



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 30, 2015

Group Chairman's Factual Report

STRUCTURES

DCA13RA081

Attachment 7

Internal Air Transport Certification (ATTLA) – 2009.08.32

Revision New, September 3, 2009

Revision 1, October 9, 2009

Revision 8, June 25, 2013



Internal Air Transport Certification

ASC/ENFC (ATTLA)
2530 Loop Road West
WPAFB, OH 45433-7101
<https://afkm.wpafb.af.mil/ATTLA> (direct)
<https://wwwd.my.af.mil/afknprod/ATTLA> (AF Portal)



Date: 3 September 2009

Item Nomenclature: Mine Resistant Ambush Protected All-Terrain Vehicle (MRAP ATV)

File Number: 2009.08.32

Requestor: MARCORSYSCOM [REDACTED]

Item Description: The subject item is identified to be a MRAP ATV. Approximate dimensions are 247" L x 123" W x 102" H. Vehicle gross weight is reported to be 30,838 lbs with a gross vehicle weight rating (GVWR) of 37,000 lbs. Front axle is reported to weigh 13,260 lbs with a rating of 17,000 lbs. Rear axle is reported to weigh 17,578 lbs with a rating of 20,000 lbs.



Figure 1: MRAP ATV

Certified Aircraft: C-17 and C-5

1. Maximum Weight for Air Transport:

- a. Gross Vehicle Weight: 37,000 lbs (GVWR)
- b. Axle Limits: Front - 17,000 lbs; Rear - 20,000 lbs (axle ratings)

2. Item Preparation:

- a. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of 401 SCMS/GUMAA (DSN 787-4503 or COM (937) 257-4503).
- b. Shipper provided sleeper shoring is required, see paragraph 5.
- c. Tire pressure shall not exceed 100 psi.

3. Loading Instructions:

- a. Item shall be loaded in accordance with normal TO 1C-XX-1/-9 procedures.
- b. Vehicle may be driven or backed aboard aircraft.
- c. Sleeper shoring required, see paragraph 5.

4. Restraint Requirements: The MRAP ATV and all accompanying cargo must be restrained to meet MIL-HDBK-1791 requirements of 3G forward, 1.5G aft and lateral, and 2G up. In addition, stored or installed equipment must meet these requirements and be capable of withstanding a 4.5G down load. Tiedown provision locations and rated capacities are provided in table 1.

Table 1: Provision Location & Rated Capacities

Location (Qty)	Longitudinal	Lateral	Vertical
Forward (2)	74,463 lbs	23,420 lbs	15,705 lbs
Aft (2)	74,463 lbs	32,080 lbs	21,520 lbs

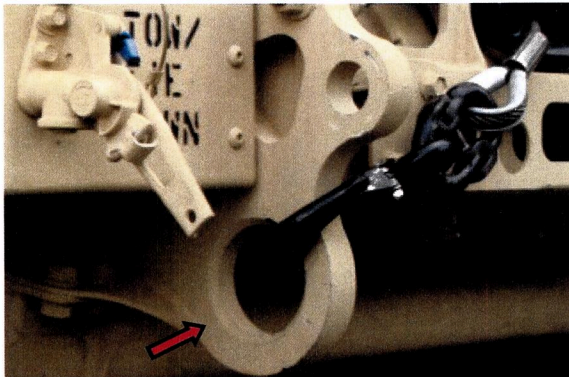


Figure 2: Front Tiedown Provisions

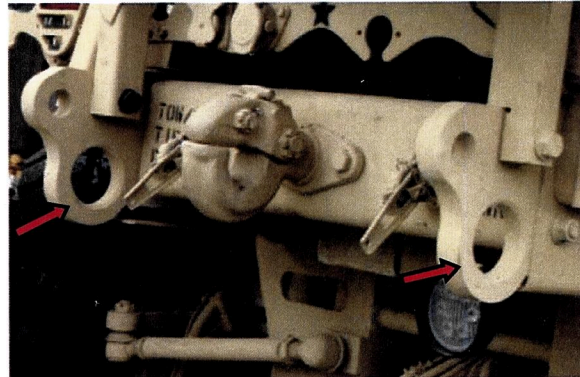


Figure 3: Aft Tiedown Provisions

5. Required Shoring Dimensions:

a. Sleeper Shoring:

- (1) Front Axle: Two stacks are required when axle weight is greater than or equal to 13,600 lbs. Minimum base dimensions of each shoring stack shall be 15" L x 15" W.
- (2) Rear Axle: Two stacks required. Minimum base dimensions shall be 17" L x 17" W.
- (3) Sleeper shoring must be stacked to within 1/2" of chassis/frame area and will be secured with cargo straps.

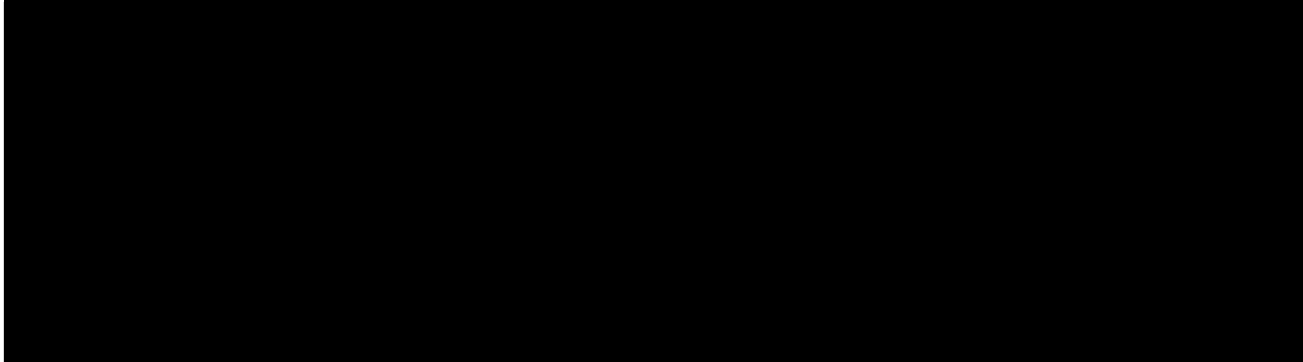
6. Validation Load: A validation loading is required to verify sleeper shoring placement and restraint methods for subject item and may be performed in conjunction with first scheduled airlift. The primary loadmaster is requested to note back to the Aerial Delivery (ATTLA) POC below with any recommended changes to these procedures.

Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This memo shall be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this item.

2. AMC/A3V.

3. SDDC TEA.





Internal Air Transport Certification

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WPAFB, OH 45433-7101
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Date: 9 October 2009

Item Nomenclature: Mine Resistant Ambush Protected All-Terrain Vehicle (MRAP ATV)

File Number: 2009.08.32 Revision 1

Requestor: MARCORSSCOM [REDACTED]

Superseded Certification Date: 3 September 2009

New Information Summary: Updated to include C-130 transportability.

Item Description: The subject item is identified to be a MRAP ATV (M-ATV). Approximate dimensions are 247" L x 123" W x 102" H. When configured for C-130 transport, vehicle height is approximately 100" H. Vehicle gross weight is reported to be 30,838 lbs with a gross vehicle weight rating (GVWR) of 37,000 lbs. Front axle is reported to weigh 13,260 lbs with a rating of 17,000 lbs. Rear axle is reported to weigh 17,578 lbs with a rating of 20,000 lbs. When configured for C-130 transport, reported weights are as follows: vehicle gross weight – 23,660 lbs, front axle – 12,080 lbs and rear axle – 11,580 lbs.



Figure 1: M-ATV

Certified Aircraft: C-130, C-17 and C-5

1. Maximum Weight for Air Transport:

- a. Gross Vehicle Weight: C-17/C-5 – 37,000 lbs (GVWR); C-130 – 26,000 lbs (aircraft limit)
- b. Axle Limits: C-17/C-5: Front - 17,000 lbs; Rear - 20,000 lbs (axle ratings)
C-130: 13,000 lbs each axle (aircraft limit)

2. Item Preparation:

- a. C-130: Vehicle shall be reduced to a height equal or less than 102 inches.
- b. C-130: The following items will be removed from vehicle to reduce each axle weight resulting in a value less than or equal to 13,000 lbs (each axle):

(1) OGPK

- (2) Front Spotlights
- (3) Front Gun Shield Base Mount
- (4) Spare Tire
- (5) All Basic Issue Items (BII) as listed in the M-ATV Operator Manual.

- c. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of 401 SCMS/GUMAA (DSN 787-4503 or COM (937) 257-4503).
- d. C-17/C-5: Shipper provided sleeper shoring is required for, see paragraph 5.
- e. Tire pressure shall not exceed 100 psi.

3. Loading Instructions:

- a. Item shall be loaded in accordance with normal TO 1C-XX-9/-1 procedures.
- b. Vehicle may be driven or backed aboard aircraft.
- c. C-17/C-5: Sleeper shoring required, see paragraph 5.

4. Restraint Requirements: The M-ATV and all accompanying cargo must be restrained to meet MIL-HDBK-1791 requirements of 3G forward, 1.5G aft and lateral, and 2G up. In addition, stored or installed equipment must meet these requirements and be capable of withstanding a 4.5G down load. Tiedown provision locations and rated capacities are provided in Table 1.

Table 1: Provision Location & Rated Capacities

Location (Qty)	Longitudinal	Lateral	Vertical
Forward (2)	74,463 lbs	23,420 lbs	15,705 lbs
Aft (2)	74,463 lbs	32,080 lbs	21,520 lbs

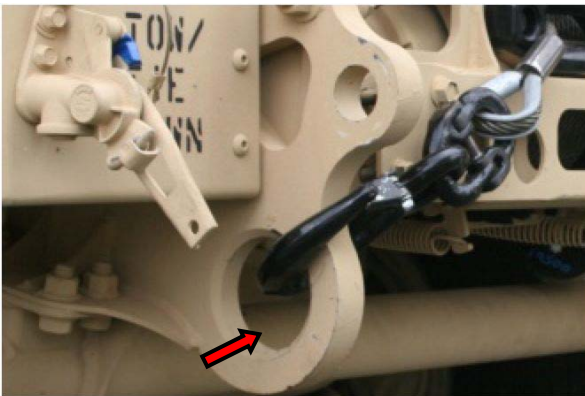


Figure 2: Front Tiedown Provisions



Figure 3: Aft Tiedown Provisions

5. Required Shoring Dimensions:

- a. Sleeper Shoring (applicable only to C-17/C-5):

(1) Front Axle: Two stacks are required when axle weight is greater than or equal to 13,600 lbs. Minimum base dimensions of each shoring stack shall be 15" L x 15" W.

(2) Rear Axle: Two stacks required. Minimum base dimensions shall be 17" L x 17" W.

(3) Sleeper shoring must be stacked to within ½" of chassis/frame area and will be secured with cargo straps.

6. Validation Load: A validation loading is required to verify sleeper shoring placement and restraint methods for subject item and may be performed in conjunction with first scheduled airlift. The primary loadmaster is requested to note back to the Aerial Delivery (ATTLA) POC below with any recommended changes to these procedures.

Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This memo shall be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this item.
2. AMC/A3V.
3. SDDC TEA.

[REDACTED]

[REDACTED]

[REDACTED]



Internal Air Transport Certification

AFLCMC/EZFC (ATTLA)
2145 Monahan Way
WPAFB, OH 45433-7017
<https://afkm.wpafb.af.mil/AirTransport>



Date: 25 June 2013

Item Nomenclature: Mine Resistant Ambush Protected All-Terrain Vehicle (MRAP ATV)

File Number: 2009.08.32 Revision 8

Requestor: MARCORSSYSCOM [REDACTED]

Superseded Certification Date: 28 September 2012

New Information Summary: Updated auxiliary tiedown provision lateral only restraint capability.

Reference Documents:

1. MARCORSSYSCOM & JPO MRAP Underbody Improvement Kit and Suspension Upgrade Data Package, 8 June 2011, M-ATV Equipped with UIK
2. Oshkosh Finite Element Analysis (FEA), 3 September 2010, M-ATV Remote Weapons Station FEA
3. APM SOCOM Engineer/Oshkosh Engineer Message, 7 September 2010, M-ATV RWS FEA
4. YPG Test Center, Axle Weight Distribution Memo, 3 December 2009, M-ATV Mobility Test Weights
5. E-mail from Dale Sims (3-401 AFSB AMC SPO Trans), 23 September 2010, Subject: MATV W/CROWS II Installed
6. E-mail from URS Contr./JPEO MRAP, 19 September 2012, SOCOM UIK and MATV UIK
7. E-mail from URS Contr./JPEO MRAP, 5 September 2012, Data Package for MATV SOCOM UIK
8. ATEC, Project No. 2010-DT-ATC-MRPAT-E6565, Report No. 10-WFE-31, 21 July 2010, Auxiliary Tie Down Testing of the Mine Resistant Ambush Protected (MRAP) All-Terrain Vehicle (M-ATV)

Item Description: The subject item is identified to be a two axle, all-terrain MRAP manufactured by Oshkosh. The vehicle's approximate dimensions, weights, and rated capacities are listed in Table 1. The vehicle can be configured with an OGPK (Objective Gunner Protection Kit) or a CROWS II (Common Remotely Operated Weapons Station) and/or Underbody Improvement Kit (UIK). Additionally, SOCOM variants may be equipped with the Monolithic Aluminum Armor Kit (MAK), which replaces applicable hull structures and original UIK--dimensions remain unchanged and gross vehicle weight is reduced. SOCOM variants with MAK are referred to as M-ATV SOCOM UIK.

Table 1: Approximate Vehicle Dimensions, Weights, and Ratings

Air Transport Configuration	Length (in)	Width (in)	Height* (in)	Front Axle Wt (lbs)	FAW Rating (lbs)	Rear Axle Wt (lbs)	RAW Rating (lbs)	GVW (lbs)	GVWR (lbs)
C-17/C-5	250	100	144	14,420	17,000	19,980	20,000	32,000	37,000
C-130	250	100	100	12,080	17,000	11,580	20,000	23,660	37,000

*Estimated height equipped with:

- (1) OGPK – 126” + Canopy – 143.6”,
- (2) RWS – 137”.
- (3) Without OGPK or CROWS II installed – 100” (UIK configured – 101.2”).



Figure 1: M-ATV with OGPK



Figure 2: RAM Bumper and CROWS II



Figure 3: CROWS II



Figure 4: M-ATV w/Original UIK

Certified Aircraft: USAF C-130, C-17 and C-5

Conditions of Certification:

1. Maximum Weight for Air Transport:

Table 2: Maximum Axle Weights and Gross Vehicle Weights

Air Transport Configuration	Front Axle Wt (lbs)	Rear Axle Wt (lbs)	Maximum GVW (lbs)	Rationale
C-17/C-5	17,000	20,000	37,000	Corresponding vehicle rated capacity
C-130	13,000	13,000	26,000	Aircraft limitations

2. Item Preparation:

- a. Fold exterior mounted mirrors inboard.
- b. Remove add-on ram bumper and transport as general cargo. See Figure 2.
- c. C-130: Vehicle shall be reduced to a height equal or less than 102 inches.

CAUTION: Vehicles equipped with UIK will not be transported aboard C-130 aircraft unless in compliance with Table 2 and paragraph 2 limitations. Transport may require removal of equipment or components in excess of those items listed in paragraph 2.b and 2.d

d. C-130: The following items will be removed from vehicle to reduce each axle weight resulting in a value less than or equal to 13,000 lbs (each axle):

- (1) OGPK
- (2) Front Spotlights
- (3) Front Gun Shield Base Mount
- (4) Spare Tire
- (5) All Basic Issue Items (BII) as listed in the M-ATV Operator Manual

e. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of AFSC/LOET [REDACTED].

f. C-17: Maximum vehicle height for air transport is 145”.

g. C-17/C-5: Sleeper shoring may be required. See paragraph 5. All shoring shall be provided by the shipper.

h. Tire pressure shall not exceed 100 psi.

3. Loading Instructions:

- a. Item can be loaded using general vehicle loading procedures as listed in the respective aircraft cargo loading manual.
- b. Vehicle may be driven or backed aboard aircraft.
- c. C-17/C-5: Sleeper shoring may be required, see paragraph 5.

4. Restraint Requirements: The M-ATV and all accompanying cargo must be restrained to meet MIL-HDBK-1791 requirements of 3G forward, 1.5G aft and lateral, and 2G up. In addition, stored or installed equipment must meet these requirements and be capable of withstanding a 4.5G down load. Tiedown provision locations and rated capacities are provided in Table 3. Additional restraint may be obtained from the vehicle axles up to their rated capacities listed in Table 1. Do not apply more than 50% of required restraint to vehicle axles for longitudinal and lateral directions. Note that spring mounted axles provide zero vertical restraint.

WARNING

Vehicle side mounted auxiliary tiedown provisions have been validated for lateral restraint only and shall not be used to obtain longitudinal or vertical restraint.

Table 3: Provision Location and Rated Capacities

Provision Location	Rated Capacity in lbs.		
	Longitudinal	Lateral	Vertical
Front Right	74,463	23,420	15,705
Front Left	74,463	23,420	15,705
Rear Right	74,463	32,080	21,520
Rear Left	74,463	32,080	21,520
Auxiliary (2-each side)	Zero	25,000	Zero



Figure 5: Front Tiedown Provisions



Figure 6: Rear Tiedown Provisions

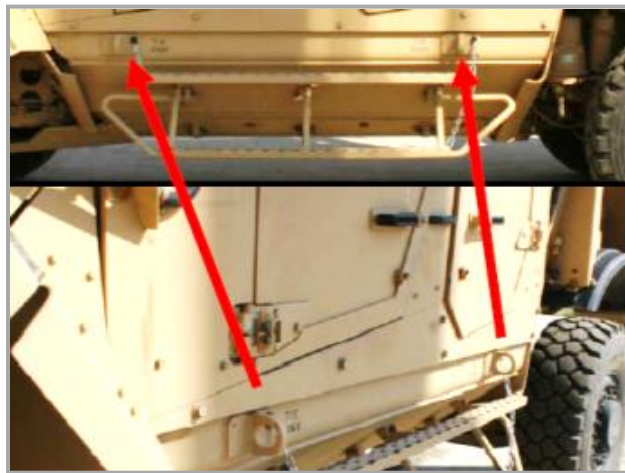


Figure 7: Auxiliary Tiedown Provisions

5. Required Shoring Dimensions:

a. Sleeper Shoring (applicable only to C-17/C-5):

(1) Front Axle: Two stacks are required when axle weight is greater than 14,420 lbs. Minimum base dimensions of each shoring stack shall be 15" L x 15" W.

(2) Rear Axle: Two stacks are required when axle weight is greater than 19,980 lbs. Minimum base dimensions shall be 17" L x 17" W.

(3) Position two shoring stacks, one on each side, adjacent to each axle as required. Sleeper shoring must be stacked to within ½" of chassis/frame and will be secured with cargo straps.

NOTE: Sleeper shoring height must be at least ½ the largest base dimension.

Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This memo will be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this item.

2. AMC/A3V & AMC/A4T

3. SDDC TEA

[REDACTED]

[REDACTED]

[REDACTED]