

MODULE III - TREATMENT OF ENERGETIC WASTES

III.A. APPLICABILITY

The requirements of this permit module pertain to the treatment of energetic military waste at the UTTR in Box Elder County, Utah. The Permittee shall comply with UAC R315-264 and all conditions of this module.

- III.A.1. The permit conditions of this module allow treatment at the Hazardous Waste Management Unit (HWMU) designated as the Thermal Treatment Unit (TTU), as designed and described in the drawings and specifications in Attachment 1. The TTU consists of Sites 1, 3 and 4 for open burning (OB) and Site 2 for OB or open detonation (OD). Site 3 is the location of the former burn pan, which was decommissioned and partially closed in 2018.
- III.A.2. OB/OD at the TTU shall only be accomplished by Explosive Ordnance Disposal (EOD) personnel in accordance with DOD OB/OD Operational Directives and Best Management Practices (BMPs), and the conditions of this permit. BMPs are listed in III.C and OB/OD Operational Directives are referenced in AFMAN 32-3001, “*Explosive Ordnance Disposal (EOD) Program*”.

III.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

- III.B.1. The Permittee may thermally treat only hazardous waste military munitions at the TTU generated from the following general sources:
- III.B.1.a. Unserviceable or serviceable excess munitions and explosive materials (e.g. bulk explosives, small arms munitions, projectiles, flares, grenades, sub-munitions, bombs and rocket motors);
- III.B.1.b. Unserviceable or serviceable excess solid propellant components and associated residues manufactured or produced under contract to the US Government or DOD for which the contractor requests treatment assistance; and
- III.B.1.c. Explosive residues generated from OO-ALC (Ogden Air Logistics Command) testing facilities and laboratories.
- III.B.2. The Permittee may only thermally treat hazardous waste military munitions with the classifications or compositions in the *Waste Characterization Plan* (Attachment 2).
- III.B.3. The Permittee is prohibited from treating hazardous waste from sources not identified in Condition III.B.1, and from classes and compositions not included in Condition III.B.2., including wholly inert items and improvised explosive devices

(e.g. homemade bombs that are non-military); chemical and nuclear warheads, their devices and components; and military energetic wastes that contain free liquids.

III.B.4. The Permittee may OB/OD only the following hazardous wastes, as indicated by EPA hazardous waste code, in the table below and subject to the prohibitions of Conditions III.B.1 and III.B.2. The Permittee shall not exceed the maximum Net Explosive Weight (NEW) for each event as listed below:

Site	EPA Code	OB (NEW lb)	OD (NEW lb)
1	D003	320,000	NA
2 (Pads 1, 2 and 3)	D003	320,000	149,900
3 [Site 3 has been decommissioned and partially closed]	NA	NA	NA
4	D003	320,000	NA

III.B.5. Reactive hazardous waste with additional secondary hazardous waste codes may be treated with prior approval from the Director.

III.B.6. The Permittee shall comply with the waste compatibility requirements of UAC R315-264-17.

III.C. GENERAL OPERATING CONDITIONS

III.C.1. To meet the performance standards of UAC R315-264-601, the Permittee shall adhere to the site-specific BMPs listed below:

III.C.1.a. OB and OD operations shall be conducted within the secure area of the TTU with controlled access. At a minimum, AFM 91-201, *Explosives Safety Standards*, shall be used to dictate safe separation distances from external receptors.

III.C.1.b. The TTU 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 and OD operations.

- III.C.1.c. During OB and OD operations, telephone or two-way radio contact shall be maintained with support personnel, including security and firefighting units.
- III.C.1.d. The integrity of the TTU and support equipment shall be determined through regular inspections, conducted in accordance with the *TTU Inspection Plan* (Attachment 5). Inspection records shall be maintained at the facility.
- III.C.1.e. A training plan shall be followed by all operators of the TTU in accordance with Condition II.I. The training program shall include operational practices and site-specific hazardous waste handling procedures.
- III.C.1.f. Prior to treatment at the TTU, meteorological data, including wind speed and direction, approach of storms (including electrical storms), precipitation, cloud cover and visibility shall be monitored to ensure that treatment is not conducted under adverse weather conditions. Meteorological data shall be recorded for each burn or detonation and maintained at the facility.
- III.C.1.g. Energetic wastes shall be treated within 24 hours of receipt at the UTTR.
- III.C.1.h. Prior to treatment, waste munitions shall be inspected to ensure that only waste defined in Condition III.B. is burned or detonated.
- III.C.1.i. Within 24 hours after each OB/OD operation, EOD personnel shall inspect the area for ejected material, untreated waste. Any untreated waste shall be immediately retreated or saved for treatment the following day. When feasible, ejected metal materials shall be stored for recycling.
- III.C.1.j. Residues from burning shall be removed after each treatment event. Metal waste shall be separated from the ash and other residue and recycled whenever feasible.
- III.C.1.k. Residues from detonation, such as surface exposed scrap metal, casings, fragments, and related items shall be collected after each event.
- III.C.1.l. The donor charge and placement geometry for OB/OD operations shall be optimized 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.
- III.C.1.m. The OB and OD events at Sites 1, 2, and 4 shall be unconfined, including not covering or burying with soil, to encourage high order burns and detonations.
- III.C.1.n. The OB and OD operations shall not generate noise or ground vibration at levels that will have an adverse effect on nearby onsite and offsite receptors. Results of noise modelling prior to each detonation greater than 10,000 lb NEW shall be in

the operating record. Copies of completed AFMC Form 3514, *Noise Complaint*, shall be in the operating record.

- III.C.1.o. The Permittee shall have a noise prediction, mitigation and management program as described in Attachment 11.
- III.C.1.p. 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.
- III.C.2. The Permittee shall operate the TTU to prevent unacceptable risk of cancer and non-cancer effects to on-site workers and off-site residents. The Permittee shall maintain compliance with the environmental performance standards listed in UAC R315-264-601 and evaluate the information in Attachment 10 biennially according to Condition II.F.2.
- III.C.3. The Permittee shall adhere to the following conditions to prevent unacceptable risk of cancer and non-cancer effects due to exposure to OB or OD emissions:
 - III.C.3.a. 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 are the worker positioned on Bug Hill and the worker at the Oasis complex. The risk shall be calculated according to the methodology in Attachment 10. The maximum NEW, including donors and initiators, to be treated at the TTU shall not exceed 149,900 lbs. per detonation or 320,000 lbs. per burn.
 - III.C.3.b. The cumulative non-carcinogenic hazard to the closest on-site potential receptors of the burn or detonation shall not exceed a hazard index of 1.0 for any 24-hour period immediately following initiation of a burn or detonation. The closest potential receptors are the worker positioned at Bug Hill and the worker at the Oasis complex. The hazard shall be calculated according to the methodology in Attachment 10. The maximum NEW, including donors and initiators, to be treated at the TTU shall not exceed 30,000,000 lbs. per year.
 - III.C.3.c. The cumulative carcinogenic risk to actual or potential off-site receptors shall not exceed 1.0×10^{-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 for any 24-hour period following initiation of a burn or detonation.
- III.C.4. The Permittee shall operate the TTU to minimize significant effects to the ecosystem surrounding the TTU. The BMPs listed in III.C.1 will be modified to reduce risk to the environment if the evaluation of Attachment 10 required by II.F.2 indicates that TTU operations are causing increasing risks to the local ecosystem outside of the TTU operational areas.

III.C.5. No burn or detonation shall be initiated when the wind direction is from the TTU to the Oasis complex, Bug Hill or any other occupied observation point.

III.D. SPECIFIC OPERATING CONDITIONS

III.D.1. Open Burning on Sites 1 and 4

III.D.1.a. The Permittee shall operate and maintain the approved burn pads on the ground surface based on the design in Attachment 1 and in accordance with the following conditions:

III.D.1.a.i. The open burn pads shall be used to burn only rocket motors and bulk propellant.

III.D.1.a.ii. Fire breaks within the TTU area, as described in Attachment 4, shall be maintained to help prevent the spread of fires.

III.D.1.a.iii. The OB operation may be initiated by placing dunnage on a pad and igniting it with diesel fuel, provided that a solid waste burn variance is obtained from the Waste Management and Radiation Control Board in accordance with Utah Admin. Code R315-317-2 and is current. The amount of fuel and dunnage shall be minimized to that necessary to accomplish the OB event in compliance with the conditions of the variance.

III.D.1.b. The Permittee shall operate the burn pads in order to minimize exposure to air emissions in accordance with the following conditions, which shall be recorded in the operating record:

III.D.1.b.i. No burn shall be initiated when the wind direction is from a burn pad to the Oasis complex, Bug Hill (when occupied), or any other occupied observation point.

III.D.1.b.ii. No burn shall be initiated when the wind speed is in excess of 15 mph.

III.D.1.b.iii. No burn shall be initiated when the visibility is less than one mile.

III.D.2. Open Detonation at Site 2, Pads 1, 2 and 3

III.D.2.a. The Permittee shall operate and maintain Site 2, Pads 1, 2 and 3 on the ground surface in accordance with the design plans in Attachment 1.

III.D.2.b. The Permittee shall operate and maintain the detonation pads in accordance with the following conditions, which shall be recorded in the operating record:

III.D.2.b.i. Detonations shall occur during daylight hours, sunrise to sunset.

III.D.2.b.ii. Detonations shall not be initiated when the wind speed is in excess of 15 mph.

III.D.2.b.iii. Detonations shall not be initiated when the wind direction is from the TTU to the Oasis complex, Bug Hill (when occupied), or any other occupied observation point.

- III.D.2.b.iv. The NEW treated by OD operation shall not exceed the limit stated in permit Condition III.B.4 for each event.
- III.D.2.b.v. Open detonations shall not occur on more than one pad at one time.
- III.D.2.b.vi. Open detonations shall not be initiated when the visibility is less than one mile.
- III.D.2.b.vii. Any fires started from kick-out from a detonation shall be extinguished within a reasonable timeframe.
- III.D.2.c. Within 24 hours of completion of an OD event, EOD personnel shall visually inspect the detonation pad for fragments. Fragments containing energetic residue will be re-detonated in place. Fragments that do not contain energetic residue will be collected, characterized, and accumulated for disposal or recycling.

III.E. RESIDUE AND ASH MANAGEMENT

- III.E.1. All residue and ash generated from OB and OD operations shall be managed in accordance with the procedures in Attachment 3 and the following conditions:
 - III.E.1.a. The Permittee shall collect and manage any hazardous waste kick-out or other hazardous residue from detonations or ash from burns within three working days of each burn or detonation.
 - III.E.1.b. The Permittee shall collect all hazardous and potentially hazardous ash and place these in steel drums.
- III.E.2. Sampling and analysis of drummed ash shall be performed according to the procedures in the *Waste Analysis Plan for Residue and Ash* (Attachment 3).

III.F. INSPECTION SCHEDULES AND PROCEDURES

- III.F.1. The Permittee shall inspect each of the treatment units in accordance with the inspection requirements in Attachment 5. The Permittee shall conduct inspections of each unit at the TTU on every day the unit is used for treatment.

III.G. ENVIRONMENTAL MONITORING REQUIREMENTS

- III.G.1. **Soil Monitoring at Sites 1, 2 and 4 for OB and OD on the ground**
 - III.G.1.a. A TTU treatment zone shall be defined as the two square mile area described in Attachment 1 and extending five feet below ground surface. A sampling plan to quantify the organic, inorganic, and explosive constituents in the treatment zone soils is found in Attachment 9B.
 - III.G.1.b. The data from the soil sampling shall be used in a human health risk assessment to evaluate the risk to workers at the TTU due to direct exposure to the soils. The risk assessment is found in Attachment 10B and is reviewed as specified in Condition II.F.2. of this permit.

- III.G.1.c. A list of Contaminants of Concern (COCs) is contained in Table 1 of Attachment 9B. Concentration thresholds for contaminants in soil in the treatment zone to protect workers at the TTU is contained in Appendix C of Attachment 10B. Soil sampling to monitor these contaminants will be conducted every odd-numbered calendar year, according to the Sampling and Analysis Plan in Attachment 9B to ensure the risk thresholds are not exceeded.
- III.G.1.d. The Permittee shall submit a soil analysis report to the Director within 180 days of any soil sampling event. The report shall contain the validated analytical data, soil sampling location map, a detailed analysis of the data and other pertinent information to determine if remediation of the soils is necessary.
- III.G.1.e. Should analytical results from any soil sampling event indicate that the soil constituents exceed an acceptable risk threshold, the Permittee shall submit a Corrective Measures Study (CMS) in accordance with Module IV.
- III.G.2. **Reserved**
- III.G.3. **Groundwater Monitoring**
- III.G.3.a. The *TTU Groundwater Sampling and Analysis Plan* is in Attachment 15. The groundwater sampling program shall include the following:
 - III.G.3.a.i. Procedures to collect groundwater samples annually from TTU groundwater monitoring wells TTU-1 and TTU-2;
 - III.G.3.a.ii. A list of Contaminants of Concern, to include those constituents listed in Table 1 in Attachment 15, as required by UAC R315-264-93;
 - III.G.3.a.iii. A list of concentration limits or action levels (UAC R315-264-94) for constituents established under UAC R315-264-93.
 - III.G.3.a.iv. Procedures for statistical evaluation of the data in determining whether background concentration values have been exceeded as defined in UAC R315-264-97(h);
 - III.G.3.a.v. Procedures to determine groundwater elevations of each well prior to each sampling event; and
 - III.G.3.a.vi. Procedures to sample and analyze unfiltered groundwater samples.
- III.G.3.b. The point of compliance, for operations at the TTU, shall be a vertical surface through well TTU-1, which is down-gradient from the TTU operations.
- III.G.3.c. Within 60 days of receiving the analytical data from the laboratory, the Permittee shall provide the Director with a groundwater monitoring report that includes the information required by Condition V.J.2.b.

III.G.3.d. The Permittee shall notify the Director if there is a statistically significant increase of the concentration of a COC or the background concentration for any constituent listed in Condition III.G.3.a.ii. The Permittee shall:

III.G.3.d.i. Notify the Director within seven calendar days of the detection of the increase;

III.G.3.d.ii. Resample the well or wells that have exceeded the concentration limits in Condition III.G.3.a.iii. and provide the results to the Director within 30 days of the initial sampling event to determine if compliance monitoring is required; and

III.G.3.d.iii. Within 90 days of determination by the Director that compliance monitoring is required for one or more wells, the Permittee shall request to modify the permit to establish a compliance monitoring program to meet the requirements of UAC R315-264-99 and Condition V.K.

III.G.3.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.

III.G.4. **Surface Water Monitoring**

III.G.4.a. Surface water accumulation will be monitored during the monthly environmental compliance inspection of the TTU required by Condition II.H. and described in Attachment 5. Sampling of observed surface water will take place within 24 hours if, in the judgement of the Facility inspector, significant surface water accumulation is observed that is likely to facilitate contaminant transport or serve as a water source for wildlife. The area of inspection for surface water will be limited to the TTU boundary.

III.G.4.b. The Permittee shall submit to the Director, by March 1 of each calendar year, a surface water monitoring report that shall contain the inspection and monitoring data for the previous calendar year, as specified in Condition III.G.4.a.

III.G.5. **Notification**

III.G.5.1. Except for surface water sampling specified in Condition III.G.4., the Permittee shall notify the Director at least ten days prior to each sampling event to allow the Director to observe the sampling and to take split or confirmation samples.

III.H. **FACILITY MODIFICATION/EXPANSION**

III.H.1. Modification of the design plans and specifications in Attachment 1 and construction of additional treatment units shall be allowed only in accordance with Utah Admin. Code R315-124-5.

III.I. CLOSURE AND POST CLOSURE

III.I.1. The Permittee shall close the TTU in accordance with the Closure Plan in Attachment 8 or conduct post-closure monitoring in accordance with a Post-Closure Plan to be submitted in accordance with Condition II.P.11.

III.J. TTU OPERATING RECORD

III.J.1. The Permittee shall maintain an operating record at the Facility describing the OB and OD activities. Portions of the operating record may be maintained at the area where the report is generated. The record shall include the following information:

III.J.1.a. The requirements of UAC R315-264-73;

III.J.1.b. Description and quantity (number and NEW) of all energetic hazardous waste received and treated at the TTU;

III.J.1.c. Date of treatment;

III.J.1.d. Copies of manifests showing disposition of burn residues, ADRs and a description of solid waste used as initiators that were burned or detonated;

III.J.1.e. Current copies of all BMPs and EOD Directives used at the TTU;

III.J.1.f. An annual running total of the NEW of energetics treated at the TTU; and

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

III.K. LAND USE PROVISIONS

III.K.1. The ecological and human health risk assessments and the noise prediction and mitigation procedures, found in Attachments 10 and 11 respectively, assume land surrounding the TTU, except for the buildings around the Oasis complex, is devoid of development and dedicated to military training and weapon testing. The assessments assume that the nearest off-site receptors to the UTTR are boaters on the Salt Lake as the land surrounding the facility is Public, State and BLM administered land used for livestock grazing.

III.K.2. The Permittee shall submit annually to the Director a land use assessment report to ensure that the land surrounding the TTU is devoid of development and that the land uses described in Attachment 1 of the Permit are valid. The assessment shall be a letter report and shall be submitted by March 1 of each calendar year.

III.L. COMPLIANCE SCHEDULE

III.L.1. The Permittee shall annually submit the following:

- III.L.1.a. In accordance with Condition III.K.2., by March 1 of each year, a land use assessment letter report;
- III.L.1.b. In accordance with Condition II.D.1.a., by March 1 of each calendar year, a report describing the wastes that were treated at the TTU during the previous calendar year;
- III.L.1.c. A waste minimization statement in accordance with Condition II.O.2.; and,
- III.L.1.d. A report evaluating alternatives to OB and OD treatment technology for each waste stream treated at the TTU, in accordance with Condition II.O.2.
- III.L.2. The Permittee shall, every fifth calendar year after issuance of the Permit, submit the following:
 - III.L.2.a. In accordance with Condition II.F.2., by August 1 of every fifth calendar year after issuance of the Permit an evaluation of the completeness and accuracy of the risk assessments in Attachment 10A and 10B.
- III.L.3. The Permittee shall, within four years of the issuance of this permit, cease treatment of Class 1.3 Smokeless Powder at the TTU. The Permittee may petition to continue treatment of Class 1.3 Smokeless Powder beyond four years by submitting documentation to the Director that adequately demonstrates that the generator of the smokeless powder is in the process of pursuing alternative technology for this waste stream. The Director will provide a written approval or denial in response to such petitions. Continued treatment of Class 1.3 Smokeless Powder is at the discretion of the Director and contingent upon the Director's approval of any petitions.