not in use.

The building doors are equipped with "panic hardware" on the inside, to allow immediate emergency personnel exit.

F-1a(2)(b)2 Control of Entry

The APE 1236 is completely within the installation's fenced perimeter (i.e., completely enclosed by an 8-foot high chain-link security fence). Access to the APE 1236 may only be gained through a locked gate in the installation perimeter fence. Access controls for the APE are shown in **Figure D-10**.

All entry points are locked when not in use; keys are maintained by authorized personnel, including the hazardous waste facility operators, the Officer of the Day, and the Police/Fire Shift Commander.

F-1a(3)(b) Warning Signs

Signs reading "Danger – Unauthorized Personnel Keep Out" that are legible from 25 feet are posted at each door leading into the APE 1236 Incinerator.

F-1b Waiver

CRANE is not requesting any waivers from security procedures and equipment requirements. Therefore, this section is not applicable.

F-2 Inspection Schedule

F-2a General Inspection Requirements

All hazardous waste management sites, including the APE 1236 Incinerator, are regularly inspected by CRANE and CAAA hazardous waste facility operators (hazardous waste handlers), and by Environmental Protection management personnel.

Inspections are documented in inspection logs. The inspection log serves as the written record of the results of implementing the Operational Inspection Schedule. In accordance with 40 CFR 264.15(d), the Inspection Log is kept at the installation, in this case in Building 3260 at CRANE.

Specific inspection requirements are described in Section F-2b.

F-2a(1) General Inspection Requirements/Frequency of Inspections

Frequencies of inspections are described in Section F-2b.

F-2a(2) General Inspection Requirements/Types of Problems

The types of problems that inspectors look for during inspections are described in Section F-2b.

F-2b Specific Process Inspection Requirements

F-2b(1) Container Inspection

Explosion and heat in the APE 1236 Incinerator rotary kiln results in the destruction of the energetic portion of the munitions/component and deactivation of the reactivity characteristics of the materials. The treated munitions/components exit the kiln as a mixture of shrapnel and ash. Shrapnel and ash are collected at the exit end of the kiln. After cooling, the shrapnel is visually evaluated for the presence of explosives and after being certified as explosive free, the shrapnel is sold as scrap metal. Kiln ash is collected and evaluated for RCRA hazardous characteristics and managed appropriately.

Air pollution control equipment residue from the cyclone, afterburner chamber, and baghouse is collected into 55-gal drums. These residues are also evaluated for RCRA hazardous characteristics and managed appropriately.

F-2b(2) Tank System Inspections

CRANE does not store or treat wastes in tank systems. Therefore, this section is not applicable.

F-2b(3) Waste Pile Inspections

CRANE does not store or treat wastes in waste piles. Therefore, this section is not applicable.

F-2b(4) Surface Impoundment Inspections
CRANE does not store or treat wastes in surface impoundments. Therefore, this section is not applicable.

F-2b(5) Incinerator and Associated Equipment
This section identifies daily and monthly inspections that are performed at the APE 1236 Incinerator.

F-2b(5)(a) Daily Inspections
The following items are inspected daily when the APE 1236 Incinerator is in use by an operator facility walk through before any work commences:

| Item | Inspected for: |
|-------------------------------------|---|
| (a) Feed Room | Cleanliness, debris, feed conveyor |
| (b) Radio Alarm System Telephone | Dial Tone (place call to the Environmental Protection office) |
| (c) Fire Extinguishers | Seal intact Gauge reads in the green |
| (d) Fence/Warning Signs | Warning signs in place and visible Check for damage or support post foundation erosion |
| (e) Gates/Gate Locks | Defective; open/close appropriately, locks working and are locks in place |
| (f) Doors/Door Locks | Open/close appropriately, locks working and are locks in place |
| (g) Operating procedures | Present/available |
| (h) Personal Protective Equipment | |
| (1) Protective Gloves | Present/Available |
| (2) Chemical Resistant Coveralls | Present/Available |

Any items that do not function properly will be corrected as necessary to ensure safe operations of the APE 1236 Incinerator. Exhibit F-6 is a sample of the APE 1236 Incinerator daily inspection form.

F-2b(5)(b) Monthly Inspections and Equipment Tests
The monthly inspection includes flushing the safety eyewash stations and emergency showers. The monthly inspections are performed by the APE 1236 Incinerator operators. Each eyewash and shower station is tagged with the time and date of the most recent inspection.

F-2b(5)(c) Annual Inspections and Equipment Tests
The CRANE Fire Protection/Prevention Branch conducts annual tests and checks of the radio signal-controlled fire alarm system that is in operation at the APE Incinerator. The detection sensors are heat-activated and, when activated, send a signal to the Fire/Security Communication desk. The test includes activation of the sensors in the normal AC powered mode and in backup DC-powered mode.

Additionally, the yearly inspection includes checking the pressure and flow rates of the fire hydrants. The Fire Prevention/Protection Branch will maintain the annual inspection records.

F-2b(6) Landfill Inspections
CRANE does not dispose of wastes into landfills. Therefore, this section is not applicable.

F-2b(7) Land Treatment Facility Inspection
CRANE does not treat wastes in land treatment facilities. Therefore, this section is not applicable.

F-2b(8) Miscellaneous Unit Inspections
This section does not apply to the APE 1236 Incinerator facility.

F-3 Waiver of Documentation of Preparedness and Prevention Requirements

CRANE has facility-wide documentation of on-site preparedness and prevention measures. The procedures for hazardous waste management facilities are addressed in the Contingency Plan and Emergency Procedures. The Contingency Plan is an evergreen document, always in use and continually updated. The Contingency Plan is retained at the EP office and Fire Protection/Prevention Branch, and copies are provided for other critical operations. The general content of the Contingency Plan is provided in the attached supplement.

The Contingency Plan sets forth the procedures that are used to minimize or prevent damage to human health and the environment from any sudden or non-sudden discharges of hazardous waste or hazardous waste constituents. Though the likelihood of a release of hazardous wastes or substances is minimized by implementation of operating and emergency procedures, the possibility of a release must always be recognized. Due to the nature of the substances used and managed at CRANE, a likely result of a sudden release, should one occur, is fire and explosion.

Because of the possibility for fire or explosion, CRANE operates and maintains its own fire department. Personnel of the CRANE Fire Protection/Prevention Branch are appropriately trained to manage the types of emergencies that are possible because of the potentially explosive nature of materials, products, and by-products. The fire department is on alert at all times to handle the types of fires that could occur during the management of hazardous wastes at the facility.

CRANE operates under explicit fire-fighting instructions formulated to protect the health and safety of the installation employees, and prevent the spread of fire into adjoining areas. The major provisions of these procedures are as follows:

- (1) All fires are reported immediately to the Fire Protection/Prevention Branch. The decision to fight the fire or let it burn is made on a case-by-case basis, and is determined based on the hazardous classification and characteristics of the materials involved in the fire. If it is adjudged too hazardous to fight the fire, Fire Protection/Prevention Branch personnel remain at the scene to contain the fire, prevent access to dangerous areas by non-authorized personnel, and to keep the fire from spreading to adjacent areas.
- (2) All transportation vehicles, offices, and operating areas are provided with a water or a hand-held fire extinguisher. The type of extinguisher provided corresponds to the nature of the materials handled or processed in that area. Operating personnel are instructed in the proper selection (by type) and use of the extinguisher(s).
- (3) Operating personnel are also instructed to use the extinguishers only to fight minor fires, and only if there is no personal danger involved from doing so. In all cases, the Fire Protection/Prevention Branch is always notified immediately about any fire.
- (4) Hazardous waste management facility internal communications are made by direct voice contact. Communications (internal and external), implementation of emergency or rescue procedures, and other related emergency response procedures are found in greater detail in the Contingency Plan.

F-3a Equipment Requirements

F-3a(1) Internal Communication

The APE 1236 Incinerator unit is approximately 88 feet wide by 120 feet long. The APE 1236 Incinerator unit has an internal communication or alarm system that is used to make NSWCrane personnel aware

of a situation that may cause a need to evacuate the unit. Evacuation requirements will be determined on an incident-by-incident basis. Within the APE 1236 Incinerator unit are three enclosures (e.g., Feed Room, the Kiln Room, and the Boiler Room).

The Feed Room is approximately 20 feet wide by 26 feet long with two doublewide exit doors. A voice notification would be used if there should be an emergency event while the Feed Room is occupied.

The Kiln Room is approximately 26 feet wide by 88 feet long with two exit doors. A voice notification would be used if there should be an emergency event while the Kiln Room is occupied.

The Boiler Room is approximately 8 feet wide square with one exit door. A voice notification would be used if there should be an emergency event while the Boiler Room is occupied.

F-3a(2) External Communications

If the incident involves a fire that is determined to be not controllable by a fire extinguisher, the manual alarm is pulled (if an alarm has not already been activated by heat). The locations of these alarm switches are inside, near the exits, at each end of the building. They activate local audible alarms and provide notification to the Fire/Security Department.

Other means of summoning emergency assistance and providing communications include two-way radios in vehicles used to transport operators to the APE 1236, as well as a telephone outside of the facility.

In addition, CRANE has a facility-wide telephone network that is serviced by Communications Products Inc. (CPI). These lines are used for both on-site and off-site calls, and can be utilized to provide emergency information or instructions to facility personnel, emergency response teams, fire departments, and police departments. A Security radio net is also employed at CRANE, consisting of a base station and portable two-way radios.

F-3a(3) Emergency Equipment

The APE 1236 Incinerator has one CO₂ fire extinguisher at the unit. This CO₂ fire extinguisher is of sufficient capacity to suppress the size fire that APE 1236 Incinerator operators alone could logically and safely extinguish.

The CRANE Fire Protection/Prevention Branch typical emergency response time is five to six minutes. Exhibit G-8 (of the Contingency Plan) contains a list of the fire fighting and control equipment available to the APE 1236 emergency response personnel. The CRANE fire fighting personnel are trained to respond to hazardous material incidents, but fires involving explosives would normally not be fought.

F-3a(4) Water for Fire Control

Lake Greenwood is the primary source of water for CRANE. The central water-treatment plant is rated at 2.16 million gallons per day. Approximately 600,000 gallons of water are allocated for fire protection.

The water is discharged into the main fire distribution system under a constant pressure of between 40 and 70 pounds per square inch gauge (psig).

The Kiln Room and the Feed Room are equipped with an automatic sprinkler system. Additionally, a fire hydrant is located on the southwest corner of the APE 1236 Incinerator unit within 25 feet of the Boiler Room.

F-3b Aisle Space Requirements

In the event of an emergency, the layout of the APE 1236 Incinerator allows for the unobstructed movement of emergency personnel and equipment to any location within the APE 1236 Incinerator.

Exhibit B-9 shows the layout of the APE 1236 Incinerator.

F-3c Arrangements with Local Authorities:

Documented agreements, arrangements, letters to hospitals and responses are found in **Exhibit G-14**. CRANE does not have an agreement with a specific contractor to clean up hazardous waste spills. **Exhibit G-9** lists contractors that could be hired.

F-4 Preventive Procedures, Structures, and Equipment

F-4a Unloading Operations

Most of the hazardous wastes treated at the APE 1236 Incinerator are classified as D003 (reactive) wastes. Hazards could occur during loading and unloading operations. Mishandling of D003 wastes during loading and unloading of transport vehicles, transportation, unloading of transport vehicles, and loading of treatment units could result in personnel injury, accidental fires or explosions, and/or releases to the environment. CRANE routinely loads, transports, and unloads explosive materials. Procedures have been established to address hazards that could occur during the handling and transportation of explosives. These procedures are also applied to the handling of D003 wastes treated at the APE 1236 Incinerator. Following is a summary of the procedures that have been established to address hazards associated with D003 wastes that could occur during loading of transportation vehicles, transportation, and unloading of transportation vehicles at the open burning and open detonation treatment units.

General Handling Requirements for D003 Wastes:

- Explosive-loaded ammunition, packaged ammunition, bulk explosives, and explosive (D003) contaminated waste materials must not be handled roughly, thrown about, tumbled, dropped, or carried over other explosives or ammunition. Large ammunition items, packaged in Department of Transportation (DOT) approved containers designed to permit dragging, rolling, or towing, may be so moved when necessary during handling for storage and transportation.
- Material handling equipment (MHE) and other lifting devices must be marked with a load rating and the date of next inspection. The load rating must not be exceeded, and the equipment without a current inspection date must not be used.
- Any defect or unusual condition that is observed must be reported immediately to supervisory personnel.
- When performing operations requiring lifting, personnel must use proper lifting techniques, safe hand holds, assume proper lifting positions, avoid twisting when lifting or carrying, avoid sharp objects and avoid pinch or snip points.

Requirements for Transport Vehicles:

- Vehicles transporting D003 wastes must be inspected monthly and certified safe and serviceable. The vehicles must be equipped with a non-sparking bed, two fire extinguishers and appropriate fire symbols.
- Exhaust systems must be kept in good mechanical repair at all times.
- No more than two persons may ride in the cab of carrier transporting D003 wastes. Only the authorized vehicle driver and assistant are permitted to ride in vehicles moving D003 wastes and / or explosive demolition material.
- Appropriate fire symbols and/or chemical hazard symbols must be displayed on vehicles used in transporting ammunition (including D003 wastes). These symbols must be affixed to the vehicle when the first D003 item is loaded for movement of D003 or explosive material to the service magazine and/or to the treatment unit.

- Fire symbols must be turned or removed at such time as the carrier is empty of explosive materials (including D003 wastes).
- Non-containerized explosives (including D003 wastes) must not be transported in a motor vehicle. Munitions must be packed in closed containers.
- Munitions and containers must be braced and stayed to prevent material movement while the vehicle is in motion.
- Explosives and/or munitions (including D003 wastes) may not be loaded or unloaded while the vehicle motor is running. The parking brake must be set and one wheel chocked if on a grade.
- When D003 wastes are moved to destruction site by truck, a route should be selected to minimize travel through and stopping in congested areas.

General Procedures for Unloading

- Trucks and tractors with trailers positioned for unloading must have parking brake set and wheels chocked.
- No explosives, ammunition, or other hazardous material may be unloaded from vehicles while their engines are running.
- Two Class 2A fire extinguishers must be available during unloading operations.
- Personnel will use MHE to the greatest extent possible that is consistent with safe and efficient operations.
- Personnel cutting steel strap bands must wear leather gloves and safety glasses.
- Empty vehicles must have "Fire Hazard" symbols covered and be removed from the destruction site when no longer necessary to the operation.

F-4b Runoff Prevention

The kiln is enclosed and not subject to run-on from precipitation. The floors of the APE 1236 Incinerator enclosures are constructed of concrete. Any staging of drums, containers, packages, or pallets is conducted on a concrete pad.

F-4c Water Supplies

The potential for contamination of ground water or surface water as a result of APE 1236 Incinerator treatment operations is extremely low. The APE 1236 Incinerator is not a land-based facility. All thermal treatment of hazardous wastes takes place within an enclosed chamber. All APE 1236 Incinerator treatment residues are collected in containers. The floors of the APE 1236 Incinerator enclosures are constructed of concrete. The design of the APE 1236 Incinerator precludes run-on into the APE 1236 Incinerator. Section D-5b describes the design of the APE 1236 Incinerator. In addition to these factors the APE 1236 Incinerator operating and emergency procedures will prevent the contamination of ground water and surface water during normal operations or any upset conditions.

F-4d Equipment Failure and Power Outages

Electricity is purchased from Duke Energy and distributed to both CRANE substations. This configuration permits a radial distribution of power from one substation, while the other is de-energized only a portion of the year. In addition, if there is a loss of power from Duke Energy, CRANE can switch over to power from Hoosier Energy, and has the necessary arrangements to do so.

In case supplied power fails, CRANE has numerous gasoline and diesel-powered generators, which will operate pumps and heating systems, if required. The emergency alarm system automatically switches to DC backup power if the main power fails.

In the unlikely event of generator failure, the APE 1236 Incinerator has been designed with "fail safe" devices. The "fail safe" devices include automatic valves and dampers that "fail" into an open or closed position to prevent cascade reactions or equipment over pressuring, pressure relief valves, and automatic feed shutoff.

Therefore, the APE 1236 Incinerator would not be adversely affected by a main power outage.

F-4e Personal Protection Equipment

An assessment of the appropriate level of protective clothing and equipment is made for each type of waste that is treated in the APE 1236 Incinerator. At a minimum this equipment includes conductive safety toe shoes, flame retardant coveralls, safety glasses, and gloves during operations. Personnel protective equipment is also specified for each type of waste material that is treated in the APE 1236 Incinerator in the applicable SOP. Every SOP contains a section describing safety requirements including personnel protective equipment. All APE 1236 Incinerator personnel are trained in the proper use of the personnel protective equipment.

F-5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

Most of the wastes treated in the APE 1236 Incinerator are RCRA reactive (D003) wastes for explosive hazards. Some of the wastes are also RCRA ignitable (D001). Therefore, all of the procedures used in the APE 1236 Incinerator are designed to prevent accidental ignition or reaction of ignitable or reactive waste materials. General safety precautions to be followed for preventing ignition or reaction of the wastes treated include the following:

- No smoking, matches, lighters, open flames, or other unauthorized ignition sources are permitted in the APE 1236 Incinerator.
- No cutting, welding, activities involving hot surfaces, frictional heat, radiant heat, or other heat-producing activities are permitted in the APE 1236 Incinerator whenever ignitable or reactive wastes are present.
- Spark-producing equipment and tools are prohibited from use when ignitable or reactive wastes are present.
- Incompatible materials (e.g. D003 wastes and ignition materials) are kept separate from each until placed into proximity for treatment.
- All operating personnel are trained.
- Established procedures are followed when loading and unloading reactive waste materials [See Section F-4a].

F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

- Crane Army Ammunition Activity (CAAA) Safety Office has a rigorous hazardous materials safety program. Specific precautions to prevent accidental ignition or reaction of waste are taken during all APE 1236 operations, loading and unloading, and transportation. Procedures are clearly described in the Navy Safety manual, OP 5;

AMC-R 755-8; and Standing Operating Procedures. The following are key precautions taken:

1. Adverse Weather Conditions - There is a Lightning Prediction System that generates a "Red Alert" warning if lightning is nearby. If a "Red Alert" is issued, all explosives operations are halted until conditions are returned to "All Clear."
2. Personnel Safety Precautions -
 - No flame-producing devices (e.g., matches, cigarette lighters) are allowed within the APE 1236 Incinerator area. Signs indicating this are conspicuously placed in all areas where there is a hazard from ignitable or reactive wastes. Smoking is limited to designated indoor areas at CRANE. No smoking is allowed at any of the areas to be permitted. Cutting, welding and spark producing tools are not used at the facility except when properly permitted by the Fire Department, Fire Prevention Inspectors. When necessary, all ignitable hazards will be moved and a manned fire truck may be on hand as stand-by.
 - Non-sparking tools (e.g., aluminum, brass, beryllium or wood) are used. Containers of waste explosives are properly labeled and sealed.
 - Inert chemical and explosive wastes are brought into contact with each other to assure that no heat-producing chemical reactions occur.
 - Reactive or ignitable wastes are shielded from direct sun.
 - All hazardous waste containers are inspected thoroughly. Any defects or foreign material must be reported to the operator for disposition.
 - Precautions are taken to control decomposition of any explosives accumulated in supplies and cleaning equipment, such as mops, brooms, and similar items.
 - Cleaning equipment that has been contaminated is placed in clearly marked covered containers, and must be handled in an approved manner.
 - All hazardous waste containers are labeled or stamped.
 - Periodic conductivity tests of safety shoes and calibration checks of the Conductive Shoe Tester shall be performed as specified by the area supervisor in the instructions posted at the site of the testing.

Demilitarization operations at the APE 1236 Incinerator are conducted in strict accordance with the procedures set forth in the Navy Safety Manual, OP 5; the Army Safety Manual, AMC-R 385-100; Army Environmental Protection and Enhancement, AR 200-1; and AMC-R 755-8. The primary purpose of these regulations is to ensure protection of personnel and the environment. It is the opinion of both the Army and the Navy that the aforementioned procedures adequately address concerns dealing with handling ignitable or reactive waste.

G. CONTINGENCY PLAN

The primary copy of the Contingency Plan and Emergency Procedures (the Contingency Plan) is kept in the office of the Emergency Coordinator. Details of the Contingency Plan are provided in an attached supplement.

Munitions awaiting treatment could detonate prior to being placed on the APE 1236 Incinerator feed conveyor. Munitions placed on the APE 1236 Incinerator feed conveyor could detonate prior to entering the rotary kiln. It is extremely unlikely that the APE 1236 Incinerator treatment residues, air pollution control system (APCS) residues or kiln ash, or kiln metal residue would present a detonation/explosion hazard. In all cases the hazard would be limited to the APE 1236 Incinerator through exposure to potential

bodily injury or death. Off-site impacts would not occur as a result of unplanned/uncontrolled explosion or fire.

The rotary kiln could be damaged as a result of excessive energetic levels in some feed items resulting in explosions that could damage the APE 1236 Incinerator. Damage resulting from excessive energetic levels in feed items is not considered to be a significant possibility because prior to being fed to the Primary Chamber, a safety evaluation is performed to determine the maximum feed rate for the material fed. This maximum feed rate is then programmed into the computer controlled feed system that will automatically shut off the feed conveyor if this feed rate is exceeded.

The APCS could be damaged if an untreated energetic would pass through the APE 1236 Incinerator and explode in the APCS. However, this is unlikely because the rotary kiln discharge end temperature ranges from 800° - 1200°F. It is extremely unlikely that any energetic material could survive this temperature in sufficient quantities to be an explosive hazard in the APCS. In the unlikely event that such an explosion would occur, the impact would be limited to the equipment and the APE 1236 Incinerator personnel and would not have off-site impacts.

A natural gas leak could be ignited resulting in a fire and/or explosion. In the unlikely event that such an explosion would occur, the impact would be limited to the equipment and the APE 1236 Incinerator personnel and would not have off-site impacts.

In summary, the principal emergency event that might occur at the APE 1236 Incinerator is an unplanned/uncontrolled explosion or fire, which would not have off-site impacts.

H. PERSONNEL TRAINING

CRANE provides different levels of training to its hazardous waste handling employees. The training program for its personnel is a common program for all its hazardous waste handling employees and not specific to the individual Part B operations. Thus, the program is described for all Part B operations in the Introduction. Only general descriptions are provided here.

H-1 Outline of the Training Program

The details of this outline are provided in the introduction to this permit. The various training programs are listed here as a summary of the breadth of training used at CRANE for its personnel involved in hazardous waste handling and treatment.

- (1) Hazardous Waste; Spill Response - Operations Level Training (Initial); and Hazardous Waste; Spill Response - Operations Level Training (Annual Refresher)
- (2) Hazardous Waste Training (Initial/Annual Refresher)
- (3) Hazardous Waste Training (Initial), and Hazardous Waste Training (Annual Refresher)
- (4) Hazardous Waste Handlers; Spill Response - Technician/Specialist Level; and Department of Transportation, 40 CFR 172-704.
- (5) Spill Response - Operations Level Training (Initial); and Spill Response - Operations Level Training (Annual Refresher)
- (6) HAZMAT/Spill Response - Technician/Specialist Level Initial); and HAZMAT/Spill Response -
- (7) HAZMAT/Spill Response - On-scene Incident Commander Training (Initial); and HAZMAT/Spill Response - On-scene Incident Commander Training (Annual Refresher)
- (8) Spill Response Simulated Incident Scenarios
- (9) Lead Exposure Training (Initial/Annual Refresher)
- (10) Miscellaneous
 - (a) Written Hazardous Waste Management and Minimization:

- (b) Written Hazardous Waste Procedures:
- (c) Written Standard Operating Procedures (SOP):
- (d) Meetings:

In the Introduction, the description of the training program also includes descriptions of personnel, their job titles, and job functions.

H-2 Implementation of Training Program

This section describes the implementation of the training program; that description is in the Introduction.

I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS

I-1 Closure Plans

A written copy of the Closure Plans for the APE 1236 facility is available at the CRANE Environmental Protection (EP) office.

I-1a Closure Activities

Closure activities associated with the APE 1236 facility will be conducted by a CRANE designated contractor. The contractor environmental coordinator will supervise the closure activities, including the packaging, transportation, and removal of any hazardous wastes generated by the closure procedure.

During closure activities, all components of the APE 1236 Incinerator including the rotary kiln waste feed system, the rotary kiln, the cyclone, the afterburner, the baghouse, the ID fans, the CEMS, and the residue collection systems will be cleaned to remove hazardous waste residues. Metallic components will be recycled as scrap metal. Nonmetallic components will be disposed as solid wastes. Any nonmetallic components that cannot be cleaned below levels of characteristic waste will be disposed as hazardous wastes.

Section I-1d describes procedures for determining whether contamination exists at the APE 1236 Incinerator during closure and, if necessary, the procedures for decontamination. If necessary, buildings, equipment, and adjacent grounds will be decontaminated until confirmation sampling and analysis test demonstrate that cleanup to regulatory levels has been achieved. Disposal of any hazardous residues generated, as part of the decontamination procedures will be at a permitted hazardous waste management facility. Removal and disposal of any building components that cannot be decontaminated will be performed in an approved manner. Upon completion of these procedures, any remaining structures that are not contaminated or that have been decontaminated may be refurbished and rededicated to other purposes or demolished with the resulting debris disposed of as a conventional, nonhazardous demolition waste. This approach will eliminate the need for post-closure maintenance and controls because no possibility of air, water, or soil contamination from the remaining facility will exist. Additionally, instrumentation and other hardware that is uncontaminated (or decontaminated) will be removed and salvaged.

I-1b Partial Closure Activities

Partial closure is not anticipated for the APE 1236 Incinerator at this time. The APE 1236 Incinerator will remain 100 percent in service during its operational life.

I-1c Maximum Waste Inventory

Waste is not stored at the APE 1236 Incinerator. The maximum inventory of waste munitions that could be present would be the amount that could be treated in a single day. The APE 1236 Incinerator will not

be closed until all material accumulated at the unit for incineration has been processed. If the kiln, after burner, or other operating equipment should malfunction and cannot be made operational prior to incineration of all the accumulated feed material, the excess waste feed will be removed and either treated in another permitted facility or returned to a conditionally exempt munitions/explosives storage facility. The maximum hourly net explosive weight (NEW) waste feed rate and the gross hourly waste feed rate are 240 pounds per hour (lb/hr) and 500 lb/hr, respectively. If the APE 1236 Incinerator were to operate at the maximum waste feed rate and at the maximum daily operating hours [e.g., 20 hours per day (hr/day)], then the maximum gross waste feed at the APE 1236 Incinerator would be 4,800 lb NEW or 10,000 lb gross weight. The primary RCRA characteristic associated with the waste military munitions/explosives treated in the APE 1236 is reactivity (D003) due to the presence of energetic materials. Some of these wastes may have a secondary characteristic of toxicity, due to the presence of metals (D004 through D011), 2,4-DNT (D030), and hexachlorobenzene (D032).

1-1d Inventory, Removal, Disposal, or Decontamination of Equipment

As mentioned previously, no inventory of hazardous waste will be present at the APE 1236 Incinerator when closure is initiated. Therefore, inventory removal and subsequent disposal will not be an issue because all wastes scheduled for treatment will have already been treated, or they will be rescheduled for treatment at other permitted facilities. Regardless of the status of hazardous wastes meeting waste acceptance criteria for the APE 1236 Incinerator at the time of closure, these wastes will not be located at, or subject to treatment in the APE 1236 Incinerator unit when closure is commenced.

At closure, the kiln and the APCS will be operated at a minimum of 7 hours at the normal operating temperature, without any waste feed until the equipment is empty. The 55-gallon residue drums will be removed. The APE 1236 Incinerator system and the APCS will then be dismantled for subsequent decontamination and disposal.

1-1d(1) Criteria for Determining Equipment, Structures, and Soil Contamination; and Success of Decontamination

None of the components of the APE 1236 Incinerator are expected to be reactive or contain reactive residues. Metallic portions of the APE 1236 Incinerator will be cleaned to the bare metal by removal of all residues utilizing techniques such as brushing, scraping, grinding, etc. When cleaned, they will be certified as explosive free and subsequently sold as scrap metal. Certification as explosive free may require treatment by flashing. Flashing would take place by placing wood dunnage under the metal items and igniting the dunnage. This would most likely be required for components containing spaces inaccessible for visual observations.

All residues including the refractory brick and the baghouse filter bags (bags) will be evaluated for RCRA characteristic and managed appropriately. None of the residues resulting from closure activities are expected to be reactive. The processes for determining the presence of contamination are described in the following section.

The APE 1236 Incinerator system and APCS will be dismantled for subsequent disposal, as described in the following subsections.

The kiln will be cleaned of all removable residues by using techniques such as scraping, grinding, and scarification. Removed residue will be containerized and evaluated for RCRA characteristic and managed appropriately. The kiln components will then be flashed and sold as metallic scrap.

The feed and discharge systems will be cleaned of all removable residues by using techniques such as scraping, grinding, and scarification, if necessary. Removed residues will be handled in the same manner as kiln residues. The dismantled components will then be flashed and sold as metallic scrap.

The afterburner, and cyclone will be dismantled and cleaned of all removable residues by using techniques such as scraping, grinding, and scarification. If necessary, removed residues will be handled in the same manner as kiln residues. The dismantled components will then be flashed and sold as scrap.

The baghouse will be dismantled. Prior to dismantling, the collected baghouse dust will have been removed from the bags as part of normal operations. The bags will be collected and will be evaluated for RCRA characteristic and managed appropriately. Metallic components of the baghouse will be cleaned of removable residue using the techniques described for the kiln. The residues will be handled in the same manner as kiln residues. The metallic components will then be flashed and sold as scrap.

The APE 1236 Incinerator stack, piping, and other miscellaneous metallic components will be cleaned of removable residue using the techniques previously described. The residue will be containerized and will be evaluated for RCRA characteristic and managed appropriately. Metallic components will be flashed and sold as scrap.

The dust and ash collection points will be visually inspected for the presence of any released dust or ash. Any such releases will be collected in containers and will be evaluated for RCRA characteristic and managed appropriately.

After all the APE 1236 Incinerator system equipment has been removed, the concrete pad and walls will be cleaned of all removable residues by sweeping to a bare concrete surface. The sweepings will be containerized and will be evaluated for RCRA characteristic and managed appropriately.

Surface soil samples will be collected surrounding the APE 1236 Incinerator area as described in Section I-1d(3). If metals or explosives are found in excess of risk-based concentrations or background levels, soil will be excavated and removed until risk-based concentrations or background levels are attained. Contaminated soil will be transported to a permitted hazardous waste facility in accordance with 40 CFR §264.114.

I-1d(2) Potentially Contaminated Surface Sampling (Concrete)

Before decontamination, all paved areas, concrete pads, containment systems, structures, and sumps should be visually inspected to identify cracks, gaps, spills, stains, or damaged areas that may be present. This visual inspection should be documented in the closure certification report with notations of any identified problems. Any cracks, gaps, or damaged areas should be repaired by grouting or sealing before decontamination is performed in order to prevent the further release of contamination into underlying soil.

Decontamination of paved areas, containment systems, and sumps should include the following:

- Visual inspection
- Waste removal
- Mechanical cleaning (scraping or sweeping)
- Repair of damaged unsealed areas
- Low-volume, high-pressure washing (can include steam or detergent for more effective cleaning)
- Three successive low-pressure ambient-temperature water rinses
- Sampling and analysis of final rinsate to confirm decontamination

The first two water rinses described above should remove both residual wastes and any detergents used during washing. The third or final rinse should provide the source of verification samples. Verification of decontamination must be provided to confirm that closure levels have been met.

At least two samples of the final rinsate from each unit undergoing closer should be analyzed for the hazardous constituents identified in the waste as defined in 40 CFR 261, Appendix VIII, or for hazardous waste constituents as defined in 40 CFR 260.10. The two rinsate samples are field duplicates for the rinsate. The final rinsate samples should be representative of the entire final rinse. Rinsate samples to be analyzed for metals should be filtered to remove solid particles prior to sample preservation. Table I-2 provides test methods for rinsate samples.

Decontamination procedures will be repeated until closure levels are met. If closure levels are not met after two iterations of decontamination procedures, IDEM will provide further guidance.

Decontamination of storage pads will include the following:

- All waste are removed from the pad and appropriately disposed of.
- The pad is mechanically cleaned by scraping, sweeping, or other methods to remove all physical contamination.
- The pad is inspected for cracks. If cracks are detected, items 10 and 11 may be performed at this point.
- The cracks are sealed.
- The pad is washed using a high-pressure steam cleaner with detergent or appropriate solvent to remove previously stored waste materials.
- The pad is rinsed three times with water. Low-pressure, ambient-temperature rinses should be used.
- The third (final) rinsate is collected separately, and two samples are analyzed to show that the pad's surface meets closure levels. For inorganic and certain organic parameters, closure levels will be based on the MCLs of the National Primary Drinking Water Regulations (40 CFR 141) in the rinsate. For organic parameters without MCLs, the closure levels of the rinsate will be based on the EQLs of the analytical methods as defined in SW-846. Analytical parameters will be based on wastes previously stored in the area.
- Care taken to prevent the migration of cleaning liquids from the pad area.
- All residues and rinsates are collected and disposed of as hazardous waste unless the residues and rinsates are analyzed and determined to be non-hazardous.
- Soil underlying cracks discovered during visual inspection is sampled for contamination. If contamination is found, the vertical and horizontal extent of the contamination should be determined. Closure levels for soil are based on background levels for inorganic parameters or for inorganic and organic parameters residential screening levels listed in the Remediation Closure Guide, dated March 22, 2012.

I-1d(3) Soil Sampling

Soils surrounding the APE 1236 will be sampled for metals and explosives in accordance with the methods outlined in Tables I-1 and I-3 and in accordance with the provided QAPP (included by reference). Quality Control/Quality Assurance Information will be followed for any analytical data used for closure of the unit.

A total of twelve (12) surface soil samples will be taken. Three (3) soil samples will be taken from along each side of the APE 1236. The samples will be located adjacent to the concrete pad and collected using a trowel.

The soil sample results obtained during the APE 1236 closure study will be compared to the background soil data for metals established in the *Base-Wide Soils Study, NSW Crane* (TiNUS, August 2000). Any explosives detected in the soil are not naturally occurring and therefore do not have any background levels established. The closure study will utilize a non-detect background level for explosives.

If metals or explosive contamination is detected in the soil samples above background levels or the Remediation Closure Guide residential screening levels, additional samples will be collected to establish both the vertical and horizontal extent of the contamination. The soil results obtained will be compared to both the background levels and Remediation Closure Guide residential screening levels.

If the analyses of the additional soil samples show that concentrations of all constituents are equal to or less than background levels or Remediation Closure Guide residential screening levels, no further sampling will be conducted.

The provided Laboratory QAPP will be used for closure activities. The analytical results used for closure activities submitted to IDEM for review will include, at a minimum, signed chain-of-custody sheets, sampling dates, analysis dates, analytical methods used, estimated quantitation limits (EQLs), and quality control (QC) results. The quality assurance/quality control (QA/QC) results will include, at a minimum, method of standard addition (ICP) or serial dilution analysis (ICP) (as applicable), tuning results (GC-MS), initial and continuing calibration results, method blank results, internal standard areas (GC-MS, ICP-MS), matrix duplicate results (as applicable), matrix spike/matrix spike duplicate (MS/MSD) results, laboratory control sample (LCS) results, and surrogate recoveries (GS-MS). The QA/QC information will also include that raw data consisting of chromatograms, recorder outputs, mass spectrum reports, computer printouts, charts, graphs, bench sheets, or any other hard copy data generated during sampling and analysis.

1-1d(4) Methods to Perform Residue/Soil Decontamination

Any contaminated residue/soil at the APE 1236 exceeding residential screening levels listed in the Remediation Closure Guide, dated March 22, 2012, or background levels will be treated on-site or will be removed using backhoes or other excavation equipment. Treatment technologies for contaminated soils cannot be determined at this time, and the likelihood of residual soil contamination is low.

The decision on whether treatment is appropriate will be determined in the future, depending on the contaminants present, the nature and extent of contamination, and the status of available technology. If treatment (on-site or off-site) is considered to be an appropriate alternative to off-site disposal, the Closure Plan will be revised and submitted to IDEM in accordance with Section I-10 (Closure Plan Amendment). The residue or soil will then be containerized, properly manifested, and transported to an approved waste management facility in accordance with 40 CFR 264.114.

1-1d(5) Procedures to Evaluate Effectiveness of Decontamination for Soil

The effectiveness of the decontamination procedures for the surrounding area of soil will be determined by taking soil samples, in the areas surrounding the units, to demonstrate that residential screening levels listed in the Remediation Closure Guide, dated March 22, 2012, or background concentrations are not exceeded.

During closure, if excavation is required, sampling will continue until all soil with contamination that exceeds residential screening levels listed in the Remediation Closure Guide, dated March 22, 2012, or background levels has been removed. The effectiveness of decontamination will be determined on the basis of the results of tests on soil samples from the excavations. Decontamination will be considered effective when all soil samples concentrations are at or below residential screening levels listed in the Remediation Closure Guide, dated March 22, 2012, or background levels. The location and number of confirmation samples will be based on the results of sampling conducted to determine the extent of contamination.

1-1d(6) Decontamination of Cleanup Materials and Residues

Solid residues (spent blasting sand, swabs, and wipes) will be landfilled in a permitted landfill. Any wash or rinse solutions generated as part of the cleanup operation will be vacuum-collected and removed to a permitted disposal facility.

1-1e(4) Closure of Tank Systems

CRANE does not store or treat hazardous wastes in tank systems; therefore, this section is not applicable.

1-1e(5) Closure of Waste Piles

CRANE does not store or treat hazardous wastes in waste piles; therefore, this section is not applicable.

1-1e(6) Closure of Surface Impoundments
CRANE does not store or treat hazardous wastes in impoundments; therefore, this section is not applicable.

1-1f Schedule for Closure
APE 1236 Incinerator Closure Schedule:

The schedule for closure of the APE 1236 hazardous waste management unit is given in countdown form as follows:

| <u>Event</u> | <u>Days</u> |
|---|-------------|
| Notification to Commissioner of intent to begin closure | 0 |
| Final volume of waste received | 45 |
| Begin inventory removal to off-site disposal | 45 |
| End decontamination effort | |
| Begin site restoration | |
| Finish site restoration | |
| Submit P.E. Certification of closure | 240 |

All hazardous wastes will be treated, removed off-site, or disposed of on-site within 90 days from the receipt of the final volume of waste at the unit or facility; and all closure activities will be completed within 180 days from the receipt of the final volume of waste at the unit or facility.

1-1g Extension for Closure Time
No extension of closure time request is anticipated.

1-1h Certification of Closure
Upon completion of closure of the APE 1236 Incinerator, the owner/operator and an independent registered professional engineer will certify that closure of the facility was completed in accordance with the specifications contained in the approved closure plan and with 40 CFR 264.115. The closure certification will detail all activities associated with the closure of the facility and will include a map of sampling locations. All tests and results, interpretation of the results, inspection procedures, and other documentation necessary to meet the closure performance standard will be forwarded to the Commissioner of IDEM.

The certification of closure or any submittal of analytical results for closure will include all associated QA/QC data in order for the IDEM to validate the results.

Within 60 days of completion of closure of the hazardous waste treatment unit, CRANE will submit to the IDEM by registered mail, a certification that the unit has been closed in accordance with the IDEM-approved Closure Plan. The Commanding Officer and an independent, qualified, professional engineer, registered in the State of Indiana, will sign the certification. Documentation supporting the independent, qualified, registered professional engineer's certification will be furnished to IDEM upon request.

I-2 Post-Closure Plan/Contingent Post-Closure

CRANE intends to clean close the APE 1236 Incinerator facility with no wastes remaining in place. In the event that a clean closure is not accomplished, CRANE will submit a permit modification to address a Post Closure Plan/Contingent Post Closure in accordance with 40 CFR 264.118.

I-3 Notices Required for Disposal Facilities

CRANE does not dispose of hazardous waste on-site (e.g., CRANE is not a disposal facility); therefore, this section is not applicable.

I-4 Closure Cost Estimate

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

I-5 Financial Assurance Mechanism for Closure

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

I-6 Post-Closure Cost Estimate

In accordance with 40 CFR §264.140(c), a post-closure financial assurance mechanism is not required for Federal facilities.

I-7 Financial Assurance Mechanism for Post-Closure Care

In accordance with 40 CFR §264.140(c), a post-closure cost estimate is not required for Federal facilities.

I-8 Liability Requirements

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

I-9 Use of State-Required Mechanisms

The hazardous waste management units at CRANE are an entity of the Federal Government and are therefore granted specific exemption from the requirements of 40 CFR §264.140.

I-10 Closure Plan Amendment

CRANE will maintain the Closure Plan to ensure that it is current and accounts for anticipated closure activities. The Closure Plan will be amended when the following events or contingencies occur:

The expected reasons that warrant closure of the APE 1236 unit change.

Changes in operating plans or unit design affect this Closure Plan. This will include, but not be limited to, the need to modify the APE 1236 unit, to expand APE 1236 treatment capacity, or to treat different types of explosives or ordnance, etc.

New information is obtained that significantly changes the underlying assumptions or procedures outlined in this Closure Plan.

Unexpected events occur during closure that requires significant modification of the Closure Plan.

Certain events and/or contingencies are anticipated in the Closure Plan and do not warrant formal amendment of this plan. For example, the need to extend the anticipated schedule of some closure activities by a few days (provided the overall time scheduled for closure is not exceeded). Such events and contingencies will be brought to the attention of the U.S. EPA or IDEM; however, formal amendment of the Closure Plan will not be requested.

Whenever events or contingencies requiring formal amendment of this Closure Plan occur, a written request for permit modification will be submitted to the IDEM. Such requests will be signed by the engineer responsible for CRANE oversight and sent by certified mail. Any requests for amendment will describe in detail the necessary Closure Plan changes.

J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

J-1 Solid Waste Management Units

There is no additional information provided here germane to the APE 1236 facility.

J-2 Releases

There is no additional information provided here germane to the APE 1236 facility.

K. OTHER FEDERAL LAWS

There is no additional information provided here germane to the APE 1236 facility.

L. PART B CERTIFICATION

This is contained in the introductory section for the entire Part B permit. A separate certification is not provided for each unit.

