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?
Actodemil Non Thermal Humic Acid Catalyzed Hydrolysis-Neutralization Technology. 14100 Park Meadow Drive Chantilly, VA 20151 (703) 222-0280 www.arctech.com	Step One: Desensitizing of M 6 with Actodemil water based reagent during the retrieval and transfer to Actodemil Units. ActoHAX regent captures NOx gas as well as water wet the M6. Step Two: Reductive Hydrolysis below water's boiling temperature. Inherently safe, reaction carried out in water-based reagent. Catalyzed by organic humic matter (allowed by USDA for growing organic foods) Complete dissolution of	Yes. Involved since the 1992 Law and 1997 Munitions Rule and efforts by the US Army Defense Ammo Center to seek non-thermal efforts. Several successful projects w/o incident, including production of fertilizer used on several hundred acres of farmland. Extensive documentation available. Projects & results: <u>Hawthorne AD</u>: recycled singe, double, and triple base propellants. Independent tests issued by Nevada EPA showed product was non hazardous and	Yes will be set up on site at Camp Minden---Mobilize—Within one month of NTP and after any permit needed. Operational within 30 days after shakedown. M 6 will be desensitized and retrieved and transferred in special containers to the Actodemil Units. Actodemil may the only technology which will not require lengthy permitting and can be deployed by using readily available mobile units. Actodemil of M6 at 80,000 lbs per	Propellants including Nitrocellulose proven 99%+ and for DNT etc., 100% or below Detection Limit and fully complies with the US EPA UTS Limits. There are two options for full and final disposition of Actodemil liquid product. One for an EPA-approved land application, which has been validated several times. A second for off- site disposal based on a 20-to-1 volume reduction.	In M6, during neutralization NOx gas is emitted, and scrubbed with Actodemil's ActoHAX reagent in a wet scrubber. The spent scrubber reagent is mixed with the fertilizer product to boost its nitrogen. No wastes from scrubber. It will be monitored and ensure compliance to the local regulations. The stored M 6 especially has depleted stabilizer so will	Proven in 2,000 lb batch units. Actodemil of M6 at a rate of 80,000 lbs per day, it is envisioned to install 10 units to process 4,000 per batch in about 10 hour shifts. Actodemil will use both M6 and CBI in batches and expect with two shifts, operation can be completed well within one year. Though Actodemil is based on use of proven relatively simple mixing solids and liquid equipment and pumps and tanks but any equipment is prone to breakdowns

	plasticized propellants & explosives. Irreversible chemical conversion of explosive and other chemicals. Step Three: Neutralization of resultant liquid to a pH near neutral. Offers alternate outlets: 1. Land use in compliance to the US EPA Universal Treatment Standards for recycled wastes for land applications 2. Volume Reduction and Safe offsite disposal of 100 lbs solid waste per ton of M 6 or CBI. @) to 1 volume reduction. Actodemil approach of recycling allowed by US EPA 1997 Munitions alternate outlets: 1. Land use in compliance to the US EPA Universal Treatment Standards for recycled wastes for land applications 2. Volume Reduction and Safe offsite disposal of 100 lbs solid waste per ton of M 6 or CBI. @) to 1	suitable for use as fertilizer. University of Nevada tests showed that Actodemil's recycled fertilizer is not phototoxic and increases protein levels and crop yields Resultant fertilizer provided to local farmers. Independent lab, ILS in North Carolina from Ames testing showed that the Actodemil product is not mutagenic. DAC/McAAP : conducted production-scale operations to recycle multiple propellants including M6 propellants. Ten tons of multiple runs one after another, produced about 8,000 gallons of fertilizer. This fertilizer was shown to be fully compliant to US EPA UTS and allowed by the DAC to be applied to the local farms. Dyno Nobe: Demonstrated treatment of explosives-contaminated wastes. Hercules Corp : Conducted project to successfully destroy and recycle Nitrocellulose	day estimate requires 50 acres to ensure compliance to Quantity – Distance per DOD Requirements		be handled by trained EOD techs with all the safety and protective gear. Spill control will be employed to protect local ecology as well as exposure to other workers on base as well as to the local residents. No noise, fugitive emissions expected during the Actodemil operations.	especially the fast track need at Camp Minden. Provisions are made with spare parts and on site maintenance experts. Also a spare Actodemil Unit will be installed to maintain the production rate. Units are expected to be installed outdoors so will be fitted with canopies to provide protect against weather elements and for the the workers.

	volume reduction. Actodemil approach of recycling allowed by US EPA 1997 Munitions	(NC) Fines. USACE TAC: Deployed a Production-Scale Facility to decontaminate and demilitarize empty projos from melt-out operations. NAVEODTECHDIV : Conducted project for successful recycling of high recycling of high explosives. Pentarch Inc/Australia: Conducted project to successfully recycle different propellants. Israel MOD : Conducted project to successfully recycle different propellants. Iowa / U.S. Army: Actodemil® removed depleted Uranium from explosive wastes Egypt military: built Actodemil Decon Unit for destruction of TNT from melt out 155 caliber shells.				