



TCM ABCT Abrams Update



Who We Are



ATCM
MAJ Robert
Brown

Test & Requirements
Robert Hay (cont)

TADSS
Tom Tysor (cont)

Master Gunner
SFC R. Davis



Mission



The mission of the Abrams team is to ensure the user is represented in all Abrams activities and to provide Abrams SME support to the TCM ABCT and PM Abrams.

This is accomplished by participation in many Integrated Product Teams (IPT), working groups, user assessments, user juries, beta tests, unit visits, and actively staying involved at the Armor School.



Key Partners



- PM Abrams
- PM ABCT
- Mounted Requirements Division (MRD)
- Original Equipment Manufacturers (OEMs)
- PEO STRI
- TCM Virtual & TCM Live
- Other PMs as required



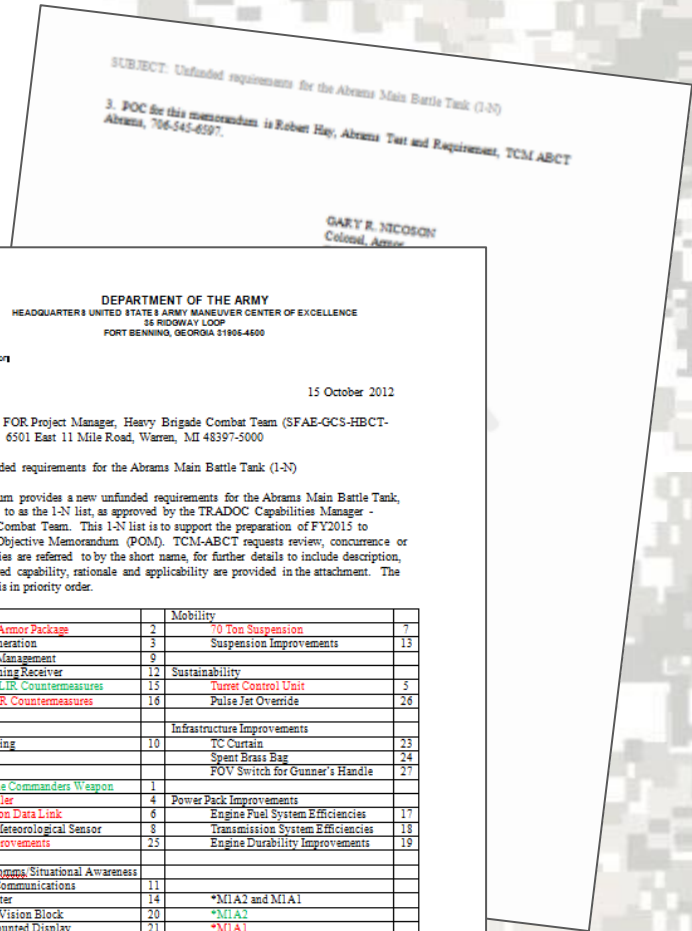


TCM Priorities for Abrams

as of October 2012



- 1) Low Profile Commander's Weapon Station (M1A2)
- 2) Upgraded Armor Package (M1A1)
- 3) Smoke Generation
- 4) Hunter/Killer Capability (M1A1)
- 5) Turret Control Unit (M1A1)
- 6) Ammunition Data Link (M1A1)
- 7) 70 Ton Suspension Improvements (M1A1)
- 8) Ambient Meteorological Sensors
- 9) Signature Management
- 10) Crew Cooling



DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY MANEUVER CENTER OF EXCELLENCE
35 RIDGWAY LOOP
FORT BENNING, GEORGIA 31905-4500

15 October 2012

MEMORANDUM FOR Project Manager, Heavy Brigade Combat Team (SFAE-GCS-HBCT-AB/LTC Brennan), 6501 East 11 Mile Road, Warren, MI 48397-5000

SUBJECT: Unfunded requirements for the Abrams Main Battle Tank (1-3)

1. This memorandum provides a new unfunded requirements for the Abrams Main Battle Tank, commonly referred to as the 1-N list, as approved by the TRADOC Capabilities Manager - Armored Brigade Combat Team. This 1-N list is to support the preparation of FY2015 to FY2019 Program Objective Memorandum (POM). TCM-ABCT requests review, concurrence or comment. All entries are referred to by the short name, for further details to include description, justification, required capability, rationale and applicability are provided in the attachment. The following 1-N list is in priority order.

Survivability		Mobility	
Upgraded Armor Package	2	70 Ton Suspension	7
Smoke Generation	3	Suspension Improvements	13
Signature Management	9		
Laser Warning Receiver	12	Sustainability	
CROWS FLIR Countermeasures	15	Turret Control Unit	5
SCWS FLIR Countermeasures	18	Pulse Jet Override	28
Force Protection		Infrastructure Improvements	
Crew Cooling	10	TC Curtain	23
		Spent Brass Bag	24
Lethality		FOV Switch for Gunner's Handle	27
Low Profile Commander's Weapon	1		
Hunter Killer	4	Power Pack Improvements	
Ammunition Data Link	6	Engine Fuel System Efficiencies	17
Ambient Meteorological Sensor	8	Transmission System Efficiencies	18
SCWS Improvements	25	Engine Durability Improvements	19
Interoperability/Comms/Situational Awareness			
Cordless Communications	11		
Laser Pointer	14	*M1A2 and M1A1	
Heads Up Vision Block	20	*M1A2	
Helmet Mounted Display	21	*M1A1	
360° Situational Awareness	22		

2. Consideration should be given to those technologies that can be applied to both platforms enabling a bigger return on investment. M1A1 should maintain similar capability to the M1A2 as long as there is a two variant fleet.



Abrams ECP



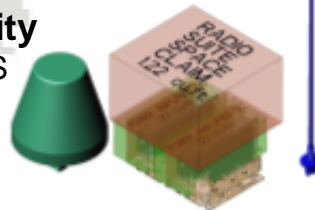
Benefits

- Additional electrical power margin (ECP 1 adds 7840 watts) supports power demands of future technologies
- Enables network upgrades, improved radios and situational awareness, providing joint interoperability
- Upgraded Armor protection
- Enables improved IED detection
- Provides ability to interface with new large caliber ammunition
- Increases energy efficiency with incorporation of an auxiliary power unit
- Reduction in operational support costs

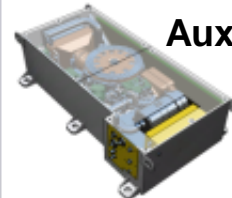
GAP: Network Enabled

Network Compatibility

- JTRS HMS
- JBC-P



GAP: Sustainment Auxiliary Power Unit



GAP: Lethality Ammunition Data Link



Power Generation/Distribution

- Battery Monitoring System
- Increased Amperage Alternator
- Slip Ring



Line Replaceable Modules (LRM)

- Improved Commander's Display Unit
- Improved Commander's Electronics Unit
- Improved Hull Mission Processor Unit
- Improved Turret Mission Processor Unit
- Improved Driver's Integrated Display
- Improved Gunner's Control Display Panel
- Improved Fire Control Electronic Unit
- Analog Input Module



GAP: Protection CREW/Duke v3 Armor Upgrade





Abrams ECP 2 Proposed Technologies



Improved Mobility

- **Fuel Efficiency Improvements**
 - AGT1500 Engine Upgrades
 - Transmission Upgrades
- **Improved Suspension**



Improved Force Protection

- **Laser Warning Receiver**
- **Environmental Control System**
- **Directional Smoke Grenade Launchers**
- **Fire Suppression (Halon replacement)**
- **Armor Upgrades**

Improved Lethality

- **Commander's Independent Thermal Viewer**
 - Next Generation FLIR
 - Laser Range Finder
 - Color Camera
- **Gunner's Primary Sight**
 - Next Generation FLIR

FOUO - PREDECISIONAL

FOUO

M1A2 SEPv2 Fleet Modification Set 1



Safety

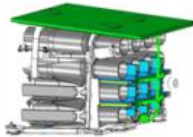
- Ammo Rack Sets Upgrade
- 4th Gen Loader's Tray
- DVE-A



M1A2 ORD: 5.c.(5)

Base Architecture / SWAP

- 80 GB Hard Drives
- Bustle Rack Extension



M1A2 ORD: 6.a, 6.c



Survivability / RAM

- LAGS II Vibration Improvement
- ARAT II Weldments

M1A2 ORD: 4.b.(3), 4.c.(3), 4.f.(5)
ONS for TUSK



Power / Mobility Enhancements

- TIGER Durability Improvements (thru attrition)



Situational Awareness

- RVSS Appliqué
- Improved Tank Infantry Phone (ITIP)

M1A2 ORD: 4.a.(1).(d), 4.d.(3)
ONS for TUSK



Comm / Interoperability

- KGV-72 (BFT Encryption)
- JCR Software

M1A2 ORD: 6.a, 6.c
Abrams CDD: KPP1



Sustainability / RAM

- TIGER Engine A-Kit
- Roadwheel Stowage Bracket Relocation
- #1 Road Arm Improvement (thru attrition)

M1A2 ORD: 4.e, 4.f.(5)



Lethality

- CROWS II

M1A2 ORD: 4.b.(3)



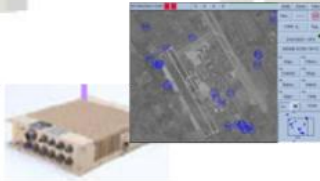


M1A2 SEPv2 Fleet Modification Set 2



Battle Command

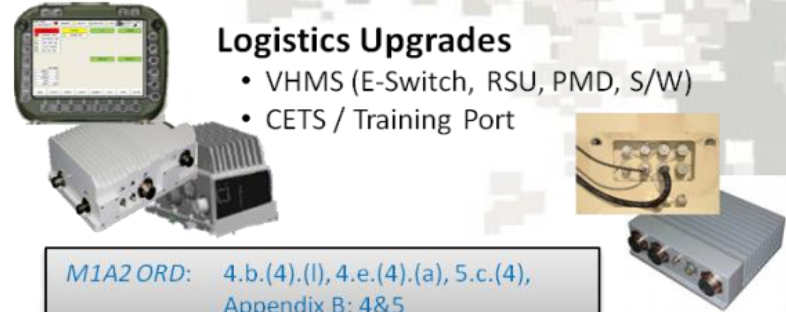
- DDU H/W
- BFT2 Upgrade
- JBC-P S/W



M1A2 ORD: 5.d.(1), 6.a, 6.c, 6.d
 Abrams CDD: KPP1
 JBC-P CDD

Logistics Upgrades

- VHMS (E-Switch, RSU, PMD, S/W)
- CETS / Training Port



M1A2 ORD: 4.b.(4).(l), 4.e.(4).(a), 5.c.(4),
 Appendix B: 4&5



Lethality

- CROWS II
- (Planned Product Improvement)
- Ammo Data Link (ADL)



M1A2 ORD: 4.b.(3)



Abrams Low Profile CROWS



The Common Remotely Operated Weapon Station (CROWS) II provides increased capability to the tank commander (LRF, thermal sight, ballistic computer, auto scan, etc) and enables the tank commander to fire his weapon under armor and on the move with both a thermal and day optic. However, it presents significant field of view (FOV) and safety issues to the tank commander. Feedback from the field indicate crewman highly appreciate the increased capability provided by CROWS but dislike its size, FOV limitations and safety risks. Fielding of CROWS II on Abrams is in progress and is approximately 50% complete with an expected completion of FY14.

TIMELINE

- CROWS fielding began in April 2011 and is expected to be complete in FY14.
- Army's approved remote weapon system and was chosen as part of the Tank Urban Survivability Kit (TUSK).
- In 2010 Army G3/5/7 directed that CROWS be integrated across the entire Abrams fleet.
- In 2011, the Armor Commandant (MG James) decided that fielding of CROWS II should continue across the M1A2 fleet with future product improvements to address size and FOV issues.
- LP CROWS demo conducted in November 2012.
- December 2012 the Armor School and MCoE endorsed a proposal to pursue a LP CROWS effort.

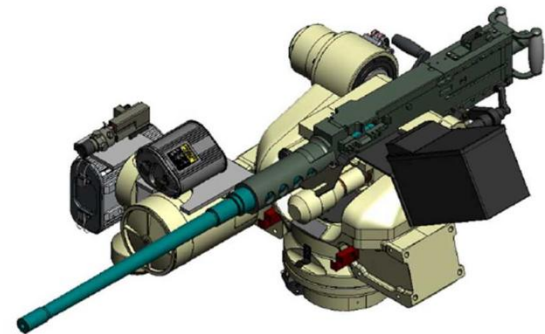


Abrams Low Profile CROWS



Improvements

- Automatic Temperature Calibration
- Reduced overall height to 19.5"
- 100 round ammunition box bracket that can accept and secure the Standard .50 cal ammo box.
- The Sight Sensor Assembly (SSA) will be mounted on the right side and forward of the system.
- The gyro bucket on the left bottom of the main frame assembly (MFA) will be removed and MEMS gyros will be used.
- Visual Imaging Sensor (VIS) 95





VIS 95

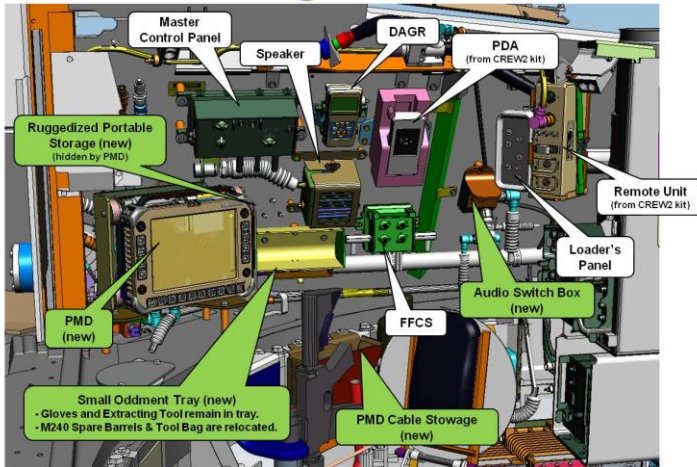




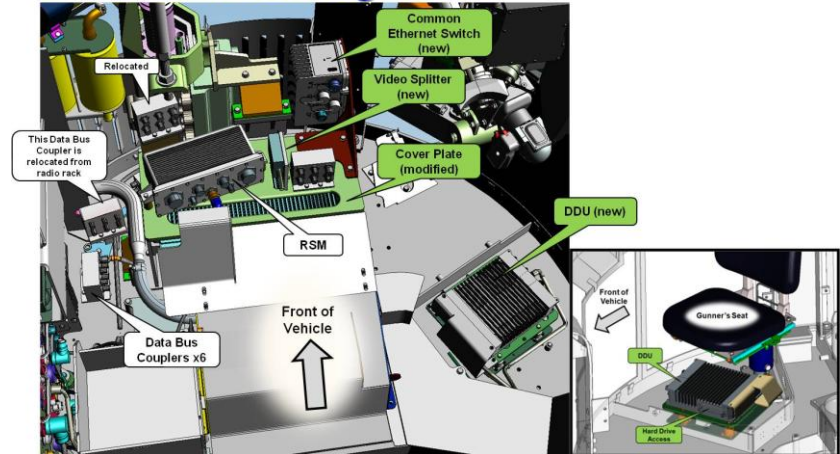
VEM



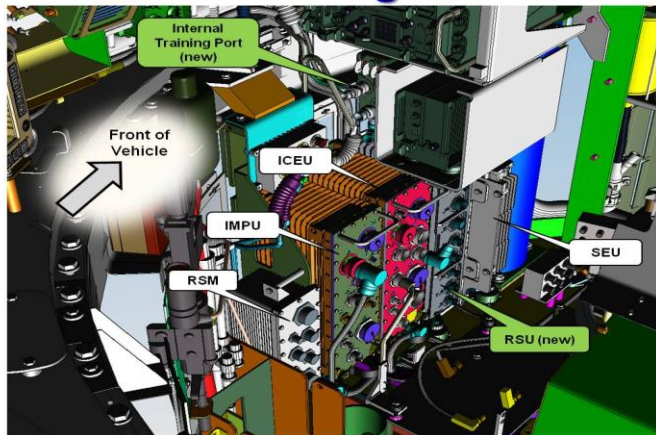
Loader's Wall – New VEM Configuration



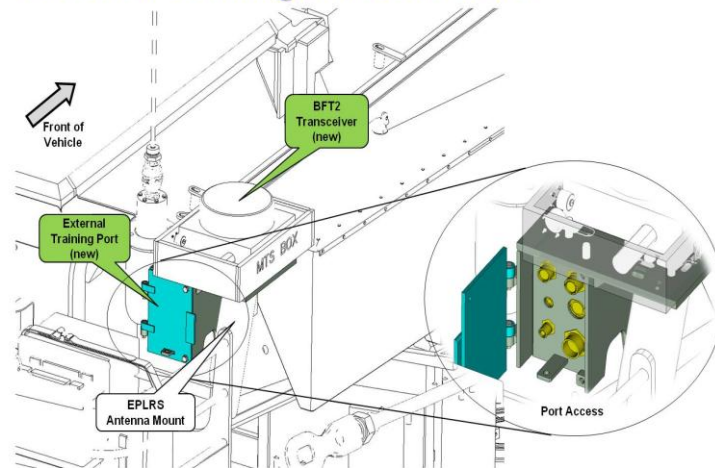
VEM / DDU Electronics Configuration



VEM DDU Electronics Configuration



External Training Port and BFT2

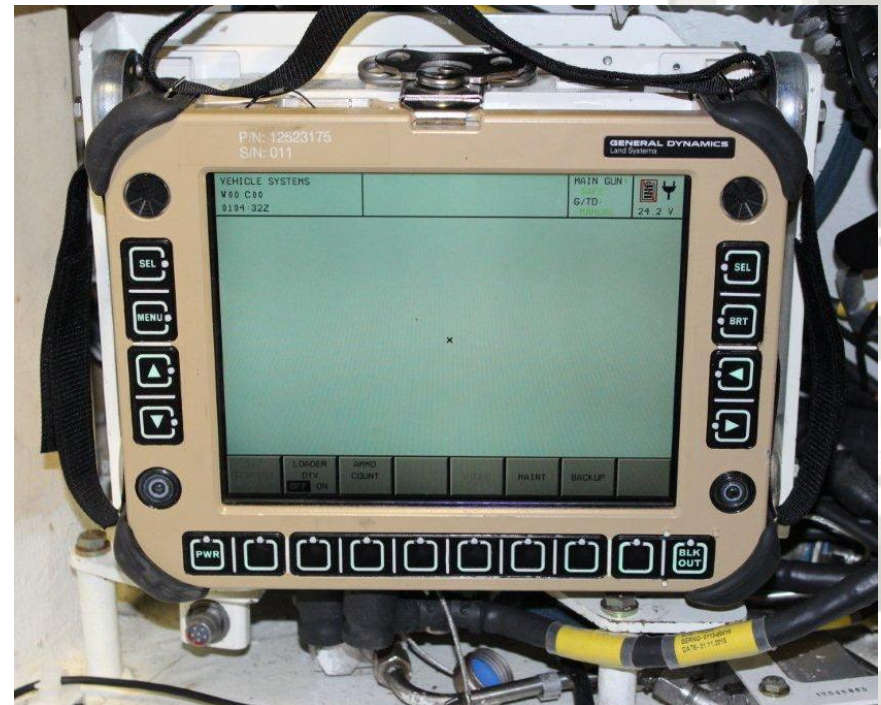




Portable Multifunctional Display (PMD) Functions



- **Interface for Interactive Electronic Technical Manuals (IETM)**
- **Vehicle Cautions/Warnings/Alerts;
BIT, FIT Diagnostics**
- Video from CITV, CROWS, LTWS
Driver's Thermal Viewer Controls
- NBC Backup Controls
- Backup Maintenance Menu – Control
Circuit Breakers
- Ammo Inventory
- Status for Gun Turret Drive and Main Gun
(same as Loader's Panel)
- Embedded Instructor Operating Screens
(EIOS) for ET
- VHMS Interface

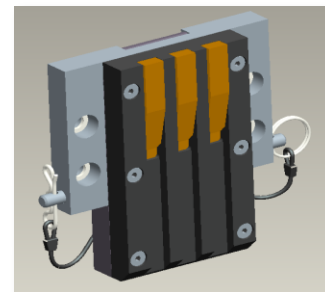




Ammunition Data Link (ADL)



- PM MAS Pays the bills
- Provides the ability to
 - Set Function Mode
 - Verify Munition status & Mission Data
 - Power a Fuse
- Dual Concentric Ring Case Base Design
- Backwards Compatibility to all Legacy 120mm Ammunition
- Meet Engagement Timeline Allocation for Round Communications
- Primer Ignition Electrically Isolated From Data Transmissions
- Ability to Accommodate Future Smart Rounds
 - Designed for Growth Potential



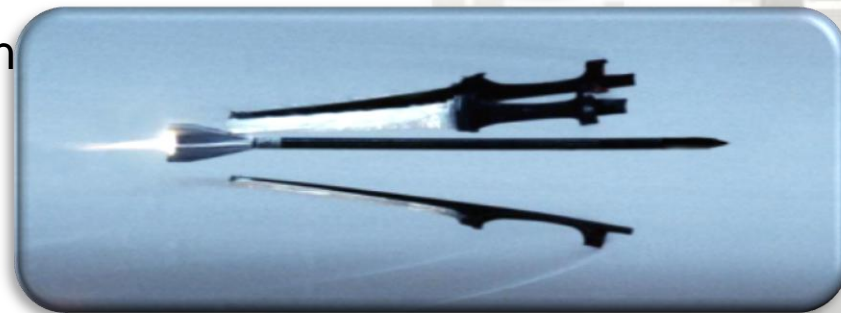


Future Ammunition



M829E4 APFSDS-T CARTRIDGE

- Provides heavy armor defeat capability against MBT's at extended ranges with Advanced Explosive Reactive Armor (ERA) & Active Protection System (APS)
- 5th Generation Kinetic Energy Anti-Tank Cartridge
- Designed for the Abrams Platform
- Utilizes Depleted Uranium (DU) Penetrator and Anti-Armor Design Advancements to Defeat Threat Targets
- Advanced Composite Sabot
- Temperature Insensitive Propellant
- Ammunition Data Link
- Hazards from Electromagnetic Radiation Ordnance (HERO) Safe Primer
- PA 171 Container



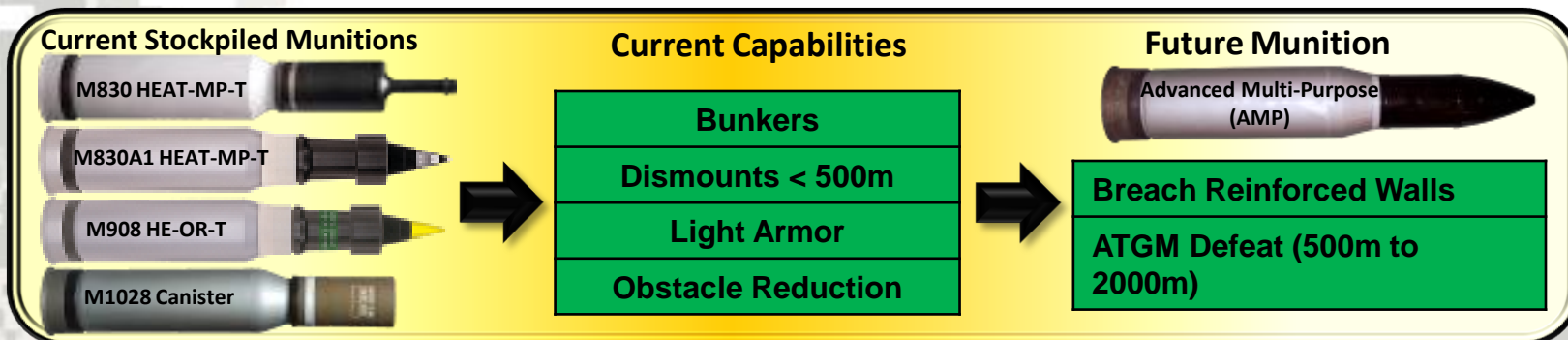


Future Ammunition



Advanced Multi-Purpose (AMP)

- Incorporate the Performance of M908 (Obstacle Reduction), M830 (HEAT), M830A1 (MPAT), and M1028 (Canister) within a Single Cartridge
- Multi-Mode Programmable Fuze
 - Air-burst, point detonating, and point detonating with delay
- Adds Capability of Engaging Infantry in Open at Significantly Increased Range
- Breaching Capabilities (Concrete Reinforced Wall)
- Battle carry one round capable of defeating multiple targets
- Decreases the logistics burden of managing multiple rounds





Software Updates



Fire Control Enhancements

- Auto Drift Enhancements
- Round Count Checking
- Manual Entry of GTR Adjustment
- Center AAC Ballistic Solutions/Update Ammo Subdes/Other Ballistic Issues
 - Ammo Subdes Updates
 - Embeds CCF values in the ballistics
 - The CCF standard values were added to the GCDP for the crew's reference



Crew Modular Unit Recorder – Common Through Sight Video (CMUR-CTSV)



CMUR



Encoder



8 Camera Stations



AAR/THP Laptop



Startech Drivebay

CMUR Capabilities:

- The CMUR is capable of recording 8 video feeds and two audio feeds simultaneously
- Stored on a removable solid-state Disk (SSD) hard drive
- Each video feed can record for up to 6 hours
- External Audio connects to the vehicle VIK System
- All audio channels are recorded and stored on the SSD
- Thru-Sight Cameras record the Gunner's Primary and Secondary sight
- Collects and analyzes sensor data generated via the 1555 bus module
- Utilizes a Garmin 18x receiver with external antenna to collect and tag audio, video and 1553 data with a gps location
- Connects directly to the vehicles 24 VDC power via turret power connector

Standalone Integrated Player Unit Consists of:

- CMUR
- 8 channel encoder
- Thru-Sight Cameras (TSCs)
- Crew Cameras
- Cables and Adapters
- 4 bay Startech Drivebay



MILES Combat Vehicle Tactical Engagement Simulation System (CVTESS)



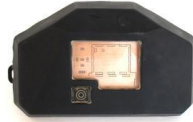
Target Interface Module



Vehicle Interface Module (VIM)



Control Module



Wireless Detection Unit (WDU)



Anti-Tank Weapon Effect Signature Simulator (ATWESS)



Audio Unit



Laser Transmitter (LT)



Small Arms Transmitter (SAT)



Canister LT



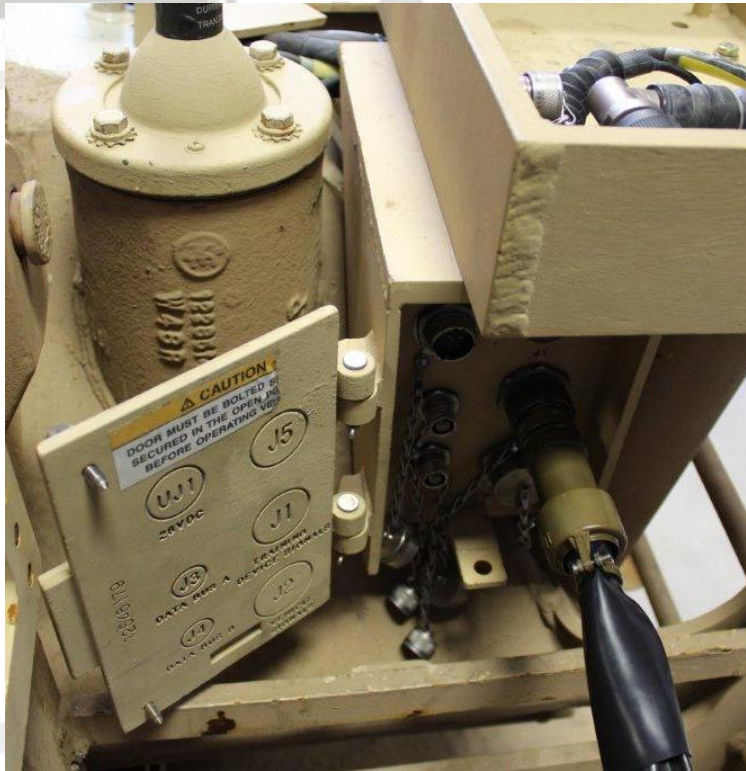
Crew Kill Module (CKM)



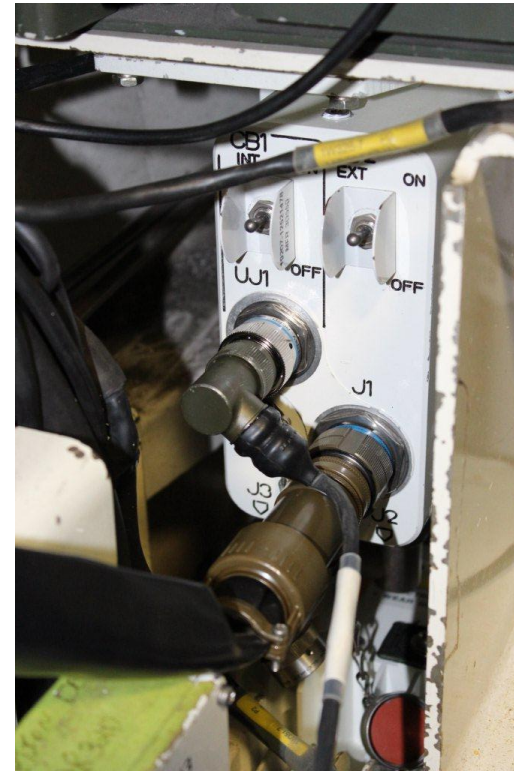
Abrams Training Port



External



Internal



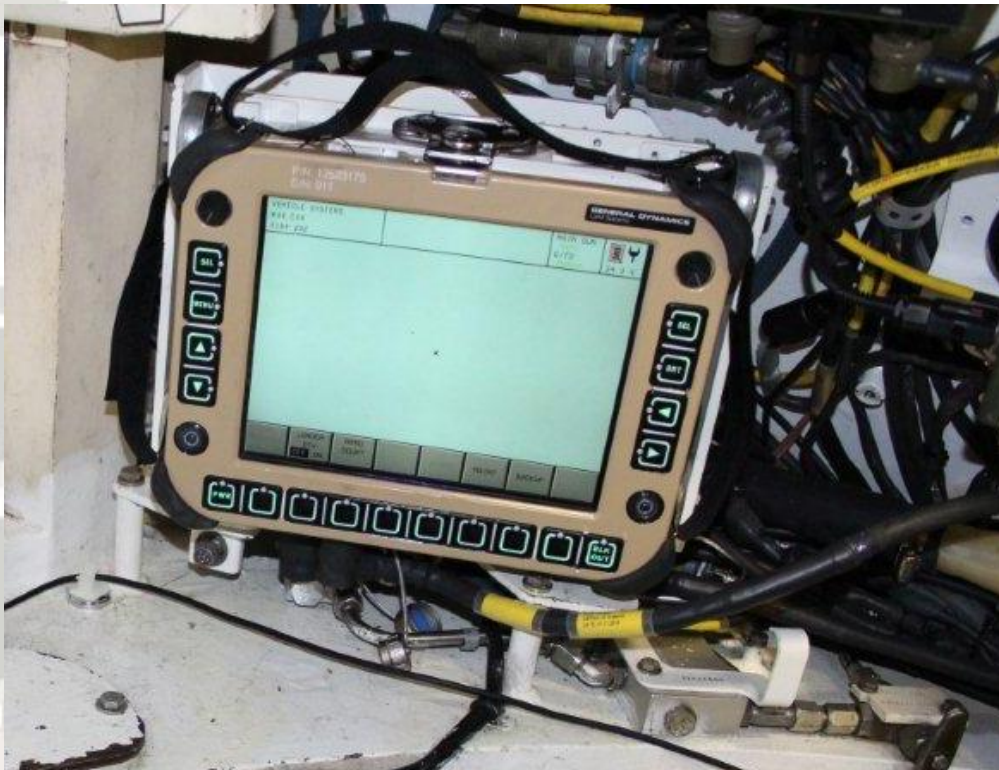
External and Internal port that will simplify training device installation and reduce damage to vehicle wiring harnesses via a single interface point.



Abrams Embedded Training



AGTS like capability embedded within the tank. Will provide the crew a very capable gunnery trainer that can be used for opportunity training, cross training, skills enhancement, etc.





Abrams Issues

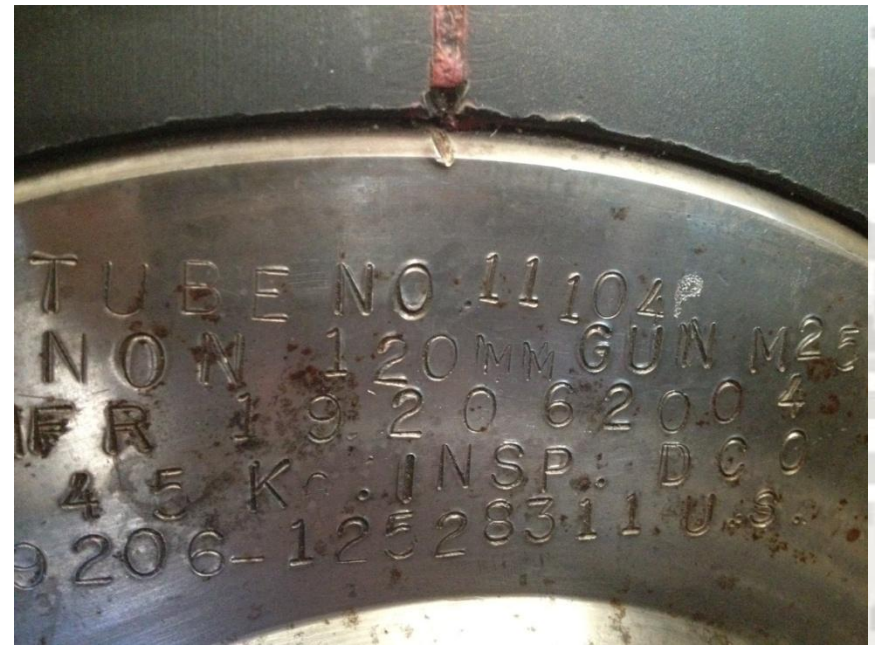


- **Gun tube strikes**
- **Gun tube Scoops**
 - **Social Media**
 - **DA 2408-4**
 - **Bore sighting**
 - **Miles 21**



Gun Cards

3 different Gun Tubes with the same S/N





1. Tube Serial 11104	2. Cannon Type, Model or Series M256 Cannon, 120mm Gun	3. ORGANIZATION (UIC/UNIT) Lima Army Tank Plant	4. SPECIAL LIFE DATA Condemn the cannon tube when 1500 EFC rounds have been fired. Comdemn the cannon when it reaches 4500 EFC rounds.
5. End Item Identification SN: UNKNOWN (Tank, Combat, FT: M1A1/M1A2)		6. RDS/EFC COMPUTATION	
7. Cannon Serial 8417	8. Retubings 1	9. Rebushings	
Cumulative EFC RDS fired for Cannon: 127.000			
Tubes:			
Status	Tube Serial	EFC Rounds	
Active	9923	127.000	
Active	11104	0.000	

10. Date	Projectile Type	Zone or Charge	Rounds Fired	EFC RDS Fired	Cumulative RDS fired	Remaining Life (EFC RDS)	Remarks: Recoil Exercise (RE), Gage or Velocity Reading, Safety Inspection (SI)	Signature
							BREECH: CANNON SERIAL MIS11104.	

1. Tube Serial 11104X	2. Cannon Type, Model or Series M256 Cannon, 120mm Gun	3. ORGANIZATION (UIC/UNIT) Sierra Army Depot	4. SPECIAL LIFE DATA Condemn the cannon tube when 1500 EFC rounds have been fired. Comdemn the cannon when it reaches 4500 EFC rounds.
5. End Item Identification SN: D8326 (Tank, Combat, FT: M1A1/M1A2)		6. RDS/EFC COMPUTATION	
7. Cannon Serial 2745	8. Retubings 1	9. Rebushings	
Cumulative EFC RDS fired for Cannon: 1,344.000			
Tubes:			
Status	Tube Serial	EFC Rounds	
Active	11104X	0.000	
Previous	2795	1344.000	

10. Date	Projectile Type	Zone or Charge	Rounds Fired	EFC RDS Fired	Cumulative RDS fired	Remaining Life (EFC RDS)	Remarks: Recoil Exercise (RE), Gage or Velocity Reading, Safety Inspection (SI)	Signature
11-07-2007		NA					MISC REMARKS: This tube number also appears on a tube at ANAD. The tube has been issued to JSMC. We are trying to find out why we have two tubes with the same number, or do we?	Southers, Michael

1. Tube Serial 11104P	2. Cannon Type, Model or Series M256 Cannon, 120mm Gun	3. ORGANIZATION (UIC/UNIT) WAGLD0 (IN BN 01 CO D ARMOR HB	4. SPECIAL LIFE DATA Condemn the cannon tube when 1500 EFC rounds have been fired. Comdemn the cannon when it reaches 4500 EFC rounds.
5. End Item Identification SN: LA23203U (Tank, Combat, FT: M1A1/M1A2)		6. RDS/EFC COMPUTATION	
7. Cannon Serial 8417	8. Retubings 1	9. Rebushings	
Cumulative EFC RDS fired for Cannon: 366.000			
Tubes:			
Status	Tube Serial	EFC Rounds	
Active	11104P	239.000	
Previous	9923	127.000	



Abrams Accident Reports



- **09 January 2013 4ID, 2 BCT, 2-8 IN Rollover with Gun Tube Strike**
 - Tank D-22 was performing operations during darkness with DVE. As the tank crested a hill, it began to drop off and over the hill. Driver made hard right turn onto the face of the hill. The tank then slid to bottom of 15-ft hill. When the tank reached the bottom of the hill, it rolled over on to its left side and driving the gun tube into the ground.
- **14 January 2013 4ID, 2BCT, 2-8 IN Collision, Tank-to-Object, with Gun Tube Strike**
 - Tank D24 was performing darkness operations using DVE and thermal viewer. Driver reported seeing only tumbleweeds ahead and commander ordered the driver to slow down. As tank drove over tumbleweeds, the tank began to descend an 8-ft hill. The driver locked the brakes and the tank slid down the hill, stopping when tank collided with a large rock. During the collision the gun tube was driven into the ground.
- **23 January 2013 1CD, 3BCT, 1-12 CAV Collision, Tank-to-Tank, with Gun Tube Strike**
 - During nighttime unit tactical road march in heavy dust conditions, tank D21 (LA19109U) slowed and stopped. Following tank, D60 (LA28241M), failed to stop, causing the main gun to strike the tank D21 bustle rack and CVRJ armor cover, driving the armor cover into the back wall of the turret ammo storage compartment. Tank D60 hull then struck the rear of tank D21.
- **28 January 2013 1CD, 3BCT, 3-8 CAV Gun Tube Strike with Gun Tube Failure During Firing**
 - Tank C14 was on maneuver at the National Training Center (NTC) and had its gun tube skim ground, collecting dirt and rock into the barrel. Crew was unaware of gun tube strike and observers did not notify crew until after the gun was fired. When the gun was fired, the barrel failed, splitting the tube, cracking the bore evacuator and causing the gun to remain out of the battery with the breech canted to the left. The fired round ejected from the tube, however the case base remained in the breech.



Abrams Accident Reports



- 06 February 2013 4ID, 2BCT, 1-67 AR Collision, Tank-to-Ground, with Gun Tube Strike
 - Tank D12 was performing night maneuvers using DVE. Driver reported seeing only tumbleweeds ahead and commander ordered the driver to slow down. As the tank drove over the tumbleweeds, the tank began to descend a hill. The driver locked the brakes and the tank slid down the hill, stopping when tank's mine plow and gun collided with the ground. During the collision the gun tube was driven into the ground about 6-inches.
- 07 February 2013 4ID, 1BCT, 1-66 AR Collision, Tank-to-Object, with Gun Tube Strike
 - Tank C22 was performing refueling operations. When a crewmember traversed the turret to gain access to the front fuel cell, the main gun struck the windshield of the HEMMT.
- 14 February 2013 1ID, 2BCT, 1-18 INF Rollover, with Gun Tube Strike
 - Tank C13 was being transported by Heavy Equipment Transporter (HET) with all tank crewmembers riding in the HET. Travelling on the main service route, the HET rolled over while negotiating a turn. During the HET rollover, the tank broke away from the trailer and came to rest on its turret. The tank driver was reported to have major facial lacerations. The HET driver was reported to have a possible broken leg.
- 26 February 2013 L TRP, 2-16 CAV, 316 CAV BDE **Crew injured during gun recoil**
 - During Gunnery Training at Comanche Range, Ft. Benning, GA, the instructor acting as a crewmember in loader's position placed leg behind main breach. When fired, the main gun struck the instructor's leg, breaking the femur just above the knee.



Abrams Accident Reports



- 04 March 2013 11D, 1BCT, 1-16 INF Vehicle Rollover
 - The Tank was being transported by a Heavy Equipment Transport (HET) to Gunnery Training Area. The HET made a sharp left turn and rolled onto its right side. The tank broke loose from the trailer, landing on its right side and rolling over the top side and came to rest on its left side. Minor injuries were reported to the gunner and driver. The loader possibly broke his leg in addition to incurring an injury to his neck. The location of the Abrams crew was not reported
- 09 March 2013 11D, 1BCT, 2-34 AR Collision, Tank-to-Ground, with Gun Tube Strike
 - Tank D-13 was navigating through a creek. The gun tube was driven into the ground up to the bore evacuator. The tank then became stuck and had to be recovered with an M88A2.





Abrams Accident Reports



- 02 April 2013 MCE, MD, Ground Support Maintenance Collision, Tank-to-Object, with Gun Tube Strike
 - During platoon maneuvers, the vehicle struck a tree. The point of impact was the base of the gun tube near the thrust nut and gun shield
- 22 April 2013 11D, 2BCT, 1-18 IN Collision, Tank-to-Object, with Gun Tube Strike
 - During Brigade training at the National Training Center (NTC), the gunner of tank D-34 was scanning a sector for targets by sweeping the turret left and right in azimuth. The tank commander then ordered the tank to move forward. The tank commander did not warn the gunner of an upcoming obstruction, leading to the gun tube collision.
- 03 May 2013 D-1/6 IN – 3/1 AD Collision, Tank-to-Object, with Gun Tube Strike
 - During field training exercise, tank was parked next to an M1083A1 FMTV (Family of Medium Tactical Vehicles). Tank crew slewed the turret and the gun tube struck the cab of the FMTV.





Abrams Accident Reports



- 10 May 2013 1ID, 1BCT, 2-34 AR Collision, Tank-to-Object, with Gun Tube Strike
 - Tank was parked in the motor pool line. In the afternoon of 10 May 2013, the crew noticed damage to the gun tube. The previous day (09 May 2013), the crew cleaned and serviced the gun tube and reported there was no damage at that time
- 09 June 2013 MCE, MD, Ground Support Maintenance **Crewmember Ejection**
 - While performing maneuvers at Good Hope Maneuver Training Area, the tank drove into an unseen ditch. The vehicle came to a stop, leaning left and the Loader was ejected from the vehicle.
- 11 June 2013 MCE, MD, Ground Support Maintenance Collision, Tank-to-Object, with Gun Tube Strike
 - The tank crew was performing maneuvers at Good Hope Maneuver Training Area. The gun tube struck a tree and recoiled past nominal, leaving the main gun out of battery.
- 22 July 2013 1ID, 1BCT, 2-34 AR Collision, Tank-to-Tank, with Gun Tube Strike
 - Tank D13 was stopped at the motor pool gate, waiting for ground guides. Tank D14 was stopped behind tank D13. Both tanks had gun tube positioned over rear deck. When tank D14's driver opened his hatch, he felt hot engine exhaust from the other tank. As tank D14's driver moved down into the driver's station, the service break was released and tank D14 moved and collided with the rear of tank D13 and its gun tube. Tank D13's gun tube was pushed 8-inches out of battery when it struck the bustle rack of tank D14



Abrams Accident Reports





Social Media



New stories



U.S Army W.T.F! moments

11 minutes ago • ⚙️

General Dynamics took 4 months to replace the gun tube on this tank after it was a lawn dart. It took the crew 1 week to destroy it again. Today At Fort Riley.



334 likes • 54 comments

👍 Like

💬 Comment

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United States Army Brotherhood Of Tankers (USABOT)

Yesterday at 4:48 PM 📷

Gun tube was warped and we couldnt get the thermal shrouds off



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Crew Injuries



- 06 August 2013 MT, 116th HBCT, 1-163 IN Collision, Person-to-Tank
 - While performing drills, the Driver of tank C-11 abruptly applied the service brakes, causing the Loader to impact against the radio rack and turret wall. The Loader sustained head, neck and spinal injuries from the collision and was taken to a hospital in Boise, ID. The vehicle was not damaged.
- 08 August 2013 1ID, 1BCT, 1-16 INF **Misc Turret Injury**
 - The Commander and Loader were transferring ammo from semi-ready storage to the ready side. When the Commander closed the semi-ready door, he pinched his index finger between the stowage lock mechanism and the ammo door.
- 21 August 2013 4ID, 3BCT, 1-68 AR **Misc Turret Injury**
 - During training at the gunnery range, the Loader loaded a round and the breech did not close. The Loader then pushed the extractor release and the breech again did not close. The Loader then reached into the breech, pushed the round in. The breech then came up, catching the Loader's fingers and bending his wrist.
- 22 August 2013 4ID, 3BCT, 1-68 AR **Misc Turret Injury**
 - In preparation of gunnery range operations, the Commander and Loader were transferring ammo from the semi-ready rack to the ready rack. After the Commander handed the Loader a round, the Commander closed the semi-ready rack door. The manual handle then fell down onto the ammo door track. As the Commander went to move the handle back to its stowed position, the Loader opened the ready door, **pinching and severing the Commander's left index finger between the manual handle and the door.**
- 28 August 2013 YTC Maintenance injury
 - Contractor crewmen were replacing the right tank track per TM 9-2350-388-10-3, WP 0543. As the crewmen were tightening the tack connection fixtures to install the center guides to shoes B13R and B14, the track fixtures slipped off the track pins. The inboard track connecting fixture struck a crewman on the back of his hand, cutting deeply into the back of his ring finger.



??? QUESTIONS ???



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