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# HEADQUARTERS



REPORT OF PROJECT NR \_\_\_\_\_ AB 661

"CONFIRMATORY TEST OF TRUCK, UTILITY,  $\frac{1}{2}$ -TON, 4x4, M151"

XEROX

22 May 1961

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HEADQUARTERS  
UNITED STATES CONTINENTAL ARMY COMMAND  
FORT MONROE, VIRGINIA

ATDEV-6 452.1

19 June 1961

SUBJECT: Report of Project Nr AB 661, "Confirmatory Test of Truck,  
Utility, 1/4-Ton, 4x4, M151"

TO: Chief of Research and Development  
Department of the Army  
Washington 25, D. C.

1. Inclosed is a copy of subject report prepared by the US Army  
Airborne and Electronics Board.

2. This headquarters concurs in the conclusions as stated in  
paragraph 7, of the report, when changed as follows:

"The Truck, Utility, 1/4-Ton, 4x4, M151, when modified by the  
attachment of a lifting device to the end of the wheel spindle, is  
suitable for air delivery and air transport."

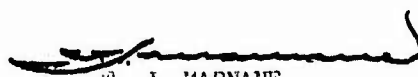
3. This headquarters recommends:

a. That the technical literature for rigging the Truck, Utility,  
1/4-Ton, 4x4, M151, modified for air delivery and external transport by  
helicopter be published at the earliest practicable date.

b. That the air delivery kits and components thereof for the  
Truck, Utility, 1/4-Ton, 4x4, M151, Modified, be made up by using units  
from individual items of standard equipment and materials.

FOR THE COMMANDER

1 Incl  
Rept of Proj Nr AB 661,  
USA Abn & Elect Bd, 22 May 61,  
subj as abv

  
T. J. MARNANE  
Colonel, ACC  
Adjutant General

Copies furnished:  
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HEADQUARTERS  
US ARMY AIRBORNE AND ELECTRONICS BOARD  
Fort Bragg, North Carolina

22 May 1961

REPORT OF PROJECT NR AB 661

"CONFIRMATORY TEST OF TRUCK, UTILITY, ½-TON, 4x4, M151"

1 AUTHORITY:

a. Directive:

(1) Letter, AFDEV-6 452.161, USCONARC, 16 January 1961, subject: "Air Delivery Test of Truck, Utility, ½-Ton, 4x4, M151."

(2) Equipment was received in March 1961.

b. Purpose: Determine:

(1) Suitability of the Truck, Utility, ½-Ton, 4x4, M151, for air delivery and air transport.

(2) Suitable air delivery kits and rigging techniques.

(3) Suitable air transport procedures.

2. REFERENCES:

a. Report of Project Nr 1945, "Test of Truck, Utility, ½-Ton, 4x4, XM151E1 and XM151E2," US Army Armor Board, 21 April 1959.

b. Report of Project Nr AB 4059, "Tests of Air Delivery Kit for Truck, Utility, ½-Ton, 4x4, M151," US Army Airborne and Electronics Board, 29 July 1960.

c. DA Project Number is 87-03-001; RDB Technical Objective is AL-3.

d. A requirement for this item has been deleted from subparagraph 1636c(1), CDOG.

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3. DESCRIPTION OF MATERIEL: The test item is a general purpose, tactical vehicle similar in configuration to the Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M38A1. All four wheels are independently suspended by coil springs from an integral all-welded body and frame. Suspension points for air delivery are provided at the wheel hubs. The test item is 132" x 63" x 71" high and weighs 2,306 pounds.

4. BACKGROUND:

a. A pilot model of the test item was tested for air delivery by this Board in 1958 and found to be suitable. However, several modifications were recommended (paragraphs 14g - k, Appendix B, reference 2a).

b. In 1960 this Board developed an air delivery kit for the test item using a pre-production model (reference 2b). Technical literature for rigging the test item was prepared and held in abeyance pending confirmatory test. This was done to decrease the time between delivery of production models of the test item and publication of rigging literature.

c. During tests conducted in a and b, above, the developmental test item was successfully dropped on a skidboard without the use of energy dissipator.

d. In early 1961 this Board conducted informal tests of a production model of the test item and found that the vehicle was unsatisfactory for use with the kit determined in reference 2b. It was not equipped with suspension points and the front cross member bent upon ground impact.

e. The present test item is a production model which has been equipped with hub type suspension points.

5. SUMMARY OF TESTS:

a. The test item is satisfactory for air delivery. Suitable air delivery kits and rigging techniques were determined using the combat expendable platform (CEP) system and the 11' Standard B platform (Test Nr 2).

b. The test item is satisfactory for air transport and suitable air transport procedures were determined (Test Nr 3).

c. The test item is satisfactory for transport by helicopter and suitable helicopter transport procedures were determined (Test Nr 4).

6. DISCUSSION

a. The Quartermaster Training Command, in coordination with this Board, compiled the necessary data for the preparation of technical literature for rigging the test item for air delivery. The air delivery kit lists, rigging techniques, and external transport by helicopter procedures are on file at this Board.

b. A comparison was made between the test item and M38A1 regarding air delivery.

(1) It is necessary to modify the M38A1 in accordance with paragraph 5, TM 10-500-10, prior to rigging for air delivery; no modification is required on the test item.

(2) Time required for preparation and rigging for air delivery of the test item is 2 man hours which is approximately one half of that required for the M38A1.

(3) The test item has a drive-on capability for rigging which the M38A1 does not have; therefore, materials handling equipment is not required. The energy dissipator used on the test item is less and easier to position.

(4) Rigged weight of the test item is less than the M38A1 by approximately 670 pounds when rigged on the same type platform.

(5) The test item requires only one G-11A cargo parachute; the M38A1 requires two.

(6) Derigging time for the test item is 5 man minutes which is approximately one third that required for the M38A1.

(7) Because the rear suspensions of the test item do not go through the cargo compartment floor as on the M38A1, more efficient use can be made of this area for stowing items such as radios.

7 CONCLUSIONS

a. The Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M151, is suitable for air delivery and air transport.

b. Air delivery kits, rigging techniques, and air transport procedures determined by this Board for Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M151, are suitable.

8. RECOMMENDATIONS:

a. That the technical literature for rigging the Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M151, for air delivery and external transport by helicopter be published at the earliest practicable date.

b. That the air delivery kits and components thereof for the Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M151, be made up by using units from individual items of standard equipment and materials.



JAMES F. ROBERTS  
Colonel, Artillery  
President

ANNEXES:

- A - Details of Tests.
- B - Findings (Not Used).
- C - Photograph.

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Ft Monroe, Va
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- 2 Bd File
- 2 ABSTD File



ANNEX A - DETAILS OF TESTS

REPORT OF PROJECT NR AB 661

Tests were conducted by Captain James E. Fiscus and other personnel of this Board.

1 TEST NR 1

a. Purpose. Determine the physical characteristics of the test item with respect to air delivery and air transport.

b. Method: The test item was examined, measured, and weighed. Technical data were reviewed.

c. Result: The test item is a general purpose, tactical vehicle similar in configuration to the Truck, Utility,  $\frac{1}{2}$ -Ton, 4x4, M38A1. All four wheels are independently suspended by coil springs from an integral all-welded body and frame. Suspension points for air delivery are provided at the wheel hubs. The test item is 132" x 63" x 71" high, reducible to 52 $\frac{1}{2}$ " high, and weighs 2,306 pounds.

2. TEST NR 2

a. Purpose: Determine:

- (1) Suitability of the test item for air delivery.
- (2) Suitable air delivery kits and rigging techniques.

b. Method:

(1) The test item was inspected and studied with reference to rigging for air delivery.

(2) The test item with 400 pounds of cargo placed therein was rigged using paperboard honeycomb as the energy dissipator (Annex C). One G-11A cargo parachute was used with each of the following methods:

A.1 (AB 661)

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<u>Method Nr</u>	<u>Platform</u>	<u>A/D Kit (Lb)</u>	<u>Gross Rigged Weight Including Parachute (Lb)</u>
1	11' x 70" CEP	388	3,420
2	11' Standard "B"	698	3,730

(3) The test item rigged as described in Method Nr 1 was dropped two times from C-119 aircraft flying at an indicated air speed of 130 knots and an actual altitude of 1,500'.

(4) The test item rigged as described in Method Nr 2 was dropped one time each from C-119 and C-130 aircraft flying at an indicated air speed of 130 knots and an actual altitude of 1,500'.

(5) Motion pictures were taken and studied. The test item was derigged, inspected for damage, and operated after each drop.

c. Results.

(1) No difficulties were encountered in rigging.

(2) Parachute drops:

<u>Rigging Method Nr</u>	<u>Drop Nr</u>	<u>Rate of Descent Last 200' (FPS)</u>	<u>Surface Winds (Knots)</u>	<u>Damage</u>
1	1	20	10	None.
1	2	20	8	None.
2	3	20	8	None.
2	4	20	10	None.

(3) The test item operated satisfactorily after each drop.

(4) The test item is satisfactory for air delivery.

(5) Suitable air delivery kits and rigging techniques were determined.

A.2 (AB 661)

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3. TEST NR 3

a. Purpose: Determine.

- (1) Suitability of the test item for air transport.
- (2) Special techniques and equipment required to load, restrain, and off-load the test item.

b. Method: The test item with and without Trailer, Cargo,  $\frac{1}{2}$ -Ton, 2 Wheel, XM416, was studied with reference to weight, overall and reducible dimensions, and obstructions to loading in appropriate aircraft.

c. Results: By study it was determined that:

- (1) The test item with and without trailer in C-119, C-123, C-124, C-130, C-133, and AC-1 aircraft is satisfactory for air transport without reduction in size
- (2) No special techniques or equipment are required.

4. TEST NR 4

a. Purpose:

- (1) Determine the suitability of the test item for transport by helicopter.
- (2) Special techniques and equipment required.

b. Method:

- (1) The test item was inspected and studied with reference to transport by helicopter.
- (2) The test item with and without Trailer, Cargo,  $\frac{1}{2}$ -Ton, 2 Wheel, XM416, was loaded internally in H-37 Helicopter.
- (3) The test item was transported externally by H-21 Helicopter.

c. Results:

- (1) The test item with trailer is satisfactory for internal transport without reduction in size in H-37 Helicopter.

A.3 (AB 661)

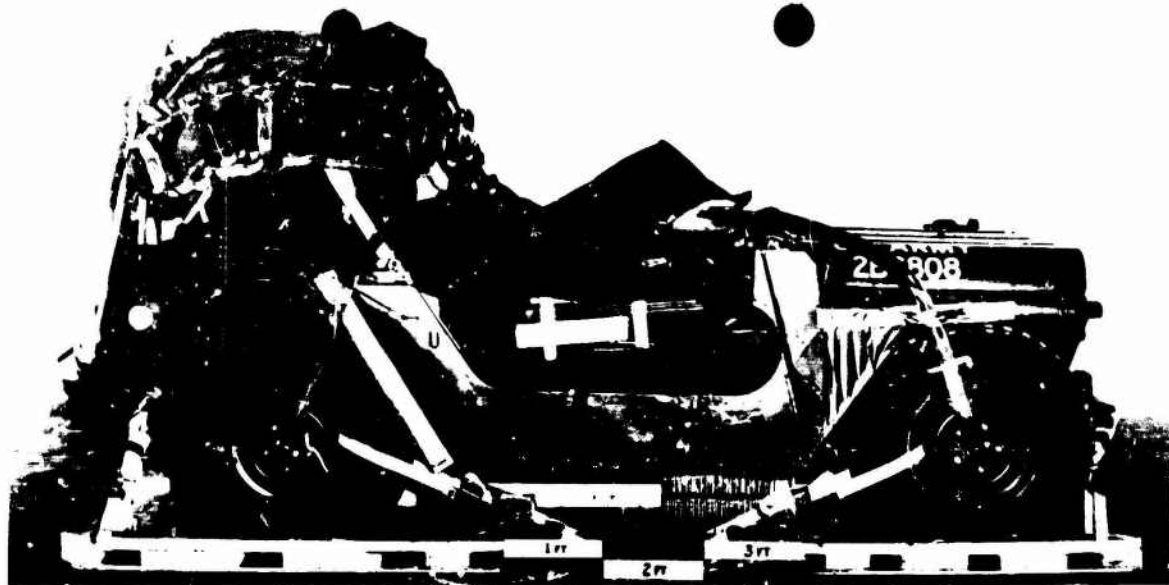
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(2) The test item is satisfactory for external transport by H-21, H-34, and H-37 Helicopters.

(3) No special techniques or equipment are required.

A.4 (AB 661)

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BOARD

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PROJECT AB 661

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ANNEX C

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"CONFIRMATORY TEST OF TRUCK, UTILITY,  $\frac{1}{2}$ -TON,  
4X4, M151"

UPPER - RIGGED ON 11' X 70" WIDE COMBAT  
EXPENDABLE PLATFORM

LOWER - RIGGED ON 11' STANDARD "B" PLATFORM

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