

## **MODULE IV – THERMAL TREATMENT OF ENERGETIC WASTES**

### **IV.A. APPLICABILITY**

- IV.A.1. The requirements of this permit module apply to the thermal treatment of energetic or reactive hazardous waste at the NIROP facility in West Valley City, Utah. The Permittees shall comply with UAC R315-8 and all conditions of this module and Permit.
- IV.A.2. The permit conditions of this module allow thermal treatment at the HWMU designated as the NIROP Burning Grounds, as designed and described in the drawings and specifications in Attachments 2 and 4. The NIROP Burning Grounds consist of 17 burn pans and two burn cages where the Permittees may thermally treat energetic or reactive hazardous wastes by open burning.
- IV.A.3. Open burning at the NIROP Burning Grounds shall only be accomplished by properly trained ATK personnel in accordance with the conditions of this Permit and its attachments.
- IV.A.4. This Permit has been developed in accordance with the applicable requirements of UAC R315-1 through 101. All conditions in this Permit shall supersede conflicting statements, requirements, or procedures found in UAC R315-1 through 101 or attachments to this Permit.

### **IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION**

- IV.B.1. The Permittees may thermally treat energetic or reactive hazardous waste at the NIROP Burning Grounds by open burning. These energetic and reactive hazardous wastes are generated from the following sources:
- IV.B.1.a. Class 1.1 and 1.3 propellants manufactured at the Bacchus Facility (e.g. cured and uncured propellants, excess propellants and propellant scraps);
- IV.B.1.b. Explosive ingredients (e.g., HMX, RDX, aluminum powder, nitrocellulose and ammonium perchlorate);
- IV.B.1.c. Waste nitroglycerin and 1,2,4-butanetriol trinitrate (BTTN) which are liquid explosives manufactured at the Bacchus Facility that are diluted and adsorbed in wood pulp to make them safer to handle;
- IV.B.1.d. Production materials contaminated with reactive residues (e.g., rags, gloves, other personal protective equipment, plastics, rubber and paper that were contaminated with explosive materials during the manufacturing process);
- IV.B.1.e. Small rocket motors and initiating devices;
- IV.B.1.f. Reactive laboratory wastes which may contain solvents;
- IV.B.1.g. Wastewater treatment sludge generated from the processing of explosive ingredients and propellants defined in UAC R315-2 as a K044 listed hazardous waste;
- IV.B.1.h. Reactive bag house dust generated from the processing of explosive ingredients and propellants;

- IV.B.1.i. Waste developmental propellants; and
- IV.B.1.j. NG remover, a chemical mixture added to nitroglycerin that chemically breaks it down and renders it less hazardous so that it can be handled if it is spilled. NG remover is a Class 1.1 reactive hazardous waste for the potential presence of nitroglycerin.
- IV.B.2. Only D003 reactive hazardous waste as defined by UAC R315-2 may be treated at the NIROP Burning Grounds. Reactive hazardous waste thermally treated at the NIROP Burning Grounds may also contain the follow EPA waste codes: D001, D005, D008, D038, F001, F002, F003, F004, F005 and K044.
- IV.B.3. The Permittees are prohibited from thermally treating reactive hazardous waste from sources not identified in Condition IV.B.1., and from classes and compositions not included in Condition IV.B.2., including wholly inert items and improvised explosive devices (e.g. homemade bombs), chemical and energetic reactive hazardous wastes that will detonate under open burning conditions or reactive hazardous wastes that contain free liquids.
- IV.B.4. The Permittees shall only thermally treat by open burning the reactive hazardous wastes at the NIROP Burning Grounds identified in Conditions IV.B.1. and IV.B.2.
- IV.B.5. The addition of hazardous waste codes to Condition IV.B.2. requires modification of the permit as specified in UAC R315-4-1.5 and Condition I.G.1.
- IV.B.6. The Permittees shall comply with the waste compatibility requirements of Condition II.I.

#### **IV.C. GENERAL OPERATING CONDITIONS**

- IV.C.1. The Permittees shall comply with the following treatment limits for the NIROP Burning Grounds:
  - IV.C.1.a. The Permittees shall not treat more than 4500 pounds of reactive hazardous waste in a calendar day;
  - IV.C.1.b. Except as allowed in Condition IV.C.1.d, the Permittees shall not treat more than 500 pounds of reactive hazardous waste in any burn pan per burn;
  - IV.C.1.c. The Permittees shall not treat more than 500 pounds of reactive hazardous waste in Burn Cages 12 or 19 per burn;
  - IV.C.1.d. The Permittees may exceed the 500 pound burn pan limit to treat large blocks of cured propellant that are cast with a motor. These large blocks of cured propellant are referred to as: necks, donuts, slugs and casting dam reservoirs. When exceeding the 500 pound burn pan limit to treat one of these large blocks of cured propellant, the Permittees shall not treat waste on any burn pan adjacent to the burn pan that has more than 500 pounds; and
  - IV.C.1.e. The Permittees shall operate the NIROP Burning Grounds in accordance with the quantity-distance requirements identified in Section 2.2.1 and 2.3 of Attachment 2.

- IV.C.1.f. The Permittees shall not treat more than 160,000 pounds of reactive hazardous waste at the NIROP Burning Grounds in a calendar year. This 160,000 pound limit shall be established by adding the total weight of reactive hazardous waste and all donor and initiator materials. Donors shall include all pallets, cardboard, packaging material, absorbents and diesel fuel.
- IV.C.2. The Permittees shall maintain the integrity of the NIROP Burning Grounds to ensure that they meet the performance standards of UAC R315-8-16 and minimize the potential impacts to human health and the environment. The Permittees shall adhere to site specific Best Management Procedures (BMPs) identified in Section 4.6 of Attachment 4, ATK's procedure document 21000GV0001 "Burning Propellant at NIROP Burning Grounds", all other applicable provision of Attachments 2 and 4 and the following conditions:
- IV.C.2.a. The Permittees shall conduct all open burn operations within the secure area designated as the NIROP Burning Grounds with controlled access as identified in Attachment 4, Figures 4-6.8 and 9;
- IV.C.2.b. The Permittees shall post warning signs around the NIROP Burning Grounds to keep unauthorized personnel out;
- IV.C.2.c. The Permittees shall maintain the egress paths for the NIROP Burning Grounds identified in Attachment 6, Figure 6.7-2;
- IV.C.2.d. The Permittees shall keep the main gate into the NIROP Burning Grounds open whenever operators are working inside the NIROP Burning Grounds;
- IV.C.2.e. The Permittees shall keep all gates and doors into a burn pan or cage open while operators are inside;
- IV.C.2.f. The Permittees shall always prepare outer burn pans for ignition first and work towards the center of the NIROP Burning Grounds;
- IV.C.2.g. The Permittees shall disconnect the firing system for the NIROP Burning Grounds whenever operators are in the QD for this treatment unit. The firing system shall only be active or armed when operators are conducting a pre-burn resistance check, as specified in Attachment 4, Section 4.6.1, when the firing system is being maintained and no waste is present in the NIROP Burning Grounds, and after all operators have exited the NIROP Burning Grounds and retreated to the firing control room in preparation of initiating a ignition as specified in Condition IV.F.2.i;
- IV.C.2.h. The Permittees shall assess and monitor meteorological conditions to ensure operators are not exposed to risks from lightning strikes or other adverse weather conditions that would preclude the safe operation of the NIROP Burning Grounds. The Permittees shall record the following meteorological conditions prior to each burn in the facility operating record: wind direction, wind speed, temperature and sky conditions (sunny, cloudy, partly cloudy, rain or snow);
- IV.C.2.i. The Permittees shall comply with all requirements for pre-burn activities, placement of waste on burn pans, squibbing and ignition and the post-burn inspection and clean up activities identified in Condition IV.D, E, F, G, H and I.

- IV.C.2.j. The Permittees shall provide operators with access to a telephone or two-way radio that can be used to contact support personnel, including security, safety and fire fighting units, whenever the operators are inside the NIROP Burning Grounds;
- IV.C.2.k. The Permittees shall maintain the integrity of the NIROP Burning Grounds and support equipment through regular inspections and in accordance with the inspection plan in Attachment 4 and 5. Inspection records shall be maintained at the facility;
- IV.C.2.l. The Permittees shall train all operators of the NIROP Burning Grounds in accordance with Condition II.H. and Attachment 7 of this Permit;
- IV.C.2.m. The Permittees shall not operate the NIROP Burning Grounds without adequate fire protection equipment and containment measures (e.g. firebreaks) to assure the confinement and control of any fire resulting from the open burn operations at the NIROP Burning Grounds; and
- IV.C.2.n. The Permittees shall not treat propulsive items at the NIROP Burning Grounds, unless the item has been rendered non-propulsive in accordance with Attachment 4, Section 4.6.2 or is a small ordnance item. All ordnance items will be treated in Burn Pan 16, Cage 12 or Cage 19.
- IV.C.3. The Permittees shall operate the NIROP Burning Grounds 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 NIROP Burning Grounds. The Permittees shall maintain compliance with the environmental performance standards listed in UAC R315-8-16 and update the information annually in accordance with Condition II.G.2.
- IV.C.4. The Permittees shall adhere to the following conditions to prevent unacceptable risk of cancer and non-cancer effects due to exposure to emissions from the open burning operations:
- IV.C.4.a. The cumulative carcinogenic risk to on-site workers shall not exceed an occurrence rate of  $1.0 \times 10^{-4}$  (one in ten thousand) for the closest potential receptors which are Bacchus Facility workers. The risk shall be calculated according to the methodology in Condition II.G.2.a. and II.G.2.d. The maximum weight includes the reactive hazardous waste, donors and initiators, to be treated at the NIROP Burning Grounds shall not exceed 4,500 pounds per burn;
- IV.C.4.b. Reserved; and
- IV.C.4.c. The cumulative carcinogenic risk to actual or potential off-site receptors shall not exceed  $1.0 \times 10^{-6}$  (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.
- IV.C.5. Based on the air dispersion and deposition modeling and the human health risk assessment for the NIROP Burning Grounds, the Permittees shall adhere to the following conditions:
- IV.C.5.a. Operations at the NIROP Burning Grounds shall not release more than 9.9 tons of HCl or chlorine in a calendar year;

- IV.C.5.b. The Permittees shall only conduct large burns when the surface wind direction is less than or equal to 112° or more than or equal to 270°, and the wind speed is not greater than 15 miles per hour. A large burn is defined as being greater than 500 pounds and not more than 4500 pounds;
- IV.C.5.c. The Permittees shall only conduct thermal treatment of a waste that has a chlorine content of greater than 5%, when the surface wind directions of less than or equal to 112° or more than or equal to 270°, and the wind speed does not exceed 15 miles per hour;
- IV.C.5.d. The Permittees shall comply with the following conditions when conducting thermal treatment of large burns or burns that have a chlorine content of greater than 5%:
- IV.C.5.d.i. All large burns of waste shall be treated between the hours of 1:00 pm and 5:00 pm;
- IV.C.5.d.ii. All large burns of waste that has a chlorine content of greater than 5% shall be treated between the hours of 1:00 pm and 5:00 pm; and
- IV.C.5.d.iii. Burns of waste quantities less than 500 pounds that has a chlorine content of greater than 5% may be treated during the hours of 10:00 am and 12:00 pm and 1:00 pm and 5:00 pm provided that the Permittees comply with condition IV.C.5.c.
- IV.C.5.e. The Permittees may conduct small burns between the hours of 10:00 am and 12:00 pm, and 1:00 pm and 5:00 pm. A small burn is defined as being no more than 500 pounds and having a chlorine content of less than 5%. Small burns shall not be restricted by the surface wind direction or its velocity; and
- IV.C.5.f. The Permittees may burn up to 100 pounds per year of PPC laboratory waste between the hours of 7:00 am and 10:00 am. This PPC laboratory waste must contain unstable Class 1.1 propellant and be identified as “PPC/urgent” waste on the Hazardous Waste Explosive tag identified in Attachment 4, Figure 4-2.1;
- IV.C.5.g. During Salt Lake County “No Burn” periods when the Utah Division of Air Quality is restricting wood burning stoves in Salt Lake County, the Permittees may burn up to 400 pounds per day of unstable wastes including nitroglycerine waste, laboratory generated wastes and unburned waste from a previous burn. These burns are not restricted by the surface wind direction.
- IV.C.5.h. The Permittees shall not conduct an open burn when the sustained wind speed exceeds 15 miles per hour.

**IV.D. WASTE TRACKING**

- IV.D.1. The Permittees shall track all reactive hazardous waste in accordance with Section 4.3.1 of Attachment 4, and maintain this information in the operating record including the type and amount of all donor materials and initiators used during open burn operations at the NIROP Burning Grounds.

**IV.E. PRE-BURN ACTIVITIES**

- IV.E.1. Prior to bringing any reactive hazardous waste into the NIROP Burning Grounds for thermal treatment, The Permittees shall conduct a pre-burn inspection in accordance with the requirements identified in Attachment 4 and 5 of this Permit. The pre-burn inspection shall be documented on the inspection form identified in Attachment 4, Figure 4-6.10, and maintained in the operating record for the NIROP facility. The Permittees shall comply with the following conditions:
- IV.E.1.a. The pre-burn inspection shall be conducted every day the Permittees conduct a burn at the NIROP Burning Grounds and once every calendar month if no pre-burn inspection has been conducted during that calendar month;
- IV.E.1.b. Any burn pan or cage that fails one or more of the pre-burn inspection criteria shall be removed from service until the problem is corrected;
- IV.E.1.c. If the radio or telephone communication system is unavailable, the NIROP Burning Grounds shall be shut down until the problem is corrected;
- IV.E.1.d. If any of the emergency or fire protection equipment is missing or not working properly, the NIROP Burning Grounds shall be shut down until the problem is corrected;
- IV.E.1.e. All leaks or spills of diesel fuel shall be cleaned up before the NIROP Burning Grounds can be operated; and
- IV.E.1.f. The loss of the warning siren or flashing light for the NIROP Burning Grounds will require that the unit be shut down until the problem is corrected. If the Permittees must use the NIROP Burning Grounds when the warning siren or flashing light is not working, the Bacchus Facility Fire Department or area supervisor shall enter and inspect the area within the QD for the NIROP Burning Grounds and assure that no unauthorized employees are present in the area. If any unauthorized employees are found within this area, they will be escorted from the area. Open burning operations can commence once the fire department or area supervisor certifies in the operating record that the area is clear.

**IV.F. PREPARING WASTE FOR THERMAL TREATMENT BURN**

- IV.F.1. Prior to placing any reactive hazardous waste on a burn pan or into a burn cage, the Permittees shall comply with all provisions Conditions IV.C, D and E of this Permit. The Permittees shall also comply with the following conditions:
- IV.F.1.a. There shall be at least two operators present when a burn pan or cage is in the process of being loaded with reactive hazardous wastes as defined in Condition IV.B.1.;
- IV.F.1.b. There shall not be more than six operators inside the NIROP Burning Grounds while reactive hazardous wastes as defined in Condition IV.B.1. are being loaded onto a burn pan or into a burn cage;
- IV.F.1.c. Only one vehicle may be unloaded at one time at the Burning Grounds;

- IV.F.1.d. The burn pans and cages shall be loaded in accordance with the provisions identified in Attachment 4, Figure 4-6.11 and ATK procedure document 21000GV0001 “Burning Propellant at NIROP Burning Grounds”, an internal confidential document;
- IV.F.1.e. Due to incompatibility issues, NG remover shall not be treated with other reactive hazardous wastes. NG remover shall be treated on a burn pan by itself;
- IV.F.1.f. All cardboard placed underneath all liquid explosive slums to contain any free liquid that may not be fully absorbed in wood pulp and all additional combustible material or donor material used to assure a complete burn shall be counted towards the daily treatment limit of 4,500 pounds and recorded in the operating record for the NIROP Burning Grounds;
- IV.F.1.g. All slum pots and SLIDs used as accumulation containers shall be inspected after use. If there is any contamination in the containers they shall be cleaned or decontaminated in accordance with the procedures identified in Attachment 4, Section 4.6.2 before being reused;
- IV.F.1.h. The Permittees shall attempt to treat all reactive hazardous waste placed on a burn pan or in a burn cage within 24 hours of being placed on a burn pan or in a burn cage unless the meteorological condition identified in Conditions IV.C.2.h and IV.C.5 prohibit the safe operation of the NIROP Burning Grounds; and
- IV.F.1.i. The Permittees shall document in the operating record the burn pan or cage number, and the burn station for each SLID, slum and container of reactive hazardous waste that is treated at the NIROP Burning Grounds.
- IV.F.2. Prior to beginning the final preparations for an open burn described in Attachment 4, Section 4.6.3., the Permittees shall comply with Conditions IV.C.1, 2 and 5, and shall have completed and complied with all provisions of Conditions, IV.D, E and F. The Permittees shall also comply with the following conditions:
  - IV.F.2.a. Burn pans and burn cages can not be squibbed, have ignition trains prepared or igniters wired, until all non-essential personnel leave the NIROP Burning Grounds;
  - IV.F.2.b. Whenever employees are “squibbing” as defined in Section 4.6.3 of Attachment 4, preparing ignition trains and wiring igniters, they shall always be observed by an employee, who has access to a telephone or two-way radio and can arrange emergency assistance or summon help in the event of an emergency. This observer shall be at least 400 feet from the NIROP Burning Grounds and maintain constant visual surveillance of the operators inside the NIROP Burning Grounds;
  - IV.F.2.c. All “squibbing”, ignition train preparation and igniter wiring operations shall be conducted by at least two employees;
  - IV.F.2.d. Liquid explosives slums shall be squibbed first;
  - IV.F.2.e. Reserved;
  - IV.F.2.f. When “squibbing”, preparing igniter trains, and wiring igniters, the Permittees shall start at the outside boundary of the NIROP Burning Grounds and work towards the center;

- IV.F.2.g. The Permittees may reactivate the firing system for the NIROP Burning Grounds only after all operators have exited the QD for the treatment unit;
- IV.F.2.h. As the operators leave the NIROP Burning Grounds they shall close the gate to the burning grounds and block the access road at the firing system control room;
- IV.F.2.i. After all operators have exited the NIROP Burning Grounds and retreated to the firing control room, the operators may replace the firing system interlocks in the firing system control console and activate the firing system control computer;
- IV.F.2.j. After activating the firing system control computer, the operators shall confirm that the flashing red light was automatically activated and that the siren sounded for 30 seconds to alert all ATK personnel that an open burn is about to start and that they should vacate the QD area for the NIROP Burning Grounds. If the flashing lights or siren are not operational, the Permittees shall comply with Condition IV.E.1.f. before initiating the thermal treatment;
- IV.F.2.k. After the warning identified in Condition IV.F.2.j. has been completed, the Permittees shall conduct a pre-ignition resistance check of the firing system to assure that the igniters have been installed correctly into the hard-wired portion of the firing system. If any firing circuit fails this test, the Permittees shall perform the following tasks:
  - IV.F.2.k.i. Remove the interlocks for the firing control system, deactivating the firing control system;
  - IV.F.2.k.ii. At least two operators shall reenter the NIROP Burning Grounds, while being observed in accordance with Condition IV.F.2.b., and correct the problem;
  - IV.F.2.k.iii. If the resistance problem cannot be immediately corrected, the operators may connect a separate igniter wire to the pylon at an adjacent burn pan or cage. If all adjacent burn pans are loaded and a spare firing circuit is not available, the area supervisor may attempt to fire the burn pan or cage using the questionable pylon during the burn; and;
  - IV.F.2.k.iv. After the problem with the firing circuit has been corrected the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system.
- IV.F.2.l. The burn pans and cages shall be fired in accordance with the provision of Attachment 4, Section 4.6.3 of this Permit;
- IV.F.2.m. All thermal treatment events at the NIROP Burning Grounds shall be observed with a video camera from the firing control room or immediately outside the firing control room;
- IV.F.2.n. In the event that none of the burn pans or cages ignite, the operators shall wait 30 minutes before removing the firing system interlocks and reentering the NIROP Burning Grounds to correct the problem. After correcting the problem, the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system;
- IV.F.2.o. If at least one burn pan or cage ignites, then the operators shall wait at least four hours before reentering the NIROP Burning Grounds and correcting the problem. After the

problem has been corrected the operators shall repeat the steps described in Conditions IV.F.2.g, h, i, j and k, and proceed with activating the firing system;

- IV.F.2.p. Prior to ignition, the area supervisor shall review the placement of the waste on the pans and the “squibbing” and ignition preparation activities; and
- IV.F.2.q. All information in the NIROP Burning Grounds Log forms shall be maintained in accordance with the requirements of UAC R315-8-5.3 and entered into the operating record for the NIROP facility. The operating record for the NIROP Burning Grounds includes the electronic hazardous waste tracking databases.

#### **IV.G. POST-BURN ACTIVITIES**

- IV.G.1. Following the completion of an open burn at the NIROP Burning Grounds, the Permittees shall conduct the post-burn inspection and cleanup activities identified in Attachment 4, Section 4.6.4. of this Permit and shall comply with Conditions IV.C.1, 2 and 3, and shall have completed and complied with all provisions of Conditions, IV.E and F.
- IV.G.2. The Permittees shall inspect the NIROP Burning Grounds and fill out the post-burn inspection form (Attachment 4, Figure 4-6.15) to the extent possible within 24 hours of completing an open burn unless one of the exceptions identified in IV.G.2.j. or k. applies. The post-burn inspection shall be finalized on the same day that cleaning activities for the burn are completed. The tasks identified below must be completed as part of the post-burn inspection:
  - IV.G.2.a. Prior to entering the NIROP Burning Grounds the operators shall deactivate the firing control system and remove the interlock;
  - IV.G.2.b. Document any burn pan or cage with an open flame, hot spot or smoldering residue;
  - IV.G.2.c. Document any burn pan or cage with unburned residue;
  - IV. G.2.d. Document any burn pan or cage with unburned reactive hazardous waste and identify if possible in the operating record why the waste did not burn;
  - IV.G.2.e. Inspect for any unburned waste that was ejected from a burn pan or cage during the last treatment event. Such waste shall be picked up and placed on a burn pan or in a burn cage;
  - IV.G.2.f. Record on the inspection form the date that the burn pans and cages were cleaned or the reason why a burn pan or cage could not be cleaned within 24 hours after completing the open burn;
  - IV.G.2.g. Record on the inspection form the date that the asphalt surface around the burn pans or cages was cleaned or the reason why the asphalt surface around a burn pan or cage could not be cleaned within 24 hours after completing the open burn;
  - IV.G.2.h. Identify the burn pans or cages where unburned waste is being stored;
  - IV.G.2.i. Evaluate the condition of the safety equipment identified in Figure 4-6.15;

- IV.G.2.j. The Permittees may postpone post-burn activities at the NIROP Burning Grounds if lightning strikes or adverse weather condition prohibit the safe operation of the NIROP Burning Grounds. Lightning strikes closer than five miles restrict attended operations at the Bacchus Facility. The Permittees shall document the reasons for the delay in the facility's operating record; and
- IV.G.2.k. The Permittees may delay the post-burn inspection for burns involving bulk propellant that occurred on the last working day of a week. The post-burn inspection shall be conducted on the following Monday or within 4 days of the last working day of the previous week, unless the meteorological conditions identified in Condition IV.G.2.j. prohibit re-entry into the NIROP Burning Grounds. The Permittees shall document the reasons for the delay in the facility's operating record.
- IV.G.3. Within 24 hours of completing an open burn, the Permittees shall remove all treated residues from the burn pans, cages and asphalt. If the Permittees can not remove all of the treated residues from the burn pans, cages and asphalt within the 24 hours, due to weather conditions, such as, snow or ice covering the burn pans, cages and asphalt, the Permittees shall document the following information in the operating record for the NIROP Burning Grounds:
- IV.G.3.a. The reason for the delay in doing the post-burn clean up;
- IV.G.3.b. Reserve;
- IV.G.3.c. The date when burn pans, cages and asphalt were cleaned; and
- IV.G.3.d. Except as delayed by the conditions described in Condition IV.G.2.j and k, the area supervisor shall review the NIROP Burning Grounds log and post-burn inspection forms within 24 hours of completing a thermal treatment event or open burn. The review shall assure that all of the recorded information is correct and identify any items that may require corrective action including any burn pan or cage that failed to ignite, had an ignition problem or misfired, had a detonation, where the burn did not propagate as expected or any other unexpected event.
- IV.G.4. Open burn operations at the NIROP Burning Grounds may result in the generation of untreated residue and unburned wastes. The Permittees shall manage these residues and wastes in accordance with the following provisions:
- IV.G.4.a. Small amounts of untreated residue, as defined in Attachment 4, Section 4.6.4, shall be considered newly generated waste and shall be logged and tracked as such in the explosive waste tracking system. This small amount is defined as less than 5% of the total volume placed on the pan or in the cage. The primary option for managing this waste is to burn it by 5:00 pm of the following calendar day. If the untreated residue can not be treated by 5:00 pm of the following calendar day then it shall be managed in accordance with UAC R315-5;
- IV.G.4.b. Unburned waste resulting from a misfire or an interrupted ignition shall be treated by 5:00 pm of the calendar day following the date of the first attempt to treat this waste. For the purposes of this Permit, an interrupted ignition occurs when anything greater than 5% of the waste placed on a burn pan or in a cage fails to ignite. This unreacted waste shall not be considered a newly generated residue. If the Permittees are unable treat the unburned waste

by 5:00 pm of the following calendar day, the Permittees shall cover the waste and manage the burn pan or cage in accordance with UAC R315-5. If the cumulative storage time for the unburned waste both while in storage prior to treatment and while on the burn pan or in the burn cage is greater than 90 days, the Permittees shall request an emergency storage permit in accordance with UAC R315-3-6.2;

- IV.G.4.c. For reactive hazardous wastes that have been in storage for greater than 90 days when they are placed on a burn pan or in a burn cage and which do not completely burn, the Permittees shall treat all unburned or unreacted waste by 5:00 pm of the calendar day following the date of the initial attempt to treat the waste. If the Permittees are unable to treat the unburned or unreacted waste by 5:00 pm of the following calendar day, then the Permittees shall request an emergency storage permit in accordance with UAC R315-3-6.2; and
- IV.G.4.d. Due to safety concerns, the Permittees can not cover unburned wastes if temperatures fall below certain levels (54 degrees (F) for nitroglycerine wastes and 10 degrees (F) for Class 1.1 propellant). The Permittees shall request an emergency permit in accordance with UAC R315-3-6.2 for these wastes unless they can be treated or covered by 5:00 pm of the calendar day following the date the waste was placed on a burn pan or in a burn cage. If the cumulative storage time for this unburned waste both while in storage prior to treatment and while on the burn pan or in the burn cage is greater than 90 days, the Permittees shall request an emergency storage permit in accordance with UAC R315-3-6.2, unless the waste can be treated by 5:00 pm of the calendar day following the date the waste was placed on a burn pan or in a burn cage.
- IV.G.4.e. Ordnance wastes burned at the NIROP Burning Grounds shall be burned twice to assure that the treatment is complete. Since the second burn is part of the prescribed treatment methodology for this waste stream, ordnance waste will not be considered as newly generated waste after the first burn. If the ordnance waste can not be reburned by 5:00 pm of the following calendar day from the date of the first burn, then the Permittees shall manage the ordnance waste in accordance with UAC R315-5. The Permittees shall conduct weekly inspections of the stored ordnance waste until it can be treated the second time. The weekly inspection shall be documented on the weekly inspection log, see Attachment 5, Figure 5-2.5.
- IV.G.5. The Permittees shall manage all treatment residues generated during post-burn activities in accordance with this Permit and UAC R315-5.

#### **IV.H. LEACHATE MANAGEMENT AND RUN-ON AND RUN-OFF CONTROLS**

- IV.H.1. The Permittees shall manage all leachate collected from a burn pan or cage in accordance with this Permit and UAC R315-5.
- IV.H.2. The Permittees shall maintain run-on diversion structures in accordance with this Permit and UAC R315-8-16 which incorporates by reference 40 CFR 264.601. The Permittees shall inspect the condition of those structures annually to assure that they are in good repair. The annual inspection shall be documented in the operating record for NIROP Burning Grounds.
- IV.H.3. Run-off from precipitation that falls within the operating area of the NIROP Burning Grounds shall be managed in accordance with UAC R315-8-16, which incorporates by

reference 40 CFR 264.601, using asphalt curbing, berms, and ground slope to direct all storm water to two collection areas, which then convey the collected storm water to a treatment plant. The treatment plant for the management of precipitation run-off from the NIROP Burning Grounds is designed to handle storm water generated within the operating area of the NIROP Burning Grounds for a 25-year, 24-hour storm event, and shall be operated in accordance with the Department of Environmental Quality, Division of Water Quality's permit.

- IV.H.4. All leachate and waste solids collected or generated as described in Conditions IV.H.1, 2 and 3 shall be sampled and analyzed in accordance with Condition II.D and Attachment 3.

**IV.I. TREATMENT RESIDUE AND ASH MANAGEMENT**

- IV.I.1. All treatment residue and ash generated from the NIROP Burning Grounds operations shall be managed in accordance with Conditions III.E.4. and IV.G.3, and the procedures in Attachment 4.

- IV.I.2. Sampling and analysis of treatment residues and ash generated during operations at the NIROP Burning Grounds shall be performed in accordance with Condition II.D. and Attachment 3.

**IV.J. INSPECTION SCHEDULES AND PROCEDURES**

- IV.J.1 The Permittees shall conduct inspections of NIROP Burning Grounds in accordance with Conditions II.F, IV.E and G, and Attachment 5.

**IV.K. ENVIRONMENTAL MONITORING REQUIREMENTS**

- IV.K.1. The Permittees shall comply with all environmental monitoring requirements identified in Condition IV.K and the Soil Monitoring Plan in Attachment 9 of this permit.

- IV.K.2. Reserve;

- IV.K.3. Reserve;

- IV.K.4. The Permittees shall sample the Tier 1, Tier 2 and Bacchus Worker locations identified in the Soil Monitoring Plan annually or at a frequency determined by the Director in writing. The Permittees shall submit a report on the soil monitoring program to the Director annually or at a frequency determined by the Director and communicated via letter to the Permittees. This report shall be submitted to the Director by March 1<sup>st</sup> of the calendar year following each sampling event.

- IV.K.5. If the Director determines after reviewing each report on the soil monitoring program that any component of the Soil Monitoring Plan needs to be updated, the Director will inform the Permittees in writing which components of the Soil Monitoring Plan to be revised or updated.

- IV.K.6. If the Permittees are required to update the Soil Monitoring Plan for the NIROP Burning Grounds, the Permit shall be modified in accordance with Condition I.D. of this Permit.

IV.K.7. The Permittees shall monitor groundwater up and down gradient of the NIROP Burning Grounds in accordance with Attachment 10 of the ATK Launch Systems, Bacchus Facility – Plant 1 Permit.

**IV.L. ECOLOGICAL RISK**

IV.L.1. Within 180 days of issuance of this Permit, the Permittees shall submit an Ecological Risk Assessment Protocol document to the Director for approval. If the Director is unable to approve the Ecological Risk Assessment Protocol document, he shall provide written comments to the Permittees identifying the deficiencies in Ecological Risk Assessment Protocol document. The Permittees shall address the comments and submit a revised Ecological Risk Assessment Protocol document to the Director for approval within 60 days of receipt of written comments.

IV.L.2. Within one year of receiving approval of the Ecological Risk Assessment Protocol document, the Permittees shall submit an Ecological Risk Assessment to the Director for approval. If the Director is unable to approve the Ecological Risk Assessment, he shall provide written comments to the Permittees identifying the deficiencies in Ecological Risk Assessment. The Permittees shall address the comments and submit a revised Ecological Risk Assessment to the Director for approval within 60 days of receipt of written comments.

IV.L.3. With 30 days of receiving approval of the Ecological Risk Assessment, the Permittees shall submit a request to modify Condition II.G. of this Permit in accordance with Condition I.D. to add performance standards for the acceptable ecological risk associated with the operation of the NIROP Burning Grounds.

**IV.M. Reserved**

**IV.N. FACILITY MODIFICATION/EXPANSION**

IV.N.1. Modification of the design plans and specifications in Attachment 2 and 4 or construction of additional treatment units shall be allowed only in accordance with UAC R315-4-1.5.

**IV.O. CLOSURE AND POST CLOSURE**

IV.O.1. The Permittees shall close the NIROP Burning Grounds in accordance with the Closure Plan in Attachment 8.

**IV.P. NIROP BURNING GROUNDS OPERATING RECORD**

IV.P.1. The Permittees shall maintain an operating record at the Bacchus Facility that describes the operation of the NIROP Burning Grounds. The operating record for the NIROP Burning Grounds shall, at a minimum, include the following information:

IV.P.1.a. All information required by UAC R315-8-5.3;

IV.P.1.b. Copies of all inspections required by this module;

IV.P.1.c. All waste tracking information identified in Condition IV.D.;

- IV.P.1.d. The burn logs for each burn and all waste tags removed from the containers before a burn;
- IV.P.1.e. A detailed description of the meteorological conditions during each burn;
- IV.P.1.f. Copies of all reports identified in Condition II.G.1. and required by Conditions II.G.2, and IV.K and L; and
- IV.P.1.g. A running total of the type and quantity of reactive hazardous waste that has been treated at the NIROP Burning Grounds during the calendar year.