Camp Minden M6 and CBI Potential Technology Screening Information

Name of Technology Vendor Contact Information Website or link to additional information	Please describe how your technology or process works and the equipment involved. Is this existing equipment or does it need to be fabricated? Is a donor explosive required?	Has your technology/ process been tested or used with M6, CBI, propellants, or similar materials? What permits or approvals do you have in hand? Describe actual uses, volumes treated, and results of tests or applications for M6 like materials.	Can your technology/ process be implemented on-site at Camp Minden? How long would it take to mobilize, install and be ready to treat material? Would it require any extra handling or preparation of the M6 and CBI? What are the key space and logistical requirements for your installation on-site including storage of residues/wastes?	What is the Destruction Efficiency of your process? What is the nature of the residues/wastes that will remain, and what processes/ disposal/ recycling will be used for this residue/ waste? What percent volume reduction (or addition) is achieved?	What is the nature and composition of any emissions? How are emissions Monitored, captured, tested, treated and ultimately disposed? What potential hazards to workers, other on-base personnel and nearby residents should be considered and how are they managed?	What is the highest throughout you have achieved you're your process? What is the reasonable maximum daily capacity/ throughput you believe you could achieve at Camp Minden? What is the reliability and maintenance requirements of your equipment? Is it subject to weather?

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Contained Burn El Dorado Engineering Bob Hayes (801)966-8288 bhayes@eldoradoengineering.com eldoradoengineering.com	This technology can be visualized as "open burning indoors" with containment of all combustion products followed by scrubbing via an efficient pollution control system. It utilizes a batch process. Propellant is placed onto a loading system for remotely controlled loading into a large chamber. The chamber is sealed and the propellant is ignited remotely by the operator. The products of combustion are contained in the chamber. A valve is then used to meter the exhaust gases through a pollution control system tailored to remove emissions of concern. The chamber is then purged with fresh air for the next cycle. The basic equipment consists of a containment vessel, feed system, electronic ignition system, and pollution control system. The equipment for Minden would be fabricated. No donor explosive is required.	This technology has been employed at multiple locations in the U.S. as a clean alternative to open burning. It has been used for a wide variety of propellants including nitrocellulose based propellants similar to M6 and CBI, as well as other propellants such as AP and azide propellants which are much more challenging than M6. Systems most similar in scale to what is required at Minden include a test system demonstrated at China Lake in CA (365 lbs per cycle) and a production system (design for 805 lbs per cycle), currently being constructed at Letterkenny army depot in PA, this system has received approval of both RCRA (Subpart X) and Air permits, as well as DDESB approval. These systems are designed for contained burning of large AP based propellant tactical rocket motors, which is much more challenging than M6. The Letterkenny system is designed for a maximum of 805 lbs per cycle, with a maximum of 3 cycles per hour.	Yes. 5-6 months. It does not require additional handling or preparation. The handling requirements will be the same as open burning and can actually allow, if desired, direct loading of the existing boxes, drums, and sacks to minimize personnel exposure and risk. The system will take up much less space than OB/OD grounds. It does require electrical power utilities. There is no need for large storage areas for residuals/wastes as no large quantities result from this process.	Destruction efficiency is extremely high (>>99%). Residuals expected include very small quantities of particulate matter from the combustion process which are collected in to small sealed drums for offsite disposal, and are non hazardous waste. % volume reduction is >>99%	The nature of the technology itself produces lower emissions of concern (i.e. CO, VOC) than open burning due to the design of the system to facilitate complete oxidation, before aftertreatment. Emissions are then treated via an advanced pollution control system. EDE has utilized this system to treat emissions from M6 combustion. The system is designed to meet all regulatory standards, which can be verified via stack testing. EDE has demonstrated technology to remove emissions from M6 burning to levels well below even European standards (more strict than U.S.) with essentially zero (non-detect) CO, VOC, and PM, and >90% NOx reduction. Operations are conducted remotely at a safe standoff distance to ensure safety or personnel.	A very similar system for AP propellant was demonstrated with 365 lbs per burn cycle. System being constructed is designed for 805 lbs per burn cycle. Nominal cycle time is 20 minutes. Camp Minden system can be provided to achieve 50,000 lbs per day, or higher according to budget considerations. Reliability is high, with very low maintenance, few moving parts. Occasional lubrication on loading system moving parts and occasional replacement of thermocouples/pressure sensors. System can be operated 24/7. Weather is not a limiting factor.