



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 30, 2015

Group Chairman's Factual Report

STRUCTURES

DCA13MA081

Attachment 6

Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV) – File Number DP 33-09, November 17, 2009



TRANSPORTABILITY APPROVAL
DEPARTMENT OF THE ARMY
MILITARY SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND
TRANSPORTATION ENGINEERING AGENCY
709 WARD DRIVE, BUILDING 1990
SCOTT AIR FORCE BASE, ILLINOIS 62225



Date: 17 November 2009

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)

File Number: DP 33-09

Requestor: MRAP Joint Program Office (JPO), [REDACTED]

Reference Documents:

- a. DoD Instruction 4540.07, "Operation of the DoD Engineering for Transportability and Deployability Program," 11 September 2007.
- b. Lift and Equipment Tie-down Provisions Testing of the Mine-Resistant, Ambush-Protected (MRAP) – All-Terrain Vehicle (ATV), SSA-3 and SSA-5, Source Selection Phase, ATEC Project No. 2009-DT-ATC-MRPAT-E1990, Report No. 09-WF-E-43, dated 1 June 2009.
- c. Rail Impact Test of the MRAP-All Terrain Vehicle (M-ATV), Project no. 2010-DT-ATC-MRPAT-E4585, Report no. 09-AID-182, dated 21 September 2009.
- d. Internal Air Transport Certification for the Mine Resistant Ambush Protected All-Terrain Vehicle (MRAP ATV), file no. 2009.08.32 Revision 1, dated 9 September 2009.

General: In accordance with reference 1a and based on the transportability information provided in references 1b, 1c, and 1d we grant transportability approval for the M-ATV and concur with full materiel release and Type Classification Standard for highway, rail, marine and air transport modes subject to the restrictions noted herein.

Item Description: The Mine Resistant Ambush Protected (MRAP) vehicles are a joint services program led by the U.S. Marine Corps for the purpose of producing and providing lifecycle support to a family of vehicles capable of surviving various ballistic threats in an asymmetric combat environment. The M-ATV (shown in figures 1 – 3) is a medium protected vehicle intended for use in point, route, and area clearance of mines and Improvised Explosive Devices (IEDs). The vehicle can safely transport personnel or equipment in areas where mines and IEDs may be deployed and can be used to deliberately search for hazardous explosive materials.

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)



Figure 1: Driver Side View of M-ATV

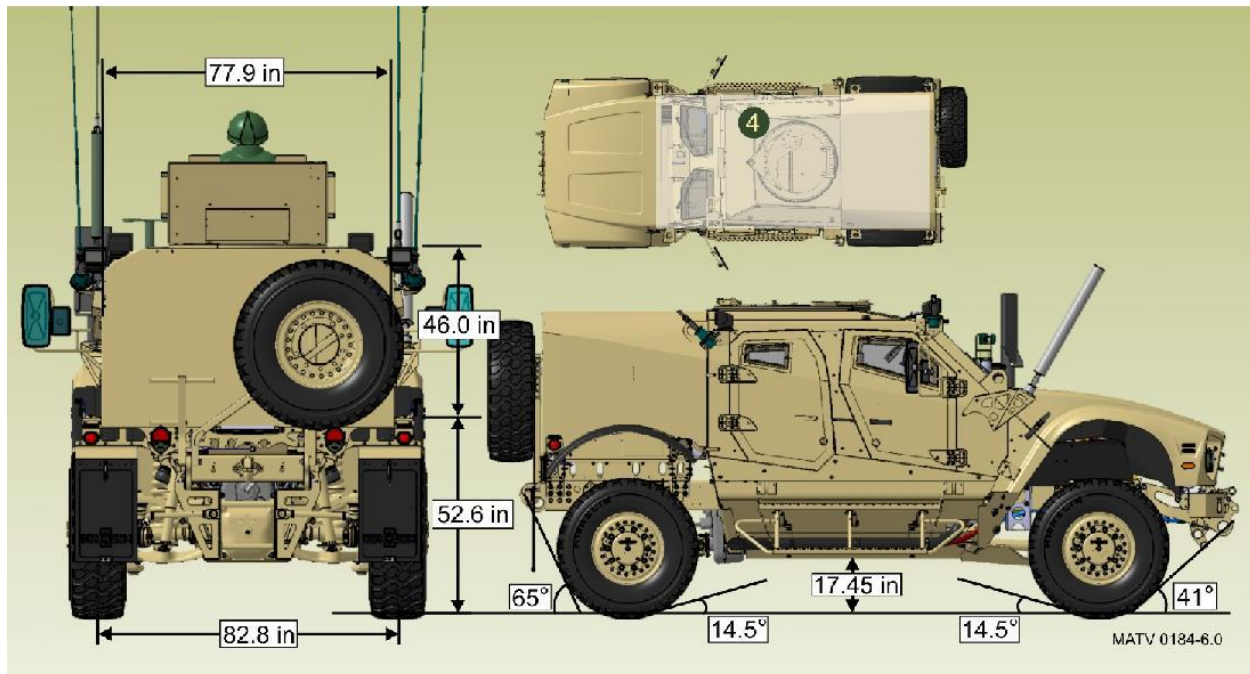


Figure 2: M-ATV with Dimensions

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)

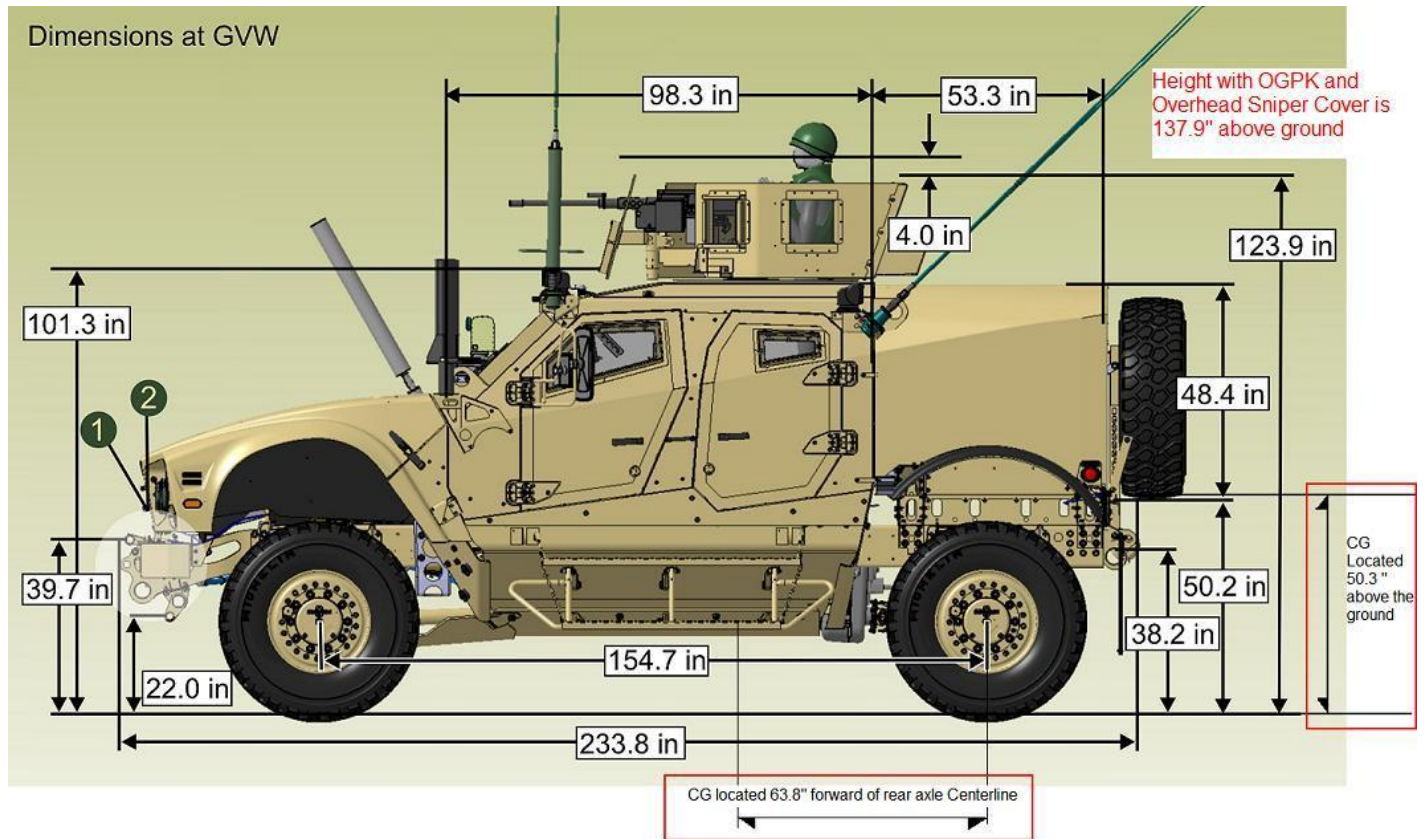


Figure 3: Dimensional Drawing of M-ATV

VEHICLE DATA:

Table 1. Physical Characteristics of the M-ATV

	Operational	Reduced
Length	246.8 inches	233.8 inches
Width	123.0 inches	98.1 inches
Operational Height	123.9 inches	101.3 inches
Front Axle Load Limit	17,000 pounds	
Rear Axle Load Limit	20,000 pounds	
Gross Vehicle Weight Rating (GVWR)	37,000 pounds	

Conditions of Certification: The M-ATV transportability requirements are that it be fit for self-deployment on highways worldwide, be capable of being transported by rail, marine, and air modes (in C-17 and C-5 aircraft) in accordance with MIL-STD-1366 and as described in MIL-HDBK-1791. The vehicle lifting and tiedown provisions shall meet the requirements of MIL-STD-209K. Our analysis shows that the M-ATV meets the transportability requirements. A summary of our analysis follows:

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)

a. Highway. Due to the width of the M-ATV (98.1 inches reduced), the vehicle does not meet the unrestricted width limit (96.0 inches) for unrestricted highway transport in the United States or NATO countries. For self-deployment on US highways state DOT permits might have to be obtained. Coordinate with Installation Transportation Officer (ITO) to obtain any required state permits.

Tiedown procedures suitable for highway truck/trailer transport are included in TEA Pamphlet 55-20, *Tiedown Handbook for Truck Movements*, Fourth Edition. An electronic copy of this pamphlet can be downloaded from our website:

www.tea.army.mil

Hard copies of any of our pamphlets can be ordered from the following location:

www.tea.army.mil/pubs/pubs_order.htm

b. Rail. The M-ATV vehicles meet all dimensional limits and are capable of unrestricted rail transport in the United States and NATO countries. It successfully passed a MIL-STD-810 rail impact tests conducted by the Aberdeen Test Center (ATC) at a GVWR of 37,020 lbs as shown in reference c (see figures 4 and 5) on 21 September 2009. Tiedown procedures suitable for rail transport can be found in TEA Pamphlet 55-19, *Tiedown Handbook for Rail Movements*, Sixth Edition.



Figure 4: Front of M-ATV tiedown for rail impact test

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)



Figure 5: Rear of M-ATV tied down for rail impact test

b. Marine. The M-ATV meets the dimensional and weight limits for transport on breakbulk, roll-on/roll-off, SEABEE, LASH and all USA, USMC and USN lighterage. The vehicle height may restrict where the system can be stowed on board the ship. Tiedown procedures suitable for marine transport are included in TEA Pamphlet 55-22, *Marine Lifting and Lashing Handbook*, Third Edition.

c. Fixed-Wing Air. The Aeronautical System Center (ASC) Air Transportability Test Loading Activity (ATTLA) certified the M-ATV for air transport on board C-130, C-17 and C-5 aircraft (enclosure). The certification states maximum transport weight at Vehicle Gross Weight of 23,660 lbs for C-130s and 37,000 lbs for C-17s and C-5s. Reference the enclosure and MIL-HDBK-1791 for guidance. Air transport procedures can be found in TEA Pamphlet 55-24, *Vehicle and Equipment Preparation Handbook for Fixed-Wing Air Movements*, Second Edition.

d. Lifting and Tiedown Provisions. The lifting and equipment tie-down provisions of the M-ATV vehicle withstood, without discernible adverse effects, the application of all loadings appropriate to a GVWR of 37,000 lbs on 1 June 2009. Pictures of the lifting and tiedown provisions can be seen in figure 6 and lift test in figure 7. Minor variations of the lift provision dimensions from stated requirements were observed, but did not inhibit rigging for crane lift. The equipment tie-down provisions should be clearly marked by function in letters 1 inch high as distinct and separate from any other fittings.

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)



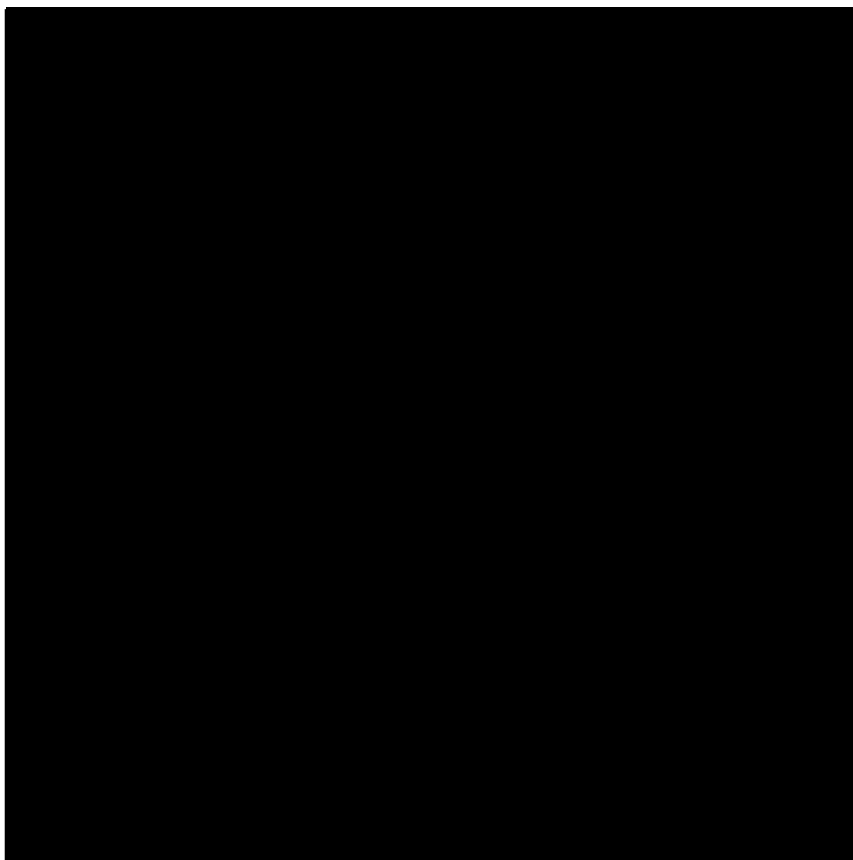
Figure 6: Lift and Tiedown provisions on M-ATV



Figure 7: Lift test for M-ATV

NOTE: The height of the rear lifting provisions are above the MIL-STD-209K maximum height of 72 inches. However, the rear lifting provisions are easily accessible using the side step for accessing the rear passenger compartment. SDDCTEA accepts this configuration.

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)



Enclosure:

Internal Air Transport Certification for the Mine Resistant Ambush Protected All-Terrain Vehicle (MRAP ATV), file no. 2009.08.32 Revision 1, dated 9 September 2009.

Subject: Transportability Approval for the Mine Resistant Ambush Protected (MRAP) – All-Terrain Vehicle (M-ATV)

Required Distribution:

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]