

MODULE V – MISCELLANEOUS MUNITIONS PROCESSING OPERATIONS

V.A. Small Caliber Ammunition Disassembly Lines

The Small Caliber Ammunition Disassembly Line (SCDL) is a process which removes the projectile (for recovery, recycling, or further processing), recovers the propellant (for recycling, or disposal) and initiates the primer. The disassembly lines in buildings 1325 and 1335 are configured to process 20, 25, and 30 mm cartridges. The disassembly line in building 1325 is configured to process 20 and 25 mm cartridges. The disassembly line in building 1335 is configured to process 20, 25, and 30 mm cartridges. The process includes ancillary feed equipment prior to a continuous-motion pull-apart turret that separates the projectiles from the cartridge case filled with propellant. The projectile is containerized and transferred to the deactivation furnace for treatment, or reclaimed for reuse. The cartridge cases continue to a dump cubical where they are inverted and the propellant drops out and is collected for recycling or for disposal at the OB/OD facility. The empty case with the primer then continues on to the primer firing module where the primer is initiated. The empty cartridge cases with expended primers are collected for recycling.

Emissions from the primer firing modules are pulled through a pollution abatement system. The pollution abatement system in building 1325 includes a Uni-Wash Model UC-10 wet type dust collector that removes particulate matter followed by a dry cell to remove excess moisture; a Mac Environmental Model FT30 cyclone separator; and a MIASMACT Model 4M2S automatic-cleaning HEPA filtering system. The pollution abatement system in building 1335 is a wet scrubber (ProVent Model VC-10) capable of removing PM₃. Building 1335 has a second wet scrubber (ProVent Model VC-30) that creates a negative pressure in both the powder collection room as well as the powder dump station. Any dust generated in these enclosures would be captured in this scrubber. The vacuum system for moving the propellant dumped from the cartridges to the powder collection containers has a HEPA filter to remove dust that may not be collected by the propellant collection air cyclone and filter.

The first part of this process (the pull apart machine and propellant dump cubicle) is not covered by this Permit. The emissions and pollution abatement system are regulated by an Approval Order issued by the Utah Division of Air Quality and is therefore not subject to the requirements of this Permit. This Permit covers the operation of the primer firing modules and the storage of wastes associated with this process.

V.A.1. OPERATION AND MAINTENANCE

V.A.1.a. The Permittee shall maintain and operate the disassembly lines in accordance with the drawings and specifications contained in Attachment 18 (Small Caliber Disassembly Line Drawings).

- V.A.1.b. Modifications to the drawings and specifications for the disassembly lines shall be allowed only in accordance with the permit modification requirements in Condition I.D.
- V.A.1.c. The Permittee shall maintain the disassembly lines and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to ensure each disassembly line remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible.
- V.A.2. PERFORMANCE STANDARDS
- Empty cases with the primer shall be processed through the primer firing module as they are generated from the propellant recovery operation. Alternatively, they may be accumulated and processed in the deactivation furnace. Primers that are not initiated in the first pass shall be run through the process again, for up to three additional passes, until they are initiated. Any primers that are not initiated shall be accumulated and processed in the deactivation furnace or another appropriate permitted facility.
- V.A.3. FEED LIMITATIONS AND OPERATING REQUIREMENTS
- V.A.3.a. The Permittee may only feed 20 and 25 mm cartridges to the disassembly line in building 1325. The Permittee may only feed 20, 25, and 30 mm cartridges to the disassembly line in building 1335.
- V.A.3.b. The maximum inventory that may be stored in buildings 1325 and 1335 is 50,000 rounds per building.
- V.A.3.c. Projectiles that have been identified as waste, and removed from their cartridges will be packaged and labeled as hazardous waste and stored in accordance with Utah Admin. Code R315-262-30 until they can be treated in the deactivation furnace or another appropriate permitted facility.
- V.A.3.d. Recovered projectiles will be stored as product until they can be recycled/reused. Upon inspection, appropriate conditional codes will be assigned according to the DOD Supply Conditional Code (SCC) standards. Should projectiles require treatment, they will be packaged and labeled as hazardous waste and stored in accordance with Utah Admin. Code R315-262-30 until they can be treated in the deactivation furnace or another appropriate permitted facility.
- V.A.3.e. Primers that are not initiated in the first pass will be run through the process again, for up to three additional passes, until they are initiated and/or packaged and labeled as hazardous waste until they can be treated in the deactivation furnace or another appropriate permitted facility.
- V.A.3.f. The primer firing module in building 1325 shall be equipped with an acoustical detector and a means of separating the cartridge cases with primers that did not initiate from those that did. The primer firing module in building 1335 shall be equipped with an IMI model 608A11 accelerometer and a means of separating the

cartridge cases with primers that did not initiate from those that did.

V.A.3.g. Cartridge cases shall be visually inspected prior to removal from the depot for recycling purposes and certified as explosive free. The certification shall be documented on DD Form 1348. This inspection and certification shall be done before these items are removed from building 1325, the paved area around buildings 1325 or 1335, or the paved area of building 1320. Containers of cartridge cases which have been inspected and certified as explosive free shall be clearly labeled to distinguish them from containers of cartridge cases which have not yet been inspected. Any primers that are discovered to have not been initiated shall be packaged and labeled as hazardous waste and treated in the deactivation furnace or another appropriate permitted facility.

V.A.3.h. Recovered propellant shall be stored as product until it can be recycled/reused. Should propellant be determined to be waste or fail other Army criteria for safety, it shall be treated in the OB/OD facility in accordance with hazardous waste regulations as specified in Attachment 2 (Waste Analysis Plan).

V.A.4. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS

V.A.4.a. Empty cartridge cases with the primer may be fed to the primer firing module only when all equipment and instruments required by this condition are on-line and operating properly.

V.A.4.b. The microphone of the acoustical detector in building 1325 shall be replaced monthly when in use. Records shall be maintained of any replacements, calibrations, or maintenance performed.

V.A.4.c. The accelerometer of the acoustical detecting system in building 1335 shall be replaced every five years when in use. It shall be tested on a quarterly basis to ensure proper detection of primer initiations. Records shall be maintained of any replacements, calibrations, testing, or maintenance performed.

V.A.4.d. The hours of operation and the amount of waste fed to the primer firing module shall be monitored and recorded on a daily basis.

V.A.4.e. The number of primers found during the visual inspection to have not initiated shall be recorded in the operating log.

V.A.4.f. Copies of the data collected under this condition shall be provided to the Director upon request.

V.A.5. WASTE FEED CUT-OFF REQUIREMENTS

The Permittee shall cease feed to the disassembly line under any of the following conditions:

V.A.5.a. Any mechanical malfunction with either the disassembly line or controls which would compromise the integrity of the system.

V.A.5.b. Waste residue collection bins, conveyance system, hoppers, or containers are full and additional waste feeds would cause these receptacles to overflow/malfunction.

V.A.6. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall comply with all applicable provisions of DoD 6055.9-STD, “DoD Ammunition and Explosives Safety Standards”.

V.A.7. INSPECTION REQUIREMENTS

On at least a daily basis, when they are in operation, the Permittee shall thoroughly, visually inspect the disassembly line and associated equipment (conveyors, ducting, feed systems, etc.) and containment systems for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering per Attachment 4 (Inspection Plan). These inspections shall be accurately documented in the facility operating records.

V.B. Hydrolysis Facility

The Hydrolysis Facility is a process that treats energetic material containing items such as Cartridge Activated Devices (CADs), Propellant Activated Devices (PADs), or other munitions for which the energetic material may be accessed readily by a caustic solution. The energetic items are hydrolyzed in a hot caustic bath to dissolve and inert the energetic material. The process provides indiscriminate de-activation of energetic constituents. A detailed description of the facility can be found at Attachment 19 (Hydrolysis System Description).

V.B.1. OPERATION AND MAINTENANCE

V.B.1.a. The Permittee shall maintain and operate the hydrolysis facility in accordance with the drawings and specifications contained in Attachment 20 (Hydrolysis System Drawings).

V.B.1.b. Modifications to the drawings and specifications for the hydrolysis facility shall be allowed only in accordance with the permit modification requirements in Condition I.D.

V.B.1.c. The Permittee shall maintain the hydrolysis facility and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to

ensure the hydrolysis facility remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible.

- V.B.1.d. Prior to operation of the hydrolysis system, the Permittee shall provide a written assessment to the Director, reviewed and certified by a qualified Utah registered professional engineer, that attests to the structural integrity and suitability of the hydrolysis tank systems for handling the specified hazardous waste in accordance with Utah Admin. Code R315-264-192.
- V.B.1.e. The hydrolysis system shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to the air, soil, groundwater, surface water, or any other location which could threaten human health or the environment.
- V.B.1.f. The Permittee shall empty, visually inspect for the general condition of each tank, and measure the corrosion of each tank in the hydrolysis facility at least once each year and certify that it can safely manage the specified hazardous waste. These inspections and tests must be certified by a qualified Utah registered professional engineer.
- V.B.1.g. The Permittee shall equip all pumps that are not within a secondary containment area with drip pans to collect any spillage that may occur.

V.B.2. PERFORMANCE STANDARDS

- V.B.2.a. Munition scrap remaining in the baskets after processing shall be inspected. Any energetic material, scrap containing energetic material, or suspect scrap will be returned to the process to ensure complete destruction.
- V.B.2.b. Sufficient caustic shall remain in the spent hydrolysate, and sufficient reaction time shall be allowed, to ensure that any energetic compounds in the solution are rendered non-reactive.
- V.B.2.c. Emissions from the hydrolysis system vent shall be controlled so that they do not pose an unacceptable risk to human health and the environment.

V.B.3. FEED LIMITATIONS AND OPERATING REQUIREMENTS

- V.B.3.a. The Permittee may process up to 488 pounds (4 baskets at a maximum of 122 pounds each) of munitions in the hydrolysis tank at any one time. The content of each basket shall not exceed the following limits: aluminum content shall not exceed 68 pounds; energetic content shall not exceed 31 pounds; and

nitroglycerin content shall not exceed 6 pounds. Also, the total surface area of aluminum in each batch shall not exceed 60 ft².

- V.B.3.b. The feed baskets shall be staggered so that the interval between baskets is at least 30 minutes and each basket remains in the hydrolysis tank for at least two hours.
- V.B.3.c. Sufficient characterization information shall be available for each munition fed to the hydrolysis system to ensure that the limits in V.B.3.a. are not exceeded.
- V.B.3.d. The feed to the hydrolysis facility shall be limited to aluminum-clad Cartridge Activated Devices (CADs) and Propellant Activated Devices (PADs). Should the Permittee desire to process other munitions, or in excess of the limits in V.B.3.a. in the future, the following procedure shall be followed:
 - V.B.3.d.1. The Permittee shall submit to the Director a class 1 modification request requiring prior approval which outlines the type(s) of munitions which are to be processed.
 - V.B.3.d.2. The modification request shall include estimates of explosive compounds, ammonia, HCN, NO_x, total hydrocarbons, volatile organics, and semi-volatile organics potentially expected to be in the emissions when processing the requested munitions. Bench scale tests at the Facility may be conducted to determine these estimates.
 - V.B.3.d.3. The modification request shall demonstrate that the estimated emissions will not cause an unacceptable risk to human health and the environment.
 - V.B.3.d.4. Upon approval of the modification request, the Permittee may begin processing the requested munitions. Within 30 days of the start of processing the new munitions, the Permittee shall sample and analyze the vent gas for the compounds listed in Condition V.B.3.d.2. Within 90 days of the start of processing the new munitions, the Permittee shall submit to the Director a report of the results of the vent gas sampling and analysis and a justification showing that the emissions are protective of human health and the environment.
 - V.B.3.d.5. Should the Permittee become aware at any time that the emissions from the hydrolysis system potentially pose an unacceptable risk to human health or the environment, the Permittee shall immediately cease processing that munition type.
- V.B.3.e. The Permittee shall limit the feed rate of munitions in each batch to be processed so that the hydrogen concentration in the vent gas will be maintained below 2%.
- V.B.3.f. The Permittee shall maintain the flow of vent gas and push air so that the face velocity across the hydrolysis tanks is at least 200 feet per minute.

- V.B.3.g. The temperature of the hydrolysis solution shall be maintained below the boiling point of the solution.
- V.B.3.h. The liquid and/or foam levels in the reaction tank and rinse tank shall be maintained so that spill over to the secondary containment is avoided.
- V.B.3.i. The batches shall be configured, and the liquid level maintained, so that the feed material will be totally immersed in the caustic solution.
- V.B.3.j. The Permittee shall operate the hydrolysis system so that makeup to the scrubber system shall only be provided by the fresh water supply.
- V.B.3.k. The hydrolysis system shall only be operated during daytime hours.
- V.B.3.l. Munitions shall not be stored at the hydrolysis facility. However, small quantities of munitions may be placed in building 1400 in preparation for feed to the hydrolysis process. The maximum inventory of munitions that may be placed in the hydrolysis facility is 3,900 pounds. Any munitions at the hydrolysis facility that are not processed by the end of the day shall be returned to an appropriate permitted hazardous waste storage facility.
- V.B.3.m. All scrap metal shall be visually inspected prior to removal from the depot for recycling purposes and certified as explosive free. All other scrap shall also be visually inspected prior to removal from the depot for disposal and certified as explosive free. The certification will be documented on DD Form 1348. This inspection and certification shall be done before these items are removed from the hydrolysis facility or the paved area around the hydrolysis facility.
- V.B.3.n. The spent hydrolysate shall be non-reactive prior to removing it from the facility. The concentrations of explosive compounds in the spent hydrolysate shall be low enough that it will not present a potential reactive hazard (even when dry). This determination shall be certified by the Permittee for each load of hydrolysate shipped off site and the certification shall be maintained at the Facility as part of the Operating Record.
- V.B.3.o. For each different feed type to be processed in the hydrolysis system, the Permittee shall conduct sufficient bench scale tests to determine the necessary operating parameters for that type of feed (e.g., feed rates, hydrogen generation rates, processing times, hydrolysate composition, etc.) prior to initiating that particular feed in the hydrolysis system to ensure that the requirements of this Permit will be met. Where munition items have like configurations, the above data may be obtained by extrapolation based upon dimensional and compositional data.

- V.B.3.p. Bench scale tests, or other tests conducted in support of the hydrolysis operation, shall be conducted under the hood in the lab room of building 1400 and only when the hood is venting through the hydrolysis vent system. The quantity of PEP or munitions in the hood shall be limited to 500 grams.
- V.B.3.q. The secondary containment systems shall be operated and maintained so that they shall be free of both cracks and gaps and are sufficiently impervious to contain leaks and spills until the collected material is detected and removed.
- V.B.3.r. If a drip pan or secondary containment area contains any material, it will be emptied within 24 hours of discovering the contents. Any material removed will be managed as a hazardous waste until it can be characterized for proper disposal or returned to the hydrolysis system.
- V.B.3.s. Containment for 25% of the entire volume of waste held within the containment area or 100% of the volume of the largest tank in the containment area, whichever is greater, shall be provided for each tank area.
- V.B.3.t. No smoking shall be allowed in, or within 50 feet of, building 1400. The Permittee shall take precautions to prevent accidental ignition or reaction of waste or other materials. The hydrolysis system and any wastes placed in building 1400 shall be separated and protected from sources of ignition or reaction including, but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g. from heat-producing chemical reactions), and radiant heat. Such sources of ignition shall be allowed only after adequate additional precautions have been taken to prevent ignition of wastes or other materials and a hot work permit has been issued.
- V.B.4. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS
- V.B.4.a. Baskets containing munitions or munition components may be fed to the hydrolysis tank only when all equipment and instruments required by this Permit are on-line and operating properly and accurately.
- V.B.4.b. All instruments required by this Permit shall be calibrated in accordance with the manufacturer's specifications and at the manufacturer's recommended frequency. The procedures and frequencies of calibration specified by the manufacturer shall be maintained at the hydrolysis facility. The calibration frequency shall be increased when the calibration frequency is found to be inadequate to consistently provide accurate readings. The hydrogen analyzer shall be calibrated on a daily basis. All calibrations shall be documented in the Operating Record.

- V.B.4.b. The hours of operation and the amount and type of waste fed to the hydrolysis system shall be monitored and recorded on a daily basis.
- V.B.4.c. Copies of any bench scale tests and calculations used to determine the feed rates and processing times of specific munitions shall be maintained.
- V.B.4.d. The hydrogen concentration in the exhaust gas shall be monitored and recorded on a continuous basis.
- V.B.4.e. The flow of vent gas shall be monitored and recorded on a continuous basis. A loss of flow will activate an alarm. The Variable Frequency Drive on the blower shall remain as set during installation of the blower. All alarms will be recorded in the data logging program.
- V.B.4.f. The temperature of the hydrolysis solution shall be monitored and recorded on a continuous basis.
- V.B.4.g. The liquid level in the hydrolysis and rinse tanks shall be monitored and recorded on a continuous basis.
- V.B.4.h. The Permittee shall record the readings from the monitoring equipment specified in Attachment 21 (Hydrolysis System Instrument List) while treating hazardous waste.
- V.B.4.i. For each batch of hydrolysate placed in the hydrolysis tank, sufficient documentation shall be maintained to verify the caustic concentration.
- V.B.4.j. Copies of the data collected under this condition shall be provided to the Director upon request. Data recorded by the PLC shall be made available in electronic format if requested by the Director.
- V.B.5. WASTE FEED CUT-OFF REQUIREMENTS
- The Permittee shall cease feed to the hydrolysis tank under any of the following conditions:
- V.B.5.a. Any mechanical malfunction with either the hydrolysis line or controls which would compromise the integrity of the system.
- V.B.5.b. A hydrogen concentration of greater than 2% in the exhaust gas.
- V.B.6. REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE
- V.B.6.a. The Permittee shall comply with all applicable provisions of DoD 6055.9-STD, “DoD Ammunition and Explosives Safety Standards”.

V.B.6.b. The Permittee shall install and maintain an automatic dry fire suppression system designed to extinguish fires within the operational and material holding areas of the hydrolysis building.

V.B.7. INSPECTION REQUIREMENTS

On at least a daily basis, when it is in operation, the Permittee shall thoroughly, visually inspect the hydrolysis tank and associated equipment (scrubber system, ducting, blower, etc.) and containment systems for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering per Attachment 4 (Inspection Plan). These inspections shall be accurately documented.

V.B.8. TESTING REQUIREMENTS

V.B.8.a. The Permittee shall conduct periodic sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards. This sampling and analysis or subsequent performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director. The performance testing, as required by this condition, is not for the purpose of establishing new permit limits or feed materials. The Permittee must follow the procedures specified in Condition V.B.3.d. for establishing new limits or for treating new munitions.

V.B.8.b. The Permittee shall conduct periodic ambient air sampling and analysis to verify that the modeling of the emissions used in the Screening Risk Assessment is an accurate (or a conservative) estimate of the dispersion of emissions from the hydrolysis facility. This performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director.

V.B.8.c. The Permittee shall conduct periodic local breathing zone sampling and analysis during operations to verify that the atmosphere inside building 1400 poses no risk to onsite receptors. This performance testing shall be performed at least every five calendar years or more often if requested in writing by the Director.

V.B.8.d. At least six months prior to a scheduled performance test, the Permittee shall submit a test plan describing the parameters to be tested for, the sampling and analytical methods to be used, the quality assurance/quality control procedures to be followed, and any other necessary information for approval from the Director. Within 90 days of the conclusion of the performance test (defined as the last day that samples were collected at the site) a report shall be submitted to the Director. The report will include a copy of all data collected during the performance test and calculations and determinations to show whether the performance standards outlined in Condition V.B.2. were met. The calculations and supporting data shall also be submitted electronically.