



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
INSTALLATIONS, ENERGY AND ENVIRONMENT
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SAIE-ESOH

OCT 11 2016

Carl Edlund, P.E.
Director, Superfund Division Environmental Protection Agency
Fountain Place 12th Floor, Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Mr. Edlund:

Enclosed is the report from the technical assistance visit (TAV) that the U.S. Environmental Protection Agency (EPA) requested, by email dated September 29, 2016, regarding support after storage magazine 2419 exploded at Camp Minden.

EPA requested the Army review operations and storage conditions for the remaining Clean Burning Igniters (CBI) and M6 propellant at Camp Minden. An Army team conducted the requested TAV at Camp Minden during 4 to 5 October 2016. The TAV team made a comprehensive review of explosives safety issues related to the continued storage of the remaining CBI and M6.

The enclosed TAV report provides recommendations for EPA Region 6's (EPA 6) consideration, in coordination with the Louisiana State Police, LA Department of Environmental Quality and LA Military Department (LMD). These recommendations may be implemented to address the immediate risk posed by the CBI remaining at LMD's Camp Minden and improve the explosives safety posture at Camp Minden.

As during previous Army TAVs, the team's primary focus was on ensuring the recommendations it made for EPA's consideration focused on actions that would reduce or mitigate potential explosive hazards to LMD personnel and public safety.

My point of contact for this matter is Mr. J. C. King, Director for Munitions and Chemical Matters, and Army DDESB Voting Member, phone number (703) 697-5564; email jc.king@us.army.mil.

Sincerely,

EUGENE COLLINS

Deputy Assistant Secretary of the Army for
Environment, Safety and Occupational Health

SAIE-ZX

SUBJECT: Department of the Army Approval of an Explosives Safety Certificate of Compelling Reason for Construction of Pier 2 on Military Ocean Terminal-Concord (MOTCO), California

cf:

MG Glenn H. Curtis, Louisiana National Guard, 6400 St. Claude Avenue, Jackson Barracks, New Orleans, LA 70117

Dr. Chuck Carr Brown, Director, Louisiana Department of Environmental Quality, 602 N. Fifth Street Baton Rouge, LA 70802

DEPARTMENT OF THE ARMY

REPORT

OF

**EXPLOSIVES SAFETY ASSISTANCE VISIT
(4 TO 5 OCTOBER 2016)**

TO

**LOUISIANA MILITARY DEPARTMENT'S
CAMP MINDEN**

FOR

THE U.S. ENVIRONMENTAL PROTECTION AGENCY

ENCLOSURE

Final Report of Explosives Safety Assistance Visit to Camp Minden (4 and 5 October 2016)

Background

On 29 September 2016, the U.S. Environmental Protection Agency (EPA) requested Army support regarding an explosion of magazine 2419 at the Louisiana Military Department's (LMD) Camp Minden earlier that day. Although the Army is not responsible for the operations, storage conditions or disposal of the explosives stored at Camp Minden, the EPA requested the Army's technical assistance to review operations and storage conditions for the remaining Clean Burning Igniter (CBI) and M6 propellant (M6) stored at Camp Minden.

On 29 September 2014, the Secretary of the Army authorized the Assistant Secretary of the Army for Installations, Energy and Environment (ASA (IE&E)), to provide the technical assistance and advice required to address the explosives safety concerns potentially posed by certain ignitable material at Camp Minden, Louisiana. Among other assistance, the Secretary of the Army's authorization allowed the Army's technical assistance to: (1) include on-site visits to assess the condition of the material; (2) provide recommendations to ensure the explosives safety of operations; (3) include technical reviews of plans; and (4) provide advice related to the storage and final disposition of this material. The Secretary also allowed the ASA (IE&E) to request other Army organizations to assist in providing this support and re-delegate this authority, as determined necessary.

During 4 and 5 October 2016, a team, under the direction of Mr. J. C. King, Director for Munitions and Chemical Matters, Office of the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health and Army Member, Department of Defense Explosives Safety Board (DDESB) provided the requested support as a technical assistance visit (TAV). The TAV team consisted of:

- Mr. J. C. King
- Mr. John Lenox, Division Director for Military Operations, DDESB and former U.S. Navy Explosives Ordnance Disposal (EOD) Officer
- Mr. Ronald Mathewson, Senior Army Quality Assurance Specialist (Ammunition Surveillance) (QASAS), Munitions Division, Headquarters, Department of the Army, Office of the Deputy Chief of Staff, G-4 Logistics
- Mr. Gregory Heles, Explosives Safety Specialist, U.S. Army Technical Center for Explosives Safety (USATCES)
- Mr. Joshua Yott, QASAS, USATCES

On 29 September 2016, munitions storage magazine 2419 that contained approximately 120,960 pounds (lbs) of CBI experienced an auto-ignition that destroyed the magazine. Fortunately, there were no injuries or damage, other than the total destruction of magazine 2419 and initiation of fires that burned trees and vegetation within the vicinity of magazine 2419, primarily to the magazine's front and rear.

Previous Army TAV recommended priority be given to the destruction of approximately 320,000 lbs of CBI and that M6 be destroyed by open burning. The TAV teams indicated that

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the decomposition rate of stabilizers in the CBI and M6 was not known because Explo Systems, Inc. (Explo) had not maintained the required Stability Monitoring Program. The TAV teams also indicated that the stability of stabilizers in the CBI and M6 could not be accurately measured to establish a relative decomposition rate because of the manner in which Explo managed and re-packaged the material and the high moisture, humidity and storage conditions of the material. Collectively, these previous TAV recommended safely destroying the CBI and M6 - given the accelerated propellant decomposition and the loss of LOT identity - at Camp Minden as soon as possible in minimum time with minimum handling.

Given the above, the uncertainty of the stabilizer content in the remaining material and the recent auto-ignition that resulted in an uncontrolled explosion of magazine 2419, the Army's TAV team believes that the CBI and M6 in storage at Camp Minden should be considered as Propellant Stability Category D. This category indicates the propellant has experienced an unacceptable stabilizer loss. Propellants identified as stability category "D" present a potential safety hazard. As such, it is unsafe for continued storage as bulk propellant and must be demilitarized within 60 days.

As a result of the 29 September 2016 incident involving CBI, the contractor destroying the CBI and M6 stored at Camp Minden (Explosives Services International (ESI)) believed the explosives safety risk to ESI personnel to manage and destroy the remaining CBI was too great.

Purpose of the TAV:

- Provide recommendations for EPA's, in coordination with the Louisiana State Police's (LASP), Louisiana Department of Environmental Quality's (LDEQ) and LMD's, consideration for immediately addressing the CBI remaining in magazines 2432 (114,336 lbs), 2471 (85,594 lbs), and 505 (approximately 810 lbs);
- Review operations and storage conditions for the remaining M6, for which the stability content is also unknown; and that also poses an explosives safety risk mirroring that of the CBI.

Assumptions

Based on discussions with EPA, LASP, LDEQ and LMD, the TAV team considered the following information:

- EPA, in coordination with the LDEQ, will establish an emissions monitoring and sampling program.
- The magazines of immediate concern are:
 - Magazine 505 in magazine storage area (MSA) L4 – 820 lbs net explosives weight (NEW) CBI;
 - Magazine 2471 in MSA L2 – 125,943 lbs total NEW (85,594 lbs NEW CBI and 40,349 lbs NEW M6); and
 - Magazine 2432 in MSA L2 – 114,336 lbs NEW CBI.

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- The risk of entering magazines 2432 and 2471 to remove the content for destruction is not acceptable; as such, the CBI and M6 in these magazines should be addressed as an explosives or munitions emergency and destroyed in place.
- LMD accepts the loss of magazines 2432 and 2471.
- LASP will assist with security of areas off the installation as determined necessary.
- Bossier Parrish Fire Department and LMD assets will be available and are equipped to fight fires that will result from the in place destruction of CBI.

Observations related to CBI

The TAV team did not observe the CBI in magazine 2432 or 2471 given reports that exposed CBI was on the floors and could be under the door or within the door. However, it observed the outcome of the explosion on 29 September 2016; conducted site visits of the three magazines (505, 2432 and 2471), and applied expert knowledge to estimate the potential explosive effects of the in-place destruction of the CBI and M6 in storage. Given the unsafe condition of the CBI in storage, the TAV team did not consider options other than in place destruction. However, it considered and provides mitigating measures that should be considered for implementation.

Recommendations for the Destruction of CBI

- CBI in magazine 505 should be destroyed in the vicinity (within of 40 feet) of the magazine with minimal handling.
- EOD should be requested to provide support for this explosives or munitions emergency. Such support should include opening the two magazines, remotely (magazine 505 can be opened normally); setting the ignition charges; conducting first entry (remotely) after the burn to see if everything was burned; and addressing kick outs that occur.
- LMD should implement security during CBI destruction operations to cordon off access to areas within the below Explosive Safety Quantity Distances (ESQD) (see figures 1 to 3) for 4 hours prior to and up to 48 hours after initiation of the CBI. Initiation of the cordon should be based on when EOD intends to open the magazine door on the day of each operation. The security cordon should encompass:
 - Magazines 2432 and 2471 – 6,500 feet (Figures 1 and 2, respectively).
 - Magazine 505 – 1,250 feet (Figure 3).
- Once the doors for magazines 2432 and 2471 are opened, they should remain open.
- The destruction of CBI should be completed per the below schedule. Should the operational parameters not be able to be met, the destruction should occur the following weekends, respectively
 - Mag 505 – 17 to 20 October 2016
 - Mag 2432 – 22 October 2016, with back up date of 23 October 2016
 - Mag 2471 – 29 October 2016, with back up date of 30 October 2016

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- The below operational parameters (go/no-go) for the destruction of CBI should be met:
 - Winds:
 - ✓ Greater than 5 miles per hour (mph) (preferred, but not absolutely necessary)
 - ✓ Less than 15 mph
 - Prevailing winds at time of initiation should be either:
 - ✓ West to east
 - ✓ South-west to north-east; or
 - ✓ West to east (acceptable)
 - Operations where exposed CBI or M6 is possible (i.e., when doors are opened) should not be conducted when lightning is reported within 10 miles.
 - The operation (burn) should be postponed if there is an inversion layer (i.e., low cloud cover) at the time of initiation until it lifts.

Factors for Consideration

- EPA and LMD should conduct public outreach and provide public notice of the pending emergency destruction of CBI. However, destruction operations should not be delayed beyond the dates indicated unless the recommended operational parameters cannot be met.
- LASP, after coordination with EPA, LDEQ and LMD, should consider requesting support from Army EOD, as necessary, for the emergency destruction of CBI.
- In-place destruction operations should be conducted early in the morning (0500 to 0700 (+/-)) on consecutive Saturdays (preferably), with the corresponding Sundays as backup.
- CBI in magazine 505 should be destroyed in two burn-pans placed approximately 40 feet from magazine 505's door. The destruction by open burning of this CBI (800 lbs) should occur prior to the in-place destruction of CBI in magazines 2432 and 2471.
- CBI in magazine 2432 should be destroyed on the first Saturday (22 Oct 16), with CBI and M6 in magazine 2471 destroyed on the following Saturday (29 Oct 16).
- An additional fire break, in addition to the road between the magazine and the road along MSA L-2's fence line, should be added to east of MSA L-2;
- Vents in storage magazine adjacent to the magazine being addressed within storage area L-2 should be closed with rear vents covered, if possible.
- LMD should provide notices to FAA (NOTAM) to restrict over flights of Camp Minden on the days of initiation of the destruction of CBI.
- LASP should:
 - Coordinate, as required, with local and other federal law enforcement agencies (i.e., Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)).
 - Post signs on HWY 20, as necessary, indicating possible smoke on Highway 20.

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- LMD should:
 - Pre-coordinate with Bossier Parrish #1 Fire Department.
 - Coordinate with rail-car owner to remove rail cars at L2 and suspend rail operations during disposal.
- MuniRem or some other like material proven to decompose nitrocellulose should be sprayed:
 - Through magazine vents and in door tracts (jams) to decompose CBI that may be loose inside the magazine on the floor prior to opening the doors;
 - On CBI or M6 kicked out of the magazine (2419) that experienced an explosion on 29 September 2016, and that may be kicked out as a result of the recommended action.
- Magazine 505 in MSA L4 – This CBI disposal is a small-scale emergency disposal. As such, most of the above conditions should not apply. However, the below should be considered:
 - Firefighting support should consider the use of a water curtain.
 - Use of two burn pans, with the boxes of packaged CBI distributed evenly between the two pans and placed in a single layer of boxes within each pan.
 - The entire 820 lbs of CBI should be considered when establishing the ESQD – recommended at 1,250 feet.
 - EPA should develop an emissions monitoring and sampling plan, if required.

Observation related to M6

The TAV team also observe ESI's procedures and the destruction of M6. Although the TAV team recognizes the public concern with the open burning of M6, it strongly recommends that consideration be given to accelerating the disposal of M6 and reducing handling of M6.

Recommendations for M6

Consideration be given to:

- Accelerating the destruction of M6 by the continued use of the contained burn system (CBS) and addition of open burning, if considered viable. Accelerating the disposal of M6 in this manner would more rapidly eliminate the explosives risks associated with the decomposing M6.
- Reducing the handling of M6 at the prestaging area by eliminating the need for weighing each super sack, box or barrel prior to placement in 880-lbs increments for burning. By now, LMD and ESI should have sufficient data to be able to simplify prestaging operations by eliminating weighing to gain an exact quantity in each 880-lb increment, relying instead on an internal fill line of the 880-lbs containers.

Figure 1: Recommended Cordon for Magazine 2432 - Equates to a K-factor of K134



Figure 2: Recommended Cordon Magazine 2471 - Equates to a K-factor of K127



Figure 3: Recommended Cordon Magazine 505

