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Director's Comments

TCM ABCT continues to work hard to improve the combat capabilities of the Army's Armored Brigade Combat Teams. Recently, TCM ABCT completed two unit visits with 1st Brigade Combat Team, 3rd Infantry Division, at the Joint Multi-national Readiness Center (JMRC) and the 1st Brigade Combat Team, 34th Infantry Division Minnesota ARNG at the National Training Center (NTC) rotation 16-07.

During our unit visits, our primary function is to collect observations, insights and lessons (OILs), identify impacts that will help mitigate gaps in ABCT formations, and document trends in material, training, leader development, personnel, facilities (DOTMLPF), safety, and sustainment in decisive action training environments. Upon return from our travels, our staff conducts research and analysis to recommend ways ABCTs and TRADOC Centers of Excellence can assist to improve unit effectiveness and readiness.

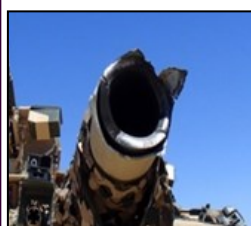
Upcoming unit engagements include NTC rotations 16-08 & 16-09. TCM-ABCT will continue to work as the user representative to DA for the ABCT community. We look forward to providing OILs and Tactics, Techniques, and Procedures (TTP) collected during this next year. As always, TCM-ABCT is here to serve you. Do not hesitate to contact me or my team for assistance. VOX MILITIS!

Abrams Gun Tube Fractures, Bulge, and Flarebacks

The 120mm main gun on the Abrams tank provides lethal kill capabilities against a variety of targets while conducting decisive action. Proper maintenance procedures on the main gun, in addition to sustained Soldier situational awareness of the maneuver area, will ensure continued performance of this system.

Gun tube fractures and bulges (GTF/B) can be defined as changes to the tube structure which reduces required performance of the gun system. Flareback (FB) is defined as introduction of burning gases into the turret of a tank after firing the main gun. Historical data has shown that both events continue to occur with improper maintenance of the equipment with gun tube strikes as being the biggest contributor for such incidents.

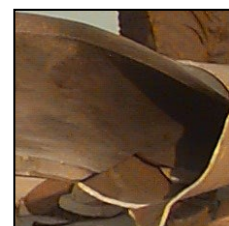
GTF/B are normally caused by obstructions in the tube which prevent required movement of the projectile to exit the muzzle during live fire. This delay in movement forces a rapid buildup of pressures behind the projectile. At some point, this increased pressure will exceed the tube strength resulting in a fracture or bulge. A bulge normally occurs at the muzzle as the pressure builds because of the projectile's delayed movement, and the tube begins to expand. However, before the excessive pressure fractures the tube, the projectile exits the muzzle end resulting in an instant release of this pressure preventing any further damage to the tube. Historically, obstructions have been identified as earthen materials (sand/dirt) entering the muzzle end of the tube resulting in GTF/B. Other obstructions included a Muzzle Boresight Device (MBD) and a cleaning rag from a bell rammer being left in the tube resulting in a GTF.



Earth Obstruction



MBD left in the tube



Rag left in tube



Bell mouth tube

Abrams Gun Tube Fractures, Bulge, and Flarebacks (continued)

TCM-ABCT and Reconnaissance contributes to ABCT and Maintenance procedures outlined in Operator's Technical Manuals (TM-10) by providing guidance in the prevention of GTF/B/FB. Strict adherence to these procedures are critical to ensure proper and safe operation of the Abrams tank armament system. All unit leaders must enforce correct application of these procedures as stated in the appropriate TM's.

Additionally, leaders can develop tactics, techniques and procedures to further prevent GTF/B. Examples might include:

- a. For Prevention of Gun Tube Fractures and Bulge
 - Drivers observe terrain and alert the crew of potential gun tube strikes.
 - Loaders check gun tubes as often as possible to ensure no obstructions exist. Be aware of terrain and environmental conditions where earthen debris could enter the gun tube. Advise crew when negotiating terrain which requires elevation of the gun to avoid strikes such as when moving through a breach lane and hilly terrain. In a defensive position, ensure the gun tube is clear to the front and sides of the vehicles scanning area. Keep the muzzle plug on the tube as the mission allows.
 - Gunners observations are limited, but be aware of terrain which could result in a gun tube strike. When moving, ensure the gun is at "0" degrees elevation or higher while maintaining pressure on the gunner's power control handles. This will ensure the gun does not go below the hull and strike earthen material.
 - Tank Commanders add to the overall crew terrain situational awareness for potential gun tube strike areas. When possible, ensure the main gun is elevated when moving through uneven terrain. In a defensive battle position, ensure left and right scanning areas are clear of any obstructions.
 - When boresighting the tank, ensure the red warning flag is attached to the MBD. This flag is designed to warn the crew and others in the immediate area of the MBD presence at the muzzle end. On live fire ranges, tower and safety personnel must verify MBD's are removed from the muzzle prior to live fire.
 - Other personnel involved in live fire training should remind tank crews of potential gun tube strike terrain/locations, and add this information to range safety briefings. Support personnel at breach locations must pay attention to vehicles moving through these areas, and be observant for potential or actual gun tube strikes.

- b. For prevention of flare back
 - Drivers must be aware of muzzle discharge during live fire which may include a flare out. While a flare out does not necessarily indicate an imminent flareback, it could be an indicator of necessary gun tube maintenance.
 - Loaders must ensure ammunition is serviceable and gun system is clean and fully operational. Never immediately clear the breech opening if the aft cap does not automatically eject after firing; always follow the required wait periods in the TM.
 - Gunners must verify the correct recoil cam setting on the right side of the gun before the start of live fire. Setting should be as slow "S" as possible
 - Tank commanders must ensure all maintenance procedures have been completed to standards and crew

The primary causes of a flareback are an improperly maintained bore evacuator, incorrect operating cam setting, or unserviceable ammunition.



Flareback while attempting to load a subsequent round



Flareback under the stub base deflector tray

Path to Low Profile CROWS on the M1A2 Abrams



Manually firing the Low Profile CROWS during user testing at APG, MD

There has been a lot going on with the commander's weapon station on the M1A2 Abrams over the past few years, and there is some confusion on the systems status and what the path forward is. In an effort to dispel rumors and eliminate confusion, this article will cover three key areas: history, requirements and testing.

The Low Profile CROWS (LP CROWS) is certainly not a 100% solution, but it is a vast improvement over CROWS II and a solution that allows the Abrams Tank Commander (TC) to fight their tank, maintain good all-around visibility while providing an under armor

capability that is stabilized with thermal sights, and allows the TC to fire the weapon manually while limiting exposure. Based upon time and costs, it was the best solution to get the capability to the warfighter quickly and fix the field of view (FOV) problems. The only change to the weapon system were above the turret roof; the interface inside the turret remain the same. Once LP CROWS is fielded it is our intent to continue to improve it using planned product improvements over time. A product improvement Integrated Product Team (IPT) has been established by PM Abrams and the

first change will be modifying the control grip so the functions, buttons and muscle memory more closely map to the tank commander's handle (TCH). This modification is intended to be implemented in FY18.

The current fielding schedule will see the first unit equipped with LP CROWS via a field modification in Q3 FY17 and will be fielded at a rate of two BCTs per year, increasing to three in late FY19 as M1A2 SEPv3 begin fielding with the system off the production line.

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History of the CROWS on the Abrams



“ABCTs requested urban survivability kits for the Abrams due to casualties related to operating in an urban environment.”

In June 2005 an Operational Needs Statement (ONS) was issued by 1st Armored Division that requested an urban survivability kit for the Abrams due to casualties related to operating in an urban environment. A component of that kit was a request for a remote weapon station (RWS) for the Abrams tank. In November of that same year, an Army Resource Requirements Board (AR2B) approved the request and development of the Abrams Tank Urban Survivability Kit (TUSK) began.

At that time the Common Remotely Operated Weapon Station (CROWS) had an approved requirements document and was already

in development. It was determined that CROWS would be the solution to meet the RWS need and allow the capability to be quickly fielded to units in Iraq.

In 2010 Army leaders determined that a remote weapon capability was an enduring requirement for the Abrams and directed CROWS to be fielded across the M1A2 fleet. Fielding began in 2011 with the 3rd Brigade, 3rd Infantry Division at Ft. Benning. Initial feedback from 3-3ID and follow on units confirmed what was previously identified through user testing; that the capability was needed but the size of the CROWS II system was too

large and caused field of view (FOV) problems for the tank commander. That same year, Product Manager (PdM) Abrams funded a size reduction study that resulted in a decision by the MCoE and the Armor School to endorse a plan to replace CROWS II with the Low Profile CROWS (LP CROWS). In December of 2013 at the recommendation from the MCoE, PdM Abrams suspended fielding of the CROWS II after approximately 880 M1A2 tanks had CROWS II installed. A contract was awarded to Kongsberg for LP CROWS as a product improvement primarily focused on reducing the height of the CROWS II.

CROWS Requirements from the Field

We are often asked why a more integrated solution like the M1A1 couldn't have been used, or why was CROWS chosen as the solution. Without going into great detail about the Army Acquisition process, it essentially boils down to having a valid approved requirement.

The acquisition process and federal law requires an approved requirement before a product manager may legally spend money on any material acquisition.

Unfortunately, the most current Abrams requirements document does not allow for an integrated commander's weapon on the M1A2. However, at the time of the ONS, the Maneuver Support Center of Excellence (MSCoE) had an approved requirements document for a remote weapon station and the Abrams was listed as an objective platform. This document is what legally allowed the Abrams product manager to meet the urgent need of the ONS from Iraq for a RWS on the M1A2 Abrams. The RWS

ended up being the Kongsberg designed Common Remotely Operated Weapon Station (CROWS). Changing or updating the Abrams requirement wasn't an option due to the time required to approve a requirements change and speed was of the essence. The Army was taking casualties on Abrams and we needed to get a solution to theater as quick as possible.



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Testing of Low Profile CROWS (LP CROWS)



LP CROWS Mounted on M1A2 Abrams

Over the past year TCM ABCT has led three user tests to validate the LP CROWS. Soldiers from Ft. Hood, Ft. Riley and Ft. Benning have participated and a synopsis of each test is below. The following link is a Roll Up report of all LP CROWS User Juries conducted. [LP CROWS User Jury Roll Up](#) July 2015 - A Non-Firing User Jury (UJ) was conducted at APG, MD using four Soldiers from the MCoE and Ft. Hood, TX. The user jury focused on static crew level tasks and a 3-kilometer driving course to assess visibility in all postures. The Soldiers felt the FOV was significantly improved in all postures but recommended we continue to seek further improvements in FOV. [LP CROWS Non-Firing User Jury](#) September 2015 - A non-firing User Excursion (UE) was conducted at Ft. Hood, TX. Fourteen tank commanders participated in the day one static demonstration and six participated in a 5-kilometer cross-country and MOUT maneuver lane. 100% of participants indicated the LP CROWS improved the TCs field of view (FOV) and provided safer command and control of the tank over CROWS II. All participants agreed that LP CROWS improves the FOV over CROWS II and believed the improvements were good enough to move forward with LP CROWS production; 92% of those considered the improvement enough to safely command and control the tank. [LP CROWS Ft. Hood User Excursion Report](#)

December 2015 - A live fire UJ was conducted at APG, MD using four Soldiers from the MCoE and Ft. Riley, KS. The Soldiers fired over 80 different scenarios (~18,000 rounds) at various levels of difficulty. There were no significant issues identified and no degradation to performance. All Soldiers indicated they would prefer the LP CROWS over the CROWS II and the FLEX .50 caliber machine gun. They also felt manual firing with the LP CROWS was greatly improved over the CROWS II and was much better than the FLEX .50. There were some minor issues identified, many of which were carried over from the CROWS II and are identified in the full report. [LP CROWS Live Fire User Jury](#)

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“All Soldiers indicated they would prefer the LP CROWS over the CROWS II and the FLEX .50 caliber machine gun.”

Observations from the Field: Anakonda-16

TCM ABCT's training and leader development lead recently teamed with the Center for Army Lessons Learned and the Command and General Staff College to form a collection and analysis team that journeyed to Poland to observe Exercise Anakonda 2016 (ANI6). ANI6 was a Polish national exercise that sought to train, exercise and integrate Polish national command and force structures into an allied, joint, multinational environment. The exercise involved more than 31,000 participants from 24 nations, including Albania, Bulgaria, Canada, Croatia, Czech Republic, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, the United Kingdom and the United States.

The 1st Armored Brigade Combat Team, 3rd Infantry Division has been the U.S. Army's Regionally Aligned Force assigned to USEUCOM for the past two years, and participated in ANI6 as part of its' mission set. Deployed to EUCOM since early April, the brigade operates on the European Activity Set of equipment, conducting combined arms

maneuver training alongside host nation military forces across eight countries in support of Operation Atlantic Resolve. A major objective for the brigade is to continue to build joint and multinational interoperability capabilities, and further demonstrate U.S. commitment to partnership training and capacity building for our NATO partners. Since 2014, CONUS-based Armored Brigade Combat Teams (ABCTs) have deployed to EUCOM to fulfill regional force requirements, and with each iteration there has been mission expansion, most notably the number of countries throughout Central and Eastern Europe in which forces are dispersed, and the mission sets that are assigned to them. Participating in ANI6 provided a rare opportunity for I/3ID to prepare itself, an attached Army National Guard (ARNG) fire support unit, and several multinational military units and Polish governmental elements to prepare multiple large and small caliber ranges for training and live fire activities, culminating in a Combined Arms Live Fire Exercise (CALFX). The Training Support Activity-Europe (TSAE) from Grafenwoehr, Germany also provided range support services.

The brigade's assigned Master Gunners for both Abrams and Bradley platforms played an integral role in range development. This was the first time that U.S. forces had conducted large caliber live fire activities in Poland, and available range facilities at Drawsko Pomorskie Training Area were in low stages of preparedness. To get them into a condition to host a large scale CALFX, several barriers needed to be overcome. They included:

- Of the seven nations with forces participating in live fire, the German, Dutch, and U.S. were the only nations with system master gunners or equivalents. This created myriad issues pertaining to standardized Surface Danger Zones (SDZs) as nations without master gunners had no one to provide technical input on weapons' capabilities.
- Creation of SDZs that incorporated all weapons to be fired was challenging. Polish ranges are generally smaller, and U.S. standard SDZs were in some cases larger than the available land. U.S. business rules regarding safe peripheral angles and distances have higher standards and less risk, especially for lateral safe zones for adjacent vehicles and dismounts (e.g. petals from tank main gun rounds), and procedures for handling duds and UXOs.
- Select multi-national partners arrived with service ammunition only; this affected adjacent ranges and placement of tactical assembly areas as ricochets have the ability to travel greater distances, potentially outside range fans and SDZs.



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Observations from the Field: Anakonda-16 (continued)



- Host nation targetry already on-hand was not to U.S. standard or specifications in scale (size, dimension) or shape. I/31D provided Polish range support personnel with the required dimensions and drawings illustrating correct sizes and shapes, and they were constructed for use.
- Polish vehicular targets are smaller and their associated lifting devices have less capability than U.S. devices. TSAE provided a number of appropriate Standard Armor Target (SAT) and Standard Infantry Target (SIT) lifting devices, but more would have been helpful; there were only enough target lifters and Radio Frequency

(RF) target control devices to support one range at a time. There were few/no problems with target hit sensors. Targets were not heated; reverse-polarity tape on the target periphery was used.

- Batteries for target lifters were limited in supply. Each lifter required two (2) large car-type/sized batteries. Fully charged batteries had an acceptable number of hours of operating capabilities, but to conduct full dry runs one day and expect them to retain power for live runs the next day was outside their capability. This required a time consuming exchange with a rather large range detail during mandatory down time.
- MN -vs- U.S. risk mitigation for unreliable ammunition (mostly MN shoulder-fired-munitions), duds and UXOs was planned for extensively. MN standards for safety are much more liberal, for example, they will closely bypass an unexploded mine clearing line charge and continue to use the lane before disposal.

The I/31D brigade Master Gunners drew unique experiences from their involvement and participation in preparing ranges for this event. They were encouraged to document their best practices and forward to the Master Gunner Course branch chief at Fort Benning, Georgia to convey to future course students.

Another area of concern lies with Training Aides, Devices, Simulations and Simulators (TADSS) in support of ABCT operations executing EUCOM RAF mission requirements. The wide-spread continental dispersion of its forces puts a strain on the ability to have adequate mobile 'system' TADSS support at the point of need for combat vehicle crewmen in more than one country at a time, primarily the Bradley Advanced Training System (BATS, or COFT-SA/COFT-E) and the Abrams Advanced Gunnery Training System (AGTS); secondarily, laser-based TADSS (MILES or CV-TESS).

Abrams and Bradley crew readiness standards (IAW TC 3-20.31, Training and Qualification, Crew) dictate that crews qualify their systems every twelve (12) months. Due to very quick turn times between their redeployment from EUCOM in OCT/NOV 2015, and subsequent deployment back to EUCOM in MAR/APR 2016, some elements in I/31D deployed to EUCOM in April 2016 still needing to qualify their systems; this was completed at the Joint Multi-national Training Center (JMTC) at Grafenwoehr, Germany. Still other elements will need to qualify/re-qualify crews again prior to redeployment in October. This will be problematic due to the unavailability of crew simulators and gaming suites for Table II, and laser-based devices for Table III in more than one country across the AOR. Additionally, I/31D will have to meet crew/system readiness requirements for a very quick deployment to NTC Rotation I7-05 in mid-March 2017.

There are mobile units (one each) of BATS and AGTS positioned in theater to support gunnery training of the RAF unit. They are normally positioned at JMTC to support ABCT elements executing gunnery training there. When requested by the RAF unit, the system devices are re-located to a priority location in the Baltic/Balkan nations to support subsequent or separate unit gunnery training activities.

Prior to their most recent deployment, I/31D forecasted that additional simulators would be required to meet crew readiness levels while they were deployed, and submitted a request thru HQ-31D, and FORSCOM to transport one Bradley and one Abrams trainer to EUCOM. The request made its way through decision approval channels, but instead of shipping unit assigned devices from Fort Stewart, Georgia, the Program Executive Office for Simulation, Training and Instrumentation (PEO-STRI) as the material provider arranged for trainers available from another CONUS location to be used, and pre-positioned them in Orlando. As of this writing, the trainers had not shipped to EUCOM, likely due to resource constraints.

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Observations from the Field: Anakonda-16 (continued)

As the next CONUS-based ABCT to deploy in support of the EUCOM RAF requirement, 3/4ID from Fort Carson, CO has been advised by the Training Support Services (TSS) community to plan for either shipping their own Bradley trainer (BATS) from FCCO, or perhaps one that PEO-STR1 has available. For an additional Abrams trainer (AGTS), PdM Abrams has agreed to have one fielded in EU-COM by 1QFY17. If both of these measures are completed, 3/4ID should have adequate resources to train and sustain qualified crews.

Finally, we interviewed several leaders about the European Activity Set (EAS), asking them to assess maintenance, sustainment, and



future readiness. This is the fifth time since the spring of 2014 that the EAS has been drawn and exercised under very aggressive operations tempo (OPTEMPO) requirements. The amount of time between RAF rotations for in-theater maintenance personnel working at fixed sites, some of which are yet to reach full operational capability, to perform scheduled services remains an important equipment readiness challenge. Leaders in 1/3ID said that the equipment was in good shape when they drew it due to good inspection and parts ordering procedures when they last turned it in, and that current replacement parts flow to elements in theater, particularly the Baltic and Balkan locations, has improved with each deployment iteration. They also disclosed that they were able to execute a basic quarterly/semi-annual service schedule on identified platforms.

At the conclusion of 1/3ID's rotation in October 2016, the complete EAS will enter a period of needed recovery to enable systems to undergo scheduled maintenance services and procedures, complete painting in woodland camouflage for platforms not yet painted, and prepared for short or long term storage. Between previous rotations, maintenance personnel at the EAS sites have averaged 60 work days between turn in and the next issue. Within this average 60 day period, they have been required to perform services, repairs and inventories on a BCT (+) set of equipment that a full unit would normally have a year to complete. This has created strains on the supply system, which works as designed, but was not designed to support the operational tempo of repetitive units on repetitive missions using the EAS.

Army leadership has realized that continuing similar OPTEMPO on the EAS could limit its future readiness capability and capacity. 3/4ID from Fort Carson, Colorado is the next scheduled CONUS-based ABCT to fulfill USEUCOM RAF mission requirements, and will ship its home station equipment set from Fort Carson in its entirety for use in theater. 3/4ID will also be the first ABCT to conduct a nine month 'heel-to-toe' rotation in USEUCOM, similar to what various COMPO-I ABCTs have been conducting in Kuwait since ~2011, and in Korea since 2015.

As FY-16 enters its fourth quarter, the EAS will fulfill its mission requirements for Cold Response, Anakonda 16, and Combine Resolve VII, and be turned in at Grafenwoehr, Mannheim, Lithuania, Bulgaria, and Romania. The Army's plan by the beginning of FY-18 is to transfer the EAS to Army Prepositioned Stock, and designate it as APS-2 with depot level storage at two planned locations in Germany.

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Combat Vehicle Tactical Engagement Simulation System

As the Army improves TADSS training and After Action Review (AAR) capabilities with the addition of the Combat Vehicle Tactical Engagement Simulation System (CVTESS) and the Crew Module Unit Recorder (CMUR), Bradley and Abrams TADSS trainers have noticed some trends that units should be aware of. When properly installed on the Bradley and the Abrams these devices are extremely effective, however, when errors occur and troubleshooting is required, crews can be confused by procedures required to get the systems working correctly.

When using CVTESS crews should remember that the life of the battery in the wireless detector units is about four full days (100 hours). If the system begins to malfunction prior to that, the first thing to check is the control module. Begin by scrolling down the left side menu of the control module to 'TE' (Test) and select "Enter." Next scroll the top row of options, and view each of the available selections; 'EL' for Error List, 'WU' for Wireless Units, and 'BS' for Battery Status. There are also selections for 'IS', 'IV', and 'OV', however the selections crews need to be most familiar with are the first three. These give crews all the information needed to reduce troubleshooting time by pinpointing exactly what the malfunction is.

When Bradley ODS-SA crew's dry-fire the TOW with CVTESS connected and it doesn't work, this malfunction can be overcome by a simple, temporary workaround. As described above, use the control module to scroll to 'TE' and select 'Enter.' From there scroll across the top row to 'OV' (output vehicle) and select 'Enter.' Next, scroll down to the last selection which is 'Weapon Reset' and select 'Enter' two times, then select 'ESC' two times. The TOW should now fire in dry-fire mode. Crews must remember that CVTESS must be turned on prior to the turret power, and if CVTESS is turned off for any reason, crews must turn off the turret power prior to turning CVTESS on again.

Bradley crews are still having difficulty making sure the connections to the external training device interface port are secure. The mounting location is tight and difficult to access, but secure cable connections can be made by hand using a method our staff has named the 'push and wiggle' method. While tightening the connector, the crewmember should 'push' and 'wiggle' the connector, then turn the locknut and repeat until there is no gap between the locknut and the hull. If the 'MCD' light does not come on, your system will not work properly.

Bradley crews are also reminded that when using the CMUR, if the ramp switch is 'open' (ramp down), power to the CMUR will be interrupted because it is connected to a dome light, and the CMUR will need to be powered up again once the ramp switch is 'closed' (ramp up). TCM-ABCT is working with the vendor and the Program Managers office to change the connection for power on the CMUR from the dome light to the external training device interface port (ETDIP) on the J4.

Abrams crews using the CMUR on Digital Range Training System (DRTS) equipped Digital Multi-purpose Range Complex's (DMPRC's) have experienced various reported problems. In particular, there have been instances where the Commanders Display Unit Thru-Site Video (CDU-TSV) cable is not properly installed, which causes faults resulting in a fuzzy picture, or lines across the screen. Mitigation steps for this situation are:

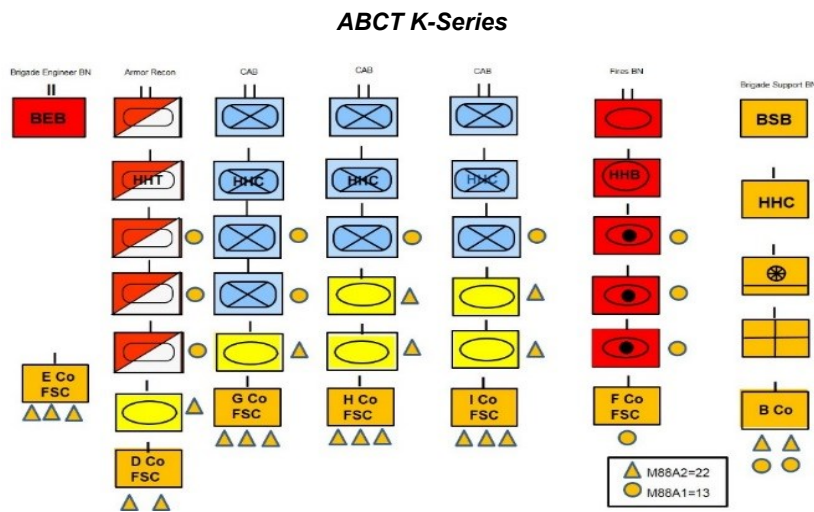
- a. De-install the system.
- b. Conduct a turret diagnostic test to clear the system of all faults.
- c. Turn off vehicle power.
- d. Re-Install the CDU cable properly.

Note: This connection is very difficult to secure because it is a blind, 90 degree connection behind the Improved CDU. TCM-ABCT's Abrams representative is in the process of fixing the issue of having to install training devices to the Tanks Line Replaceable Units. In the future, a new training port in the bustle rack will eliminate this procedure.



MCD light on Bradley System Control Box

M88 HERCULES Operational Modifications (OPMODS) & ABCT Pure Fleet



During The M88 Heavy Equipment Recovery Combat Utility Lift Evacuation System (HERCULES) is the ABCT's primary recovery asset that has proven itself invaluable in past decades. As with most of our combat systems, they are challenged to keep up with the rapid technological advancements of the civilian markets as well as the ever evolving demands of the force influenced by past, present, and future adversaries. In 1998, lessons learned from Desert Storm influenced the revision of the M88 requirements document to meet the single vehicle recovery needs of the ABCTs. The past decade of war has driven another update to the M88 requirement document to retain this

single vehicle recovery capability. A capability that has been lost due to the Abrams tank growth in weight. A weight growth that will save lives when they encounter the next adversary on the battlefield. Previously, the M88 capability shortcomings may have been an acceptable risk with the lighter variants of the tank, however, these risks will no longer be acceptable with the heavier variants.

The M88 team is conducting the upfront analysis to determine what engineering and design changes will be needed to ensure the ground commander will have single vehicle recovery. The program office has a good idea of what these changes will entail and have requested the appropriate funding to execute the program but the process will not be a short one; a targeted first unit equipping of this capability is planned in FY25. In the short term, the ABCT fleet of M88s will undergo two other initiatives that will help Soldiers complete their recovery and maintenance missions.

The first is an ABCT pure fleet of M88A2s. Currently, ABCTs have a mixed fleet of M88A1s and M88A2s but their vehicles are being upgraded to a M88A2 pure fleet which in itself is a 10 ton increase in capability. This initiative is ongoing and your unit may have already received their converted recovery vehicles but the entire ABCTs fleet will be complete by FY21. The second initiative is also ongoing and involves modifications to the existing M88 fleet of vehicles. These major modifications include improved storage, increase situational awareness with a Drivers Vision Enhancer (DVE) & Blue Force Tracker (BFT) integration. There is also improved lighting (internal and external) providing workspace clarity as well as an integrated AFES that improves protection for the Soldier. These modifications should be completed by the end of FY17.

To check out these modifications for yourself click on the following link. [M88 MWO overview](#)

TCM ABCT SIMEX update

The TCM ABCT Futures section continues to prepare for a Simulation Exercise (SIMEX) scheduled from 25 to 29 July at the Maneuver Battle Lab at Fort Benning. During the SIMEX the Futures section will compare the current organization of the ABCT against several possible changes to the formation and equipment and assess improvements in the ABCT's ability to conduct Joint Combined Arms Maneuver. Additionally, the Futures section completed the Functional Needs Analysis (FNA) portion of the FY16 Capabilities Needs Analysis (CNA) which highlighted the formation's Capability Gaps. The section is currently identifying Recommended Solution Approaches (RSAs) to help mitigate the identified gaps.

The Armored Multi-Purpose Vehicle (AMPV)

The Armored Multi-Purpose Vehicle (AMPV) program remains on track to replace the M113 family of vehicles. The program completed its Critical Design Review (CDR) June 16. This event formally begins prototype vehicle manufacture and will provide 29 AMPVs for developmental testing and logistical demonstrations to verify each variant meets Army requirements. TCM ABCT continues to assist PM AMPV, MCoE's Mounted Requirements Division, Directorate of Training and Doctrine, the Army Evaluation Command and supporting TRADOC Centers of Excellence in all development activities to ensure units ABCTs are fielded five highly survivable variants with the mobility to support all six warfighting functions, in all ABCT environments. These specific variants and their capabilities are highlighted in the paragraphs below:

- The XMI283 General Purpose (GP) vehicle replaces the M113A3 and provides protected transport for Soldiers while maneuvering with combat vehicles in support of ABCT tactical operations. A main function of the GP vehicle is to support First Sergeant (ISG) tasks, such as Logistics Package (LOGPAC) escort, emergency resupply and casualty evacuation (CASEVAC). In the CASEVAC role, the GP vehicle is reconfigurable to accommodate one litter, without internal interference and without displacing the crew or passengers. The GP mounts can a Caliber .50, M2A1 for self-defense and provides seating for six assigned personnel (driver, commander, and four additional occupants).
- The XMI284 Medical Evacuation (ME) vehicle replaces the M113A3 medical evacuation vehicle and integrates medical support into maneuver unit operations by providing the protected mobility and immediate casualty medical care required in ABCT tactical environments. The ME vehicle capabilities include emergency care enroute, in a protected, environmentally controlled compartment, enhanced by specific lighting and a specialized medical mission equipment package. The ME vehicle supports a crew of three and is capable of transporting four litter casualties or six ambulatory casualties (or a combination thereof).
- The XMI285 Medical Treatment (MT) carrier replaces the M577A3. The AMPV MT integrates medical treatment support into the ABCT by providing greater survivability, mobility and force protection to conduct required medical tasks in ABCT operational environments. The MT vehicle provides a specifically designed, environmentally controlled, area for the unit surgeon, physician's assistant and medical staff to provide immediate medical care of casualties or life stabilizing triage for casualties prior to evacuation to more capable hospital facilities. The MT carrier can transport a crew of four (4) and provide adequate space for one litter patient with full body access inside the vehicle.
- The XMI286 Mission Command (MCmd) vehicle replaces the M1068A3 command post. The MCmd vehicle provides advanced C2 (voice & data) and analysis tools that are a main component of the ABCT formation network. The MCmd vehicle's improved mobility and survivability allows it to support Commanders' operational needs at any location in the operational area. It is capable of integrating the specific communications equipment required by mission role in accordance with network system architectures, as approved by Army G-3/5/7. The MCmd vehicle provides Line of Sight (LOS), Non-Line of Sight (NLOS) and long-range Beyond Line of Sight (BLOS) voice and data communication capabilities. The MCmd vehicle is interoperable with current and future communications systems to insure a common operating picture and connectivity across all echelons throughout the area of operations. The MCmd crew consist of commander, driver. The vehicle also provides up to three workstations with Mission Equipment Packages (MEP) that support all warfighting functions.
- The XMI287 Mortar Carrier (MC) replaces the M1064A3, 120 millimeter Mortar Carrier and provides immediate, responsive, heavy mortar fire, utilizing M121 mortar system, during fast-paced, offensive, ABCT operations. The MC vehicle also provides accurate and lethal high-angle fires to support operations in complex terrain, urban environments and provides the capability to attack enemy forces in defilade or in reverse-slope positions. The MC vehicle accommodates a mortar squad of four Soldiers and incorporates the existing M1064A3 MEP, to include the .50 caliber M2A1.

ABCTs' mobility and survivability are significantly enhanced with the AMPV Family of Vehicles (FoV). Replacing the M113 FoV remains one of the Army's top priorities with First Unit Equipped (FUE) scheduled for FY21. TCM ABCT in conjunction with all major stakeholders, the Acquisition and Test communities will ensure that these capabilities meet ABCT operational requirements.

AMPV & Network Update:

TCM-ABCT and Reconnaissance contributes to ABCT and reconnaissance formation combat effectiveness through our contributions to the development of the Armored Multipurpose Vehicle (AMPV), through our efforts to identify DOTMLPF capability gaps in the structure of the ABCT, and through our efforts with industry to accelerate technologies that allow us to field combat platforms with significantly increased power generation capability, integrated Active Protection Systems (APS), directed-energy weapons systems, and increased protection by means of composite materials and electromagnetic armor.

In the near-term, development and fielding of the AMPV addresses the ABCT's need to enhance friendly force freedom of action, ability to shape terrain, denial of enemy movement, and helps ABCT organizations achieve situational understanding which enables defeat of enemy organizations across the ROMO, as identified within AWfC 15 and learning demands 15.6 and 15.7. The AMPV replaces the M113 family of vehicles on a one-for-one basis and applies to Mission Command, Medical Evacuation and Treatment, Mortar Carriers, and General Purpose variants. Our initiatives include expanding the role of the AMPV as a standard engineer vehicle and creating a company-level mission command on the move capability, which will place mission command systems in an appropriate command and control vehicle, rather than into the turret of a combat vehicle and subjecting the vehicle commander to cognitive overload.

The K-series TO&E limits the ABCT's ability to gain overmatch, retain the initiative, and maintain freedom of movement during joint combined arms maneuver, and addresses gaps derived from learning demands 15.4 and 15.5. TCM-ABCT is addressing this in the near term through our efforts to return two infantry companies to the ABCT and adding a tank company; we believe the addition of these three companies will allow the ABCT to generate sufficient combat power to fight and win.

In the far term, TCM-ABCT continues to work towards identifying, understanding, and [accelerating](#) technologies that will facilitate development of a new armored combat vehicle with significantly increased power generation capability, integrated APS, directed-energy weapons systems, and increased protection with composite materials and electromagnetic armor. We believe we need to move away from incremental upgrades that apply to all ABCTs, and instead use Engineer Change Proposals (ECPs) for full capability return for select geographically aligned units facing the most dangerous threat. We believe this will allow resources to be focused on technology acceleration and operationalizing desired capabilities for combat vehicle integration by FY 2030. These technologies are necessary for the ABCT to increase survivability and lethality, given increases in kinetic energy and chemical energy weapons used by our potential adversaries and addresses gaps derived from learning demands 15.4 and 15.5.

Evaluation of Mission Essential Task List (METL) Tasks:

For over a decade like units have operated with a wide range of METL to meet mission requirements. External evaluation criteria for determining training status (T/P/U) and USR reporting of METL proficiency has not been a requirement. Units and Combat Training Centers (CTCs) have documented performance but have not captured METL proficiency.

On 20 June 2016 the Army adopted a Standard Decisive Action METL for like type units and echelons down through company level, to enable commanders to more accurately and objectively build and assess training readiness, to ensure that like units are reporting readiness, and to ensure that like units are reporting readiness on the same capabilities. The unit's METL represents the fundamental collective tasks the unit was designed to perform for decisive action during Unified Land Operations. Units can begin to apply these Standard METL immediately to focus their training. Approved METL will be promulgated using the Army Training Network, the Digital Training Management System, and included in Department of the Army Pam 350-1 when published. AMWG 16-03 METLs will be incorporated in NetUSR for readiness reporting units no later than November 2016. The approval memorandum from HQDA G3/5/7 is at <https://www.milsuite.mil/book/docs/DOC-291284>

TCM-ABCT in support of the Maneuver Center of Excellence (MCoE) Directorate of Training and Doctrine (DOTD) are revising collective tasks for each METL task. Each METL task contains supporting collective tasks, and each collective task contains supporting individual tasks. Our team is complete reviewing >80% of these tasks. Collective task standards in T&EOs are more challenging and include: a required percentage of leaders and Soldier present for training, conditions for night and live fire environments, and quantitative performance metrics. Read the entire article at: <https://www.milsuite.mil/book/docs/DOC-292751>

VOX MILITIS "The Voice of the Soldier"

The TRADOC Capability Manager-Armored Brigade Combat Team (TCM-ABCT) acts as the TRADOC conduit and user representative for FORSCOM and the ABCT communities. We perform ABCT GAP analysis across Doctrine, Organization, Training, Material, Leadership & Professional Development, Personnel and Facilities (DOTMLPF) through data collection and post-rotation interviews (PRI) with ABCTs following return from deployments and Combat Training Center (CTC) rotations.

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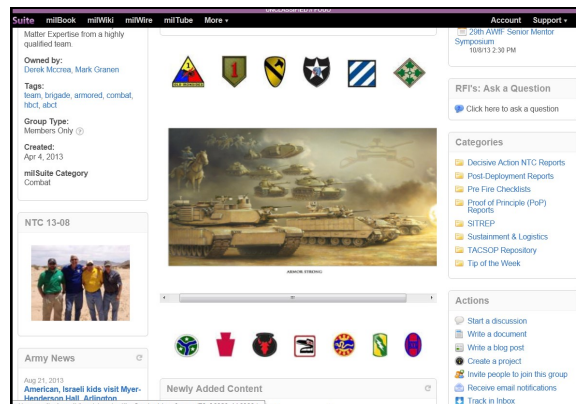
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Upcoming ABCT Events:

AWff SMS:
TBD September

Unit Visit:
NTC 16-08 & 16-09

ABCT Milestones



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