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TEAE-MS

6 May 2015

MEMORANDUM FOR Program Director, Main Battle Tank Systems (SFAE-GCS-MBTS-Q), 6501 East Eleven Mile Road, Warren, MI 48397-5000

SUBJECT: Safety Confirmation for the Coaxial Machinegun Catch Bag for Use in Abrams Tanks Provided for Fielding

1. References.

- a. MIL-STD-882E, Department of Defense (DOD), Standard Practice, System Safety, 11 May 2012.
- b. DOD Instruction 5000.02, Operation of the Defense Acquisition System, 7 January 2015.
- c. U.S. Army Test and Evaluation Command (ATEC) PAM 73-1 (Volume 1 System Test and Evaluation Procedures), 9 July 2013.
- d. AR 700-142 (Type Classification, Materiel Release, Fielding, and Transfer), Headquarters Department of the Army, 17 January 2013.
- e. Technical Manual (TM) 9-2350-388-XX series, Tank, Combat, Full-Track, 120mm Gun, M1A2 (2350-01-328-5964) (EIC: AAF), General Abrams, various dates.
- f. TM 9-2350-264-XX series, Tank, Combat, Full-Track, 120mm Gun, M1A1 (2350-01-087-1095), General Abrams, various dates.
- g. Safety Assessment Report (SAR) for the Coaxial Machine Gun Spent Brass Bag for Tank, Combat, Full Tracked, 120MM Gun, M1A1, Program Manager, Tank Systems, Armor and Fire Support Systems, Marine Corps System Command, 15 October 2010.
- h. Memorandum, Program Manager Tank Systems, Armor and Fire Support Systems, Marine Corps System Command (RDAR-WSF-D), 23 March 2011, subject: Test documentation on new Spent Brass Catcher Bag Assembly, PN 13028028, for use on Coaxial Weapon Installation, PN 12304663, on all Abrams platform vehicles.

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(Test and Evaluation), May 2015.

Other requests for this document shall be referred to PD MBTS.

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i. Briefing, Maneuver Center of Excellence (MCoE) (ATZB-CIH), subject: Spent Brass Bag Assessment, Abrams – Gunner’s Coax 7.62, APG, Aberdeen, 3 November 2009.

2. Executive Summary. This Safety Confirmation for the Coaxial Machinegun Catch Bag for use in Abrams tanks is provided for Fielding. A safety assessment in accordance with (IAW) MIL-STD-882E (reference 1a) has been conducted. The Coaxial Machinegun Catch Bag can be used by trained Soldiers in all Abrams tanks provided the warnings, cautions, and procedures addressed in references 1e and 1f are implemented

3. System Description.

a. All variants of Abrams tanks are equipped with an M240 coaxial machinegun mounted to and designed to fire along a parallel axis to the main weapon. The term coaxial is a misnomer as the weapon line of fire arrangement is actually paraxial. The Abrams coaxial machinegun is fed by a belt of 2,800 rounds of 7.62 mm ammunition that is stored in a box on the left of the main weapon, travels over the top of the main weapon between the recoil mechanism and the breech, and enters the M240 coaxial machinegun from the left side. Spent brass and links are collected in a chute and deposited into a catch box on the right side of the main weapon. The M240 coaxial machinegun can be fired using any of the triggers provided to the gunner and Commander. These triggers can fire the main weapon or the coaxial machinegun, but not both at the same time. Ballistic solutions for the M240 coaxial machinegun are provided in the Abrams fire control system so coaxial machinegun firing can be performed under fully stabilized conditions with relative accuracy.

b. The Coaxial Machinegun Catch Bag is a replacement for the existing sheet metal coaxial machinegun spent brass catch box. The current sheet metal spent brass catch box collects all of the spent brass and links that remain after firing the coaxial machinegun. Figure 1 presents a line drawing of the existing sheet metal coaxial machinegun spent brass catch box. The existing sheet metal spent brass catch box has proven to be easily damaged by contact with stowage or other items as the main weapon elevates. The flexible Coaxial Machinegun Catch Bag should eliminate these accidents. In addition, there is no way for the crew to remove excess spent brass and links if the existing sheet metal spent brass catch box becomes overfilled. Currently, the excess spent brass and links spill all over the turret floor when the crew attempts to empty the box after an overfill situation has been created. The Spent Brass Catch Bag can unzip and allow the crew to remove the spent brass and links while providing a method to control any excess. If needed the Coaxial Machinegun Catch Bag can be completely removed like the existing sheet metal spent brass catch box. Figure 2 presents views of the Coaxial Machinegun Catch Bag.

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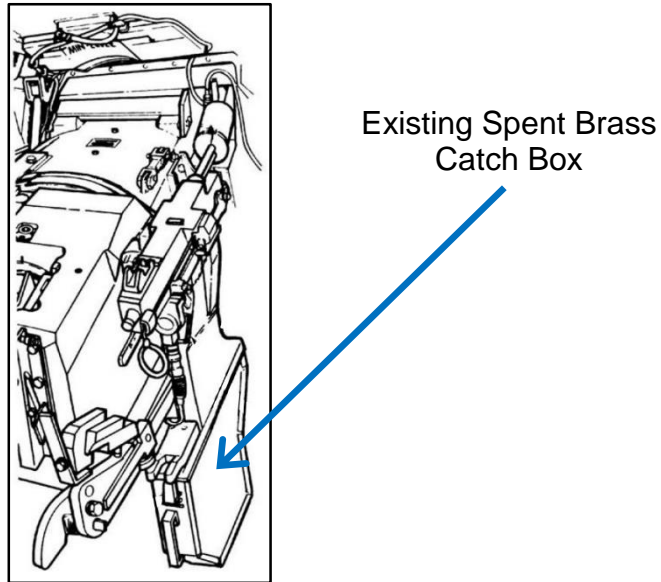


Figure 1. Existing Coaxial Machinegun Spent Brass Catch Box.

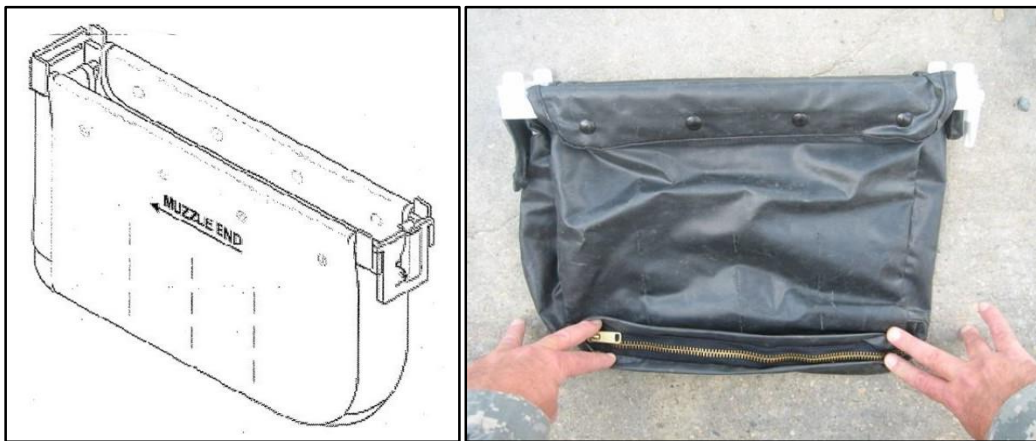


Figure 2. New Coaxial Machinegun Catch Bag.

c. The Spent Brass Catch Bag Assembly, part number 13028028, is made up of two parts; the Spent Brass Catch Fabric Bag, part number 13028029, and the Spent Brass Catch Mount, part number 13028030.

4. Evaluation Limiting Factors. This Safety Confirmation is not an evaluation of system performance and does not address system effectiveness, suitability, or survivability.

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5. Evaluation Results.

a. This Safety Confirmation is derived through Test Manager analysis of the results of testing performed by ATC personnel on 3 November 2009 and a review of the references. The test item does not contain safety significant software as defined by reference 1c. No potential safety hazards were identified during the evaluation.

b. Testing included firing over 4,000 coaxial machinegun rounds. Firing was performed under stationary and moving conditions to assess strength and retention of the new bag. The bag was allowed to become overfilled with spent brass and links to assess the crew's ability to empty the bag. No safety incidents were observed.

6. Conclusions and Recommendations. This Safety Confirmation for the Coaxial Machinegun Catch Bag is provided for Fielding. AEC has conducted a safety assessment to support program risk acceptance.

a. The Coaxial Machinegun Catch Bag can be used by trained Soldiers provided the warnings, cautions, and procedures addressed references 1e and 1f are implemented.

b. If Program Director, Main Battle Tank Systems (PD MBTS) elects to alter the hardware of this system from the configuration defined herein, this Safety Confirmation will no longer be applicable; a new Safety Confirmation will be required. PD MBTS shall coordinate a plan with the ATEC System Team Chair to verify and validate the new configuration through testing and/or analysis.

c. This Safety Confirmation does not negate the need for other safety activities or documents required for materiel release IAW AR 700-142 (reference 1d).

7. The AEC point of contact is Mr. Bill Baetz, TEAE-MS-A, 443-861-9604, DSN 848-9604, or william.a.baetz.civ@mail.mil.

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MARY ELLEN RAYMOND
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