MODULE VI – OPEN BURN AND OPEN DETONATION (OB/OD)

VI.A. APPLICABILITY

VI.A.1. The requirements of this permit module pertain to the treatment of waste military munitions at the OB/OD area at the Tooele Army Depot (TEAD). The Permittee shall comply with Utah Admin. Code R315-8 and all conditions of this module.

VI.A.2 The permit conditions of this module allow treatment at the OB/OD area, as designed and described in the drawings and specifications in Attachment 16 Open Burning/Open Detonation Operations. The OB/OD area consists of three Hazardous Waste Management Units (HWMUs), the open burn (OB) unit with 14 burns pans, the open detonation (OD) unit with a maximum of 19 detonation sites and the static fire (SF) unit with six static firing silos.

VI.A.3. OB/OD operations shall be accomplished by trained explosives personnel in accordance with DOD OB/OD Standard Operating Procedures (SOPs) and the conditions of this permit.

VI.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

VI.B.1 The Permittee may treat, at the OB/OD units, only hazardous waste military munitions that cannot be treated by any other means and so certified on the Demilitarization Approval Form. The Permittee shall treat only hazardous waste military munitions characterized as D003, and generated from the sources listed in Condition II.P.1. and from the following general sources:

VI.B.1.a. Unserviceable or serviceable excess Army munitions and explosive materials (e.g. bulk explosives, small arms munitions, projectiles, flares, grenades, sub-munitions, bombs and rocket motors);

VI.B.1.b. Unserviceable or serviceable excess solid propellant components and associated residue generated by an Army contractor and the contractor requests treatment assistance; and

VI.B.1.c. Explosive residues generated from inspection and disassembly activities of munitions at the Facility.

VI.B.2. The Permittee may only treat hazardous waste military munitions with known classifications and compositions in the *MIDAS Database* and in Attachment 2, Waste Analysis Plan, excluding the items listed in Condition VI.B.2.a. unless an emergency situation exists. If an emergency exists and an item is not in the MIDAS database, all available information will be reviewed to minimize hazards

to the Demil team and the environment. Information on the item will be submitted to DAC, for inclusion into the MIDAS database, within 60 days of treatment.

VI.B.2.a. The following munitions shall not be treated by OB/OD, unless an emergency exists and the Director of the Division of Solid and Hazardous Waste (Director) grants an Emergency Permit: Hawk Motor, Nike Motor, Explosive D Bulk, 20MM HEI Cartridge, M206 Flare IR Count, GGU2A Gas Generator, AN-M43A2 Red Star, M158 Red Star, TNT Bulk (excluding that used for donor material), 155MM Projectile, TH3 AN-M14 Incendiary Hand Grenade, M136 AT4 Shape Charge, M72A3 66MM High Explosive Antitank (Heat) Rocket, FIM-92A Stringer Missile Warhead and FIM-92A Stinger-Basic Launch Motor. Also prohibited are munitions with any of the following constituents: hexachloroethane (HC), colored smoke, white phosphorus (WP), red phosphorus (RP), depleted uranium (DU) and riot control munitions.

VI.B.3. The Permittee is prohibited from treating wholly inert items and improvised explosive devices (e.g. homemade bombs which are non-military), chemical and nuclear weapons, their devices and components and military munitions, propellant or residues that contain free liquids. Items that are believed to be wholly inert items, but cannot be conclusively verified to be inert, may be cracked open with a small explosive charge to expose the interior to verify that no explosives are present. The Permittee shall document in the operating record as required by condition II.J all treatment and verification activities required by this condition.

VI.B.4. Subject to the prohibitions of Conditions VI.B.1, 2 and 3, and Condition II.P.2, the Permittee shall not exceed the maximum Net Explosive Weight (NEW) for each day and each calendar year as listed below. Each type of treatment; burning in pans, static fire, or open detonation; may take place in the same day, but only one type of treatment may take place in any one hour except one detonation pit may be used to treat range clean-up material the same hour the static fire silos or the burn pans are used.

Site	EPA Code	Daily Quantity (NEW lb/day)	Annual Quantity (NEW lb)	Frequency (days/year)
OB	**D003**	**6,000**	**360,000**	**60**
SF	**D003**	**6,040**	**362,400**	**60**
OD	**D003**	**7,500**	**675,000**	**90**

VI.B.5. Addition of hazardous waste codes to Conditions VI.B.4. requires modification of the permit as specified in Condition I.D.

VI.B.6. The Permittee shall comply with the waste compatibility requirements of Utah Admin. Code R315-8-2.8.

VI.C. GENERAL OPERATING CONDITIONS

VI.C.1. The Permittee shall adhere to site specific SOPs and DOD Operational Directives contained in the operating record and listed in Attachment 16, Open Burning/Open Detonation Opeartions including the following non-site-specific procedures:

VI.C.1.a. OB/OD operations shall be conducted within the secure area of the OB/OD area with controlled access for humans and livestock. At a minimum, DOD Explosives Safety Standards, shall be used to dictate safe separation distances from external receptors.

VI.C.1.b. The OB/OD area shall be posted with warning signs to keep unauthorized personnel out. Warning flags shall fly and access roads shall be barricaded and posted during OB/OD operations.

VI.C.1.c. During OB/OD operations, telephone or two-way radio contact shall be available and operational with support personnel, including security and fire fighting units.

VI.C.1.d. The integrity of the OB/OD area and support equipment shall be determined through regular inspections in accordance with the inspection plan in Attachment 4, Inspection Plan. Inspection records shall be maintained at the facility.

VI.C.1.e. Prior to OB/OD, meteorological data including wind speed and direction, approach of storms (including electrical storms), precipitation, cloud cover, visibility and inversions (temperature with altitude) shall be monitored to ensure that OB/OD is not conducted under adverse weather conditions. Inversions shall be monitored by the clearing index. Meteorological data shall be recorded for each burn or detonation and maintained in the operating record. The following conditions apply to all of the OB/OD units:

VI.C.1.e.i. OB/OD operations shall occur between the hours of 10:00 a.m. and 5:00 p.m.

VI.C.1.e.ii. OB/OD operations shall not be initiated when an inversion is present as defined by a clearing index less than 500.

VI.C.1.e.iii. OB/OD operations shall not be initiated when the visibility is less than one mile.

VI.C.1.e.iv. OB/OD operations shall not be initiated when winds are coming from the SE counter-clockwise through WNW as shown in Figure 3-1 of the Risk Management Plan in Attachment 17. The wind direction shall be observed at the time of treatment at the weather tower at the entrance to the OB/OD area and recorded on the Demilitarization Approval Form. The alternate weather tower near building 1345 will be used in the event there is operational problems with the tower by the OB/OD entrance. If the wind direction is changing into and out of the exclusion zone due to rapidly changing weather conditions, then treatment shall not occur until the wind stabilizes. The wind shall be considered stable if the wind stays out of the exclusion zone for the fifteen minute period prior to treatment. Once treatment has commenced it will not cease until completed, even if the wind direction moves back into the exclusion zone or the wind speed drops out of the permit limits. The wind direction range during treatment will be recorded on the Demilitarization Approval Form.

VI.C.1.e.v. No OB/OD or static fire in Silos as required by Condition VI.D shall be initiated when the wind speed is in excess of 20 mph with gusts greater than 30 mph or wind speeds less than three mph.

VI.C.1.f. Waste munitions shall be treated within 24 hours of receipt at an OB/OD unit. If treatment of the waste munitions is delayed, after the munitions are received at an OB/OD unit, due to an unforeseen change that creates conditions outside those permitted by Condition VI.C.1.e. and in Figure 3 in Attachment 16, Open Burning/Open Detonation Operations, the munitions may be stored and remain in place in the unit until conditions allow treatment to be performed.

VI.C.1.g Prior to OB/OD, waste munitions shall be inspected to ensure that only waste defined in Condition VI.B. is burned or detonated.

VI.C.1.h. Clean-up of the OB/OD area will be conducted according to Facility SOPs and the Army Standard *IAW AMC-R 755-8, Authorizing, Accomplishing and Reporting Demilitarization of Class V Materials.* Within two working days of the completion of a burn, detonation or static fire, personnel will perform a sweep of the area, all pits, silos and pans to include the immediate surrounding areas to clear all UXO or any metal fragments that could threaten human health or the environment. Items or material such as lumps of explosives or unfuzed munitions will be recovered and prepared for treatment on the next scheduled day. Fuzed ammunition or other types of munitions that are unsafe to move will be treated in place. Non-explosive scrap metal, casings, fragments and related items will be

picked-up and cleared from the OB/OD area bi-annually, once in the Spring prior to full-scale treatment and once in the Fall upon completion of full-scale treatment. Metal waste shall be recycled whenever feasible.

VI.C.1.i. The donor charge and placement geometry for OB/OD operations shall be optimised to minimize the generation of unburned and un-detonated waste and residue. All re-burns and re-detonations shall be recorded in the operating record.

VI.C.1.j. OD events shall be confined by covering or burying with soil, to discourage the production of excessive noise. High order burns and detonations shall be conducted using the appropriate amount of initiator to encourage the complete combustion of the energetic material.

VI.C.1.k. Prior to each OB/OD event, the treatment area shall be inspected to insure that no livestock are present.

VI.C.1.l. The OB/OD operations shall not generate noise or ground vibration at levels that will have an adverse effect on nearby onsite and offsite receptors. Operations shall not exceed local noise ordinances. Noise complaints shall be recorded in the operating record.

VI.C.1.m. The Permittee shall have a noise management program.

VI.C.1.n. The Permittee shall have available, during each burn or detonation, adequate fire protection equipment and containment measures (e.g. firebreaks) to assure the confinement and control of any fire resulting from the OB/OD operations. The firebreaks shall be cleared and maintained clear to prevent the spread of any fire within the OB/OD area.

VI.C.1.o. To help prevent ground fires, and in accordance with AMC Regulation 385-100, during operations, dry grass, leaves and other extraneous combustible material in the amounts sufficient to spread fire, shall be removed within a radius of 200 feet from the point of destruction.

VI.C.2 The Permittee shall operate the OB/OD area to prevent unacceptable risk of cancer and non-cancer effects to on-site workers and off-site residents and to minimize significant effects to the ecosystem surrounding the OB/OD area. The cumulative carcinogenic risk to on-site workers shall not exceed 1.0×10^{-4} (one in ten thousand) for the closest potential receptors, which during operations are the workers positioned at the gate at the entrance to the unit and the workers at the detonation firing bunker. The cumulative non-carcinogenic hazard to the closest on-site potential receptors of a burn or detonation shall not exceed a hazard index of 1.0.

VI.C.3. The cumulative carcinogenic risk to actual or potential off-site human receptors shall not exceed 1.0 X 10^{-6} (one in a million). The cumulative non-carcinogenic hazard to actual or potential off-site receptors shall not exceed a hazard index of 1.0 any 24-hour period following initiation of a burn or detonation. The Permittee shall maintain compliance with the environmental performance standards listed in Utah Admin. Code R315-8-16 and review the information in Attachment 17, Risk Management Plan, periodically according to Condition II.R.2.

VI.C.4. The Permittee shall record in the OB/OD operating record all unplanned discharges, fires and explosions, including all low order detonations, as specified in Utah Admin. Code R315-8-4.(j).

VI.D. SPECIFIC OPERATING CONDITIONS

VI.D.1. Open Burning in Burn Pans

VI.D.1.a The Permittee shall operate and maintain the approved burn pans based on the design in Attachment 16, Open Burning/Open Detonation Operations and in accordance with the following conditions:

VI.D.1.a.i. The open burning pans shall be used to burn only propellant from propellant based munitions and associated components.

VI.D.1.a.ii. The OB operation may not be initiated with any solid waste.

VI.D.1.b. The integrity of each pan shall be evaluated before each use. The results of the inspection of the pans shall be recorded on the operations checklist.

VI.D.1.c. Burn pan lids shall remain on the pans at all times except during operations.

VI.D.2. Open Detonation in Pits

VI.D.2.a. The Permittee shall operate and maintain the detonation unit on the ground surface or in pits in accordance with the plans in Attachment 16, Open Burning/Open Detonation Operations.

VI.D.2.b. Open detonations shall not occur in more than one pit at one time

VI.D.2.c. Any fires started from kick out from a detonation shall be extinguished as soon as possible.

VI.D.3. **Static Firing in Silos**

VI.D.3.a. The Permittee shall operate and maintain the static silos in accordance with the design plans and specifications in Attachment 16, Open Burning/Open Detonation Operations.

VI.D.3.b. The Permittee shall operate and maintain the silos in accordance with the following conditions:

VI.D.3.b.i. When not in use, the Permittee shall place and maintain a lid on each silo to prevent precipitation, vegetation and wildlife from entering the silo.

VI.D.3.b.ii. The Permittee shall manage accumulated precipitation in accordance with the Waste Analysis Plan in Attachment 2.

VI.D.3.c. The integrity of each silo and the concrete secondary containment shall be evaluated by visual inspection prior to use. Results of the inspection shall be recorded on the operations checklist.

VI.E. RESIDUE AND ASH MANAGEMENT

VI.E.1. All residue and ash generated from OB/OD operations shall be managed in accordance with the procedures in Attachment 2, Waste Analysis Plan, and the following conditions:

VI.E.2. Sampling and analysis of ash and residue shall be conducted according to standard procedures as described in Attachment 2, Waste Analysis Plan.

VI.F. INSPECTION SCHEDULES AND PROCEDURES

VI.F.1 The Permittee shall inspect the OB/OD units in accordance with the inspection requirements in Attachment 4, Inspection Plan. The Permittee shall conduct inspections of the silos, burn pans and detonation pits each day of treatment.

VI.G. ENVIRONMENTAL MONITORING REQUIREMENTS

VI.G.1. **Soil Monitoring**

VI.G.1.a. A treatment zone shall be defined as the aerial surface of the entire OB/OD area (including the entire hill side) described in Attachment 16, Open Burning/Open Detonation Opeartions and extending five feet below ground surface.

VI.G.1.b. Every five years, during the second quarter of the year, the Permittee shall conduct soil sampling in accordance with the plan in Attachment 19, Quality Assurance Project Plan. Sampling shall occur every five years beginning 2014.

VI.G.1.b.i. A report with the analytical results of soil sampling shall be submitted to the Director within 120 days of the sampling event. The report shall include the validated analytical data, a soil sampling location map and a detailed analysis of the data.

VI.G.1.b.ii. Through a permit modification, the data from each sampling event shall be incorporated into the human health risk assessment in Attachment 17, Risk Management Plan, to update the evaluation of the risk to workers at the OB/OD Area due to direct exposure to the soils. The revised risk assessment, through a permit modification, shall be submitted within 180 days of submitting the sampling results being approved by the Director.

VI.G.1.b.iii. Should analytical results from any soil sampling event indicate that the soil constituents exceed an acceptable risk threshold, the Permittee shall address the contaminated soil in accordance with Utah Admin. Code R315-8-6.12 or, if necessary, provide additional personnel protection equipment to workers at the area.

VI.G.2. **Groundwater Monitoring**

VI.G.2.a. The Permittee shall conduct sampling of the single groundwater monitoring well, in accordance with the plan in Attachment 19, Quality Assurance Project Plan, every five years, during the second quarter of the year, when the five year review and ten year renewal are required, and in conjunction with the soil sampling event.

VI.G.2.b. The point of compliance, for operations at the OB/OD area, shall be a vertical surface extending through well OBOD1, which is down gradient from the OB/OD operations area.

VI.G.2.c. Within 120 days of a sampling event, the Permittee shall provide the Director with the analytical results in a report with the results of the groundwater sampling conducted that year.

VI.G.2.d. The Permittee shall notify the Director if there is a statistically significant increase of the concentration of a COC or of a background concentration for any constituent. The Permittee shall:

VI.G.2.d.i. Notify the Director, in writing, within seven calendar days of the detection of the increase;

VI.G.2.d.ii. Resample the well or wells that have exceeded concentration limits and provide the results to the Director within 60 days of the initial sampling event, to determine if compliance monitoring is required; and

VI.G.2.d.iii. Within 90 days of determination by the Director that compliance monitoring is required for the one well at the OB/OD area, the Permittee shall request to modify the permit to establish a compliance monitoring program to meet the requirements of Utah Admin. Code R315-8-6.10.

VI.G.2.e. Abandonment of any monitoring well shall be accomplished in a manner that prevents vertical movement of water and possible contaminants within the borehole and the annular space surrounding the well casing. The Permittee shall comply with Utah Division of Water Rights rules for well abandonment.

VI.H. FACILITY MODIFICATION/EXPANSION

VI.H.1. Modification of the design plans and specifications in Attachment 16, Open Burning/Open Detonation Operations and construction of additional treatment units shall be allowed only in accordance with Condition I.D.

VI.I. CLOSURE AND POST CLOSURE

VI.I.1. The Permittee shall close the OB/OD units in accordance with the Closure Plan in Attachment 8 or conduct post-closure monitoring in accordance with Utah Admin. Code R315-8-7.

VI.J. OB/OD OPERATING RECORD

VI.J.1. The Permittee shall maintain an operating record describing the OB/OD activities. Portions of the operating record may be maintained at the area where the report is generated. For example, records of waste treated at the OB/OD units may be maintained by ammunition operations personnel and kept in their office. The record shall include the following information:

VI.J.1.a. The requirements of Utah Admin. Code R315-8-5.3.

VI.J.1.b. Description and quantity (number and NEW) of each hazardous waste munition, initiators and donors received and treated at the OB/OD units.

VI.J.1.c. Date of treatment.

VI.J.1.d. Copies of documents showing the disposition of residues transported off the OB/OD area.

VI.J.1.e. Current copies of all SOPs used at the OB/OD units,

VI.J.1.f. An annual running total of the NEW of all energetics treated at the OB/OD units.

VI.J.1.g. Meteorological conditions during each burn or detonation as listed in Condition VI.C.1.f.

VI.J.1.h. All information to characterize waste. Information to support Condition VI.B.2.

VI.J.1.i. Copies of all completed demilitarization forms for all events.

VI.K LAND USE PROVISIONS

VI.K.1. The Permittee shall evaluate the soil sampling data, air emission factors, land use, air modelling protocols and other pertinent inputs/drivers to the risk assessments in Attachment 17, Risk Management Plan, and incorporate any changes into the risk assessments, in accordance with the schedule in permit Condition VI.G.1.