Proposed Contained Burn System at Camp Minden
May 6, 2015

Contained Burn System (CBS): It consists of a primary Contained Burn Chamber (CBC), constructed of high quality steel. Propellant is treated in a batch process. Once ignited, the flame rises vertically, mixing with the air in the sealed chamber at high temperature with long residence time promoting complete combustion. The exhaust gases within the CBC are metered using a motorized controlled valve to control flow into the Pollution Abatement System (PAS).

Upon completion of the contained burn process cycle, the burn tray will be removed from the chamber and a cold tray containing another of M6/CBI material will be introduced into the chamber. Residue ash will be removed from the tray after each cycle. As a result of the contained burn process, all residue ash is anticipated to be non-hazardous. Prior to shipment offsite, the ash will be sampled and profiled accordingly for disposal. The operation will be conducted on a twenty-four (24) hour basis to achieve the daily disposal rate required. The vendor recommends Area-I for operations due to its secluded location.

Pollution Abatement System: The CBS will provide superior protection to the public and the environment by processing all exhaust gases and products of combustion, and removing those emissions and materials of concern prior to release of cleaned exhaust gases to the environment. The PAS will achieve Clean Air Act Maximum Achievable Control Technology (MACT) standards. The major products of combustion of M6 and CBI are carbon dioxide (CO2), water (H2O), and nitrogen (N2). Potential minor products of combustion include solid ash or particulate matter (PM) and gaseous species: carbon monoxide (CO), nitrogen oxides (NOx), and volatile organic compounds (VOC). Cyclone, baghouse system and HEPA filter will be used to remove particulates. EPA has recommended use of a more effective Selective Catalytic Reduction (SCR) system to minimize NOx emissions well below the regulatory limits. Dioxin and furan emissions are not expected to be produced from the contained burning of M6 because M6 does not contain any chlorine which is required to produce these species. If an worker safety situation arises that requires the inclusion of packing material, the amount of chlorine in the packaging material compared to the mass of propellant and air involved in the process makes it likely that dioxin or furan would not be produced at any detectable levels, and may not be produced at all.

EPA is also recommending use of an afterburner for Volatile Organic Compounds. Use of an afterburner will provide assurance that VOCs of concerns are burned in excess of the regulatory 99.99% Destruction and Removal Efficiency (DRE). Based on the past experience, the vendor claims that DRE of 99.9999% is achievable. It means, emissions of Dinitrotoluene will be less than 1 part per million, with a total of 1.5 lbs will likely be emitted into the atmosphere during the nine-month operation.

Continuous Emissions Monitoring System (CEMS): Monitoring of Total Hydrocarbon (THC) and CO using CEMS in the stack gas are good indicators of degree of combustion. Similarly, NOx CEMS will show the emissions level of NOx to the environment. In addition, EPA is recommending periodic sampling of three M6 constituents: Dinitrotoluene, Dibutylpthalate, and Diphenylamine.

Performance Test: Prior to the normal destruction operations, a performance test will be conducted to ensure that the entire system including the combustion unit and the PAS are working properly to meet with the emissions standards for CO, Total Hydrocarbons, PMs, chlorine and D/Fs. During the test burn, the operating conditions for future operations will also be established.

Air Modeling: EPA and the vendor will run air model using the real-time information from the CEMS, stack gas flow, stack gas temperature, meteorological data, and VOCs results.

Implementation Schedule: Once approved, according to the vendor the proposed system will take five months to construct. According to the vendor, it will provide a maximum throughput rate of approximately 63,360 lbs per day. This will provide a capability to complete the destruction of the M6 and CBI in less than one year following start of operations.