FINAL REPORT
MAY 2003

REPORT NO. 02-19 (A)

HIMARS RESUPPLY VEHICLE AND TRAILER
TP-94-01,
"TRANSPORTABILITY TESTING PROCEDURES"

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VALIDATION ENGINEERING DIVISION
MCALESTER, OKLAHOMA 74501-9053
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ABSTRACT

The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SJMPC-DEV), was tasked by the Precision Fire Rocket and Missile System Project Management Office, Huntsville, Alabama, to conduct transportability testing using the High Mobility Artillery Rocket System (HIMARS) Resupply Vehicle (RSV) and Resupply Trailer (RST) when loaded with Multiple Launch Rocket System (MLRS) rocket pods. Loading procedures specified in AMC Drawing 19-48-8152 were used as a guideline. The testing was conducted in accordance with TP-94-01, Revision 1, July 2003 “Transportability Testing Procedures.”

The HIMARS Resupply Vehicle and Resupply Trailer were tested in accordance with TP-94-01, Revision 1, July 2002. The primary area of concern was with the lateral movement of the pods during current and previous testing. The results of the movement were that the straps loosened during rail impact testing. The brackets “shoes” are laterally too far apart. Therefore, we recommend that the lateral distance between the “shoes” be reduced.

Also, the RSV and RST are currently equipped with 8-D handles each. During testing the forward most and rearward most rings on each side were used. Therefore, we recommend that four D handles, the second handles in from each corner, be eliminated.

Therefore, the HIMARS RSV and RST, as tested, are satisfactory to transport ammunition.

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PART 1 – INTRODUCTION

A. BACKGROUND. The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SJMAC-DEV), was tasked by the Precision Fire Rocket and Missile System Project Management Office, Huntsville, Alabama, to conduct transportability testing using the HIMARS Resupply Vehicle (RSV) and Resupply Trailer (RST) when loaded with rocket pods. Loading procedures specified in AMC Drawing 19-48-8152 were used as a guideline. The testing was conducted in accordance with TP-94-01, Revision 1, July 2002, “Transportability Testing Procedures.”

B. AUTHORITY. This test was conducted IAW mission responsibilities delegated by the U.S. Army Joint Munitions Command (JMC), Rock Island, IL. Reference is made to the following:


C. OBJECTIVE. The objective of the testing was to validate if the HIMARS RSV and RST, manufactured by Stewart and Stevenson, satisfied the transportability requirements of TP-94-01, Revision 1, July 2002.

D. CONCLUSION. The HIMARS Resupply Vehicle and Resupply Trailer were tested in accordance with TP-94-01, Revision 1, July 2002. The primary area of concern was with the lateral movement of the pods during current and previous testing. The results of the movement were that the straps loosened during rail impact testing. The brackets “shoes” are laterally too far apart. Therefore, we recommend that the lateral distance between the “shoes” be reduced.
Also, the RSV and RST are currently equipped with 8-D handles each. During testing the forward most and rearward most rings on each side were used. Therefore, we recommend that four D handles, the second handles in from each corner, be eliminated.

Therefore, the HIMARS RSV and RST, as tested, are satisfactory to transport ammunition.
## PART 2 - ATTENDEES

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<th>ATTENDEE</th>
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<tbody>
<tr>
<td>Philip Barickman</td>
<td>Director</td>
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<td></td>
<td>McAlester, OK 74501-9053</td>
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<tr>
<td>Richard Garside</td>
<td>Director</td>
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<td>Lloyd Cato</td>
<td>Military Traffic Management Command</td>
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<td>Transportation Engineering Agency</td>
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<td></td>
<td>Newport News, VA 23606</td>
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<td>Systems Studies and Simulations, Inc.</td>
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<td>HIMARS, Precision Fires Rocket and Missile Systems Project Office</td>
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<td>DSN 746-4801</td>
<td>Redstone Arsenal, AL 35898</td>
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<td>(256) 876-4801</td>
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<td>DSN 746-4184</td>
<td>HIMARS, Precision Fires Rocket and Missile Systems Project Office</td>
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<tr>
<td>(256) 876-4184</td>
<td>Redstone Arsenal, AL 35898</td>
</tr>
<tr>
<td>Brian Matteucci</td>
<td>Stewart and Stevenson</td>
</tr>
<tr>
<td>Senior Engineer</td>
<td>Tactical Vehicle Systems</td>
</tr>
<tr>
<td>(713) 867-1939</td>
<td>5000 Interstate 10 West</td>
</tr>
<tr>
<td></td>
<td>Sealy, TX 77474</td>
</tr>
</tbody>
</table>
PART 3 - TEST EQUIPMENT

1. Truck, Cargo: MTV, HIMARS Resupply, M1084A1
   Manufactured by: Stewart and Stevenson
   Tactical Vehicle Systems Division
   Sealy, TX 77474
   MFG Serial No.: C-015393BFGK
   MFG Date: 08/01
   Maximum Payload: 5 tons
   Empty Weight: 24,420 pounds
   Gross Weight: 35,147 pounds

2. Trailer Cargo, 5 ton: MTV, M1095
   Manufactured by: Stewart and Stevenson
   Tactical Vehicle Systems Division
   Sealy, TX 77474
   NSN: 2330 01 449 1776
   MFG Serial No.: TM-014431BFCK
   MFG Date: 04/01
   Maximum Payload: 5 tons
   Curb Weight Total: 9,520 pounds
   Gross Weight: 19,520 pounds

Photo 1. HIMARS RSV and RST
3. Dynometer
Manufactured by: John Chatillion & Son New York, New York
Model: TD-5
Serial No. 6226
Range: 0-10,000 lbs.
Calibration Date: 1 May 2002
PART 4 - TEST PROCEDURES

The test procedures outlined in this section were extracted from TP-94-01, "Transportability Testing Procedures," Revision 1, July 2003, for validating tactical vehicles and outloading procedures used for shipping munitions by tactical or commercial truck, railcar, and ocean-going vessel.

Inert (non-explosive) items will be used to build the load. The test loads will be prepared using the blocking and bracing procedures proposed for use with munitions (see Part 7 for procedures). The weight and physical characteristics (weights, physical dimensions, center of gravity, etc.) of the test loads will be similar to live (explosive) ammunition.

A. RAIL TEST. RAIL IMPACT TEST METHOD. The test load or vehicle will be secured to a flatcar. The equipment needed to perform the test will include the specimen (hammer) car, four empty railroad cars connected together to serve as the anvil, and a railroad locomotive. The anvil cars will be positioned on a level section of track with air and hand brakes set and with draft gears compressed. The locomotive unit will push the specimen car toward the anvil at a predetermined speed, then disconnect from the specimen car approximately 50 yards away from the anvil cars allowing the specimen car to roll freely along the track until it strikes the anvil. This will constitute an impact. Impacting will be accomplished at speeds of 4, 6, and 8.1 mph in one direction and at a speed of 8.1 mph in the reverse direction. The speeds will have a tolerance of plus .5 mph and minus zero mph. The impact speeds will be determined by using an electronic counter to measure the time for the specimen car to traverse an 11-foot distance immediately prior to contact with the anvil cars (see Figure 1).
ASSOCIATION OF AMERICAN RAILROADS (AAR)

STANDARD TEST PLAN

4 BUFFER CARS (ANVIL) WITH DRAFT GEAR COMPRESSED AND AIR BRAKES IN A SET POSITION

ANVIL CAR TOTAL WT. 250,000 LBS (APPROX)

SPECIMEN CAR IS RELEASED BY SWITCH ENGINE TO ATTAIN:

IMPACT NO. 1 @ 4 MPH
IMPACT NO. 2 @ 6 MPH
IMPACT NO. 3 @ 8.1 MPH

THEN THE CAR IS REVERSED AND RELEASED BY SWITCH ENGINE TO ATTAIN:

IMPACT NO. 4 @ 8.1 MPH

Figure 1. Rail Impact Sketch
B. **ON/OFF ROAD TESTS.**

1. **HAZARD COURSE.** The test load or vehicle will be transported over the 200-foot-long segment of concrete-paved road consisting of two series of railroad ties projecting 6 inches above the level of the road surface. The hazard course will be traversed two times (see Figure 2).

![Hazard Course Sketch]

**Figure 2. Hazard Course Sketch**

a. The first series of 6 ties are spaced on 10-foot centers and alternately positioned on opposite sides of the road centerline for a distance of 50 feet.

b. Following the first series of ties, a paved roadway of 75 feet separates the first and second series of railroad ties.

c. The second series of 7 ties are spaced on 8-foot centers and alternately positioned on opposite sides of the road centerline for a distance of 50 feet.
d. The test load is driven across the hazard course at speeds that will produce the most violent vertical and side-to-side rolling reaction obtainable in traversing the hazard course (approximately 5 mph).

2. **ROAD TRIP.** The test load or vehicle will be transported for a distance of 30 miles over a combination of roads surfaced with gravel, concrete, and asphalt. The test route will include curves, corners, railroad crossings and stops and starts. The test load or vehicle will travel at the maximum speed for the particular road being traversed, except as limited by legal restrictions.

3. **PANIC STOPS.** During the road trip, the test load or vehicle will be subjected to three (3) full airbrake stops while traveling in the forward direction and one in the reverse direction while traveling down a 7 percent grade. The first three stops are at 5, 10, and 15 mph while the stop in the reverse direction is approximately 5 mph. This testing will not be required if the Rail Impact Test is performed.

4. **WASHBOARD COURSE.** The test load or vehicle will be driven over the washboard course at a speed that produces the most violent response in the vertical direction.

![Figure 3. Washboard Course Sketch](image)
PART 5 - TEST RESULTS

5.1 HIMARS RSV and RST with Full Payload.

Payload Weight:
- RSV - 10,530 pounds
- RST - 10,495 pounds

Testing Date: 8 April 2003

A. RAIL TEST.

Photo 2. Rail Impact Testing of HIMARS RSV and RST.
<table>
<thead>
<tr>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flatcar Number: OTTX 97099</td>
<td>68,100 lbs.</td>
</tr>
<tr>
<td>HIMARS Resupply Vehicle and Resupply Trailer with full payload</td>
<td>55,920 lbs.</td>
</tr>
<tr>
<td>Total Specimen Wt.</td>
<td>124,020 lbs.</td>
</tr>
<tr>
<td>Buffer Car (four cars)</td>
<td>257,900 lbs.</td>
</tr>
</tbody>
</table>

Figure 4.

Remarks: Figure 4 lists the test components and weights of the items used during the Rail Impact Tests.

<table>
<thead>
<tr>
<th>Impact Number</th>
<th>Avg. Velocity (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.4</td>
</tr>
<tr>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>3</td>
<td>6.2</td>
</tr>
<tr>
<td>4</td>
<td>8.2</td>
</tr>
<tr>
<td>5</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Figure 5.

Remarks:
1. Figure 5 lists the average speeds of the specimen car immediately prior to impact with the anvil. Impact #1 was determined to be a "no test" due to the inadequate impact speed (minimum 4 mph). Impact #5 is the reverse impact.
2. Following Impact #2 the payload moved 0.25 inches in the direction of impact on the trailer (toward the rear of the trailer) on both the passenger and driver's side of the trailer. The payload on the truck moved 1.25-1.5 inches in the direction of impact (toward the rear of the truck) on the vehicle.
3. Following Impacts #3 and #4 there was no additional movement of the payload.
4. Following Impact #5 the payload moved 0.75 inches on the truck and 0.5 inches on the trailer, in the direction of impact. The payload moved on the
vehicle passenger side 0.37 inches laterally toward the driver's side following Impact #5. The strap located at the rear of the truck on the driver's side loosened due to the brackets “shoes” are too far apart laterally.

B. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

![Photo 3. Example of Hazard Course Testing of the HIMARS RSV and RST](image)

<table>
<thead>
<tr>
<th>Pass No.</th>
<th>Elapsed Time</th>
<th>Avg. Velocity (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>34 Seconds</td>
<td>4.3</td>
</tr>
<tr>
<td>2</td>
<td>23 Seconds</td>
<td>6.3</td>
</tr>
</tbody>
</table>

**Figure 6.**

**Remarks:**
1. Figure 6 lists the average speeds of the test load through the Hazard Course.
2. Inspection following Passes #1 and #2 revealed no excessive movement of the payload, damage to the truck, trailer, tiedowns, and straps.
2. **ROAD TRIP:** Inspection revealed no damage or excessive movement of the payload or damage to the truck, trailer, tiedowns or straps.

3. **PANIC STOPs:** Testing was not required since the HIMARS RSV and RST were rail impact tested.

4. **HAZARD COURSE:**

<table>
<thead>
<tr>
<th>Pass No.</th>
<th>Elapsed Time</th>
<th>Avg. Velocity (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>22 Seconds</td>
<td>6.6</td>
</tr>
<tr>
<td>4</td>
<td>24 Seconds</td>
<td>6.0</td>
</tr>
</tbody>
</table>

   **Figure 7.**

**Remarks:**
1. Figure 7 lists the average speeds of the test load through the Hazard Course.
2. Inspection following Passes #3 and #4 revealed no excessive movement of the payload, damage to the truck, trailer, tiedowns, and straps.
3. Passes #3 and #4 were conducted following the Road Trip.

5. **WASHBOARD COURSE:** Inspection revealed no damage or excessive movement of the payload or damage to the truck, trailer, tiedowns, or straps.
C. **CONCLUSION:** The HIMARS RSV and RST performed adequately during testing. Therefore, the HIMARS RSV and RST, as tested, are adequate for the transport of ammunition. The lateral movement of the pods during rail impact testing is an area of concern. The results of the movement were that the straps loosened during rail impact testing. The brackets "shoes" are laterally too far apart. Therefore, we recommend that the lateral distance between the "shoes" be reduced.
5.2 HIMARS RSV and RST with Half Payload

Payload Weight: RSV – 5,275 pounds
   RST – 5,265 pounds

Testing Date: 9 April 2003

Photo 5. Single Pod Payload on RSV and RST.

A. ON/OFF ROAD TESTS.

1. HAZARD COURSE.

Photo 6. Example of Hazard Course Testing of RSV and RST.
### Figure 8.

**Pass No.** | **Elapsed Time** | **Avg. Velocity (mph)**
--- | --- | ---
1 | 22 Seconds | 6.6
2 | 30 Seconds | 4.8

**Remarks:**
1. Figure 8 lists the average speeds of the test load through the Hazard Course.
2. Inspection following Passes #1 and #2 revealed no excessive movement of the payload, damage to the truck, trailer, tiedowns or straps.

2. **ROAD TRIP:** Inspection revealed no damage or excessive movement of the payload or damage to the truck, trailer, tiedowns, or straps.

3. **PANIC STOPS:** Inspection revealed no damage or excessive movement of the payload or damage to the truck, trailer, tiedowns, or straps.

### Figure 9.

**Pass No.** | **Elapsed Time** | **Avg. Velocity (mph)**
--- | --- | ---
3 | 28 Seconds | 5.2
4 | 26 Seconds | 5.6

**Remarks:**
1. Figure 9 lists the average speeds of the test load through the Hazard Course.
2. Inspection following Passes #3 and #4 revealed no excessive movement of the payload, damage to the truck, trailer, tiedowns, or straps.
3. Passes #3 and #4 were conducted following the road trip.
5. **WASHBOARD COURSE**: Inspection revealed no damage or excessive movement of the payload or damage to the truck, trailer, tiedowns, or straps.

![Photo 7. Example of Washboard Course testing of HIMARS RSV and RST.](image)

**B. CONCLUSION**: No damage or excessive movement of the payload or damage to the truck, trailer, tiedowns, or straps occurred during testing. Therefore, the HIMARS RSV and RST, as tested, are adequate for the transport of ammunition.
5.3 HIMARS RSV and RST Ring Pull Test

Testing Date: 10 April 2003

A. **PULL TESTING**: The pull testing was conducted on the D handle on the front driver's side of the RSV and RST. The testing was conducted in the vertical direction and at the resultant angle of 35 degrees lateral and 49 degrees longitudinal. The pull was 5000 pounds and was held a minimum of 6 seconds.

**Remarks**: Inspection following each test revealed no visible deformation to the D handles or area around the D handles.

B. **CONCLUSION**: The D handle tie-down provisions, as currently designed, are adequate to be used for ammunition transportation.

Photo. 8  D Handle Testing on RSV.
Photo. 9  D Handle Testing on RST.
PART 6 – ACCELEROMETER DATA

The first accelerometers were located in various areas on the test specimen. These areas are described on each of the following graphic depictions of each of the railcar impacts, hazard course, road course, and washboard course. The axial orientation of the accelerometers is as follows:

A table depicting the identification and location of the graphic illustrations is below:
(Sensors were located on the RSV and RST as shown below).

<table>
<thead>
<tr>
<th>HIMSRS RSV/RST</th>
<th>FULL PAYLOAD</th>
<th>PAGE</th>
<th>HALF PAYLOAD</th>
<th>PAGE</th>
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HIMARS RSV (FULL LOAD) - 30 Mile Road Trip

Lateral Acceleration

5000 milliseconds per division

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

HIMARS RSV (FULL LOAD) - 30 Mile Road Trip

Longitudinal Acceleration

5000 milliseconds per division

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.
HIMARS RSV (FULL LOAD) - 30 Mile Road Trip

Vertical Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division

HIMARS RST (FULL LOAD) - 30 Mile Road Trip

Lateral Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division
HIMARS RST (FULL LOAD) - 30 Mile Road Trip

Longitudinal Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division

HIMARS RST (FULL LOAD) - 30 Mile Road Trip

Vertical Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division
HIMARS RSV (PARTIAL LOAD) - WASHBOARD COURSE

Vertical Acceleration

EDR3-0185
2 events
200 Hz sample rate
local x-axis

5000 milliseconds per division

HIMARS RST (FULL LOAD) - WASHBOARD COURSE

Lateral Acceleration

EDR3-0178
2 events
200 Hz sample rate
local x-axis

5000 milliseconds per division
HIMARS RST (FULL LOAD) - WASHBOARD COURSE

**Longitudinal Acceleration**

Acceleration (g)

5000 milliseconds per division

**Vertical Acceleration**

Acceleration (g)

5000 milliseconds per division
HIMARS RSV (PARTIAL LOAD) - 30 Mile Road Trip

Lateral Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division

Longitudinal Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division
HIMARS RST (PARTIAL LOAD) - 30 Mile Road Trip

Longitudinal Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division

Vertical Acceleration

Note: random vibration indicated is not a continuous representation of entire 30 mile road trip.

5000 milliseconds per division
PART 7 – DRAWINGS

The following drawing represents the load configuration that was subjected to the test criteria.
MLRS
LOADING, TIEDOWN, AND UNLOADING PROCEDURES FOR THE ROCKET POD CONTAINER (RP/C) FOR THE MULTIPLE LAUNCH ROCKET SYSTEM IN/ON TACTICAL VEHICLES

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U.S. ARMY MATERIEL COMMAND DRAWING

DO NOT SCALE
SPECIAL NOTES:

1. A LOAD OF ONE CONTAINER IS SHOWN ON A 10-TON M577/ M885 HEAVY EXPANDED MOBILITY TACTICAL TRUCK HAVING DESIRABLE DIMENSIONS OF 216-3/4" LONG BY 86-3/4" WIDE. EQUIPPED WITH SHACK TYPE RESTRAINING DEVICES. SEE SHOWN ON PAGE 25.

2. THE 10-TON M577/M885 HEAVY EXPANDED MOBILITY TACTICAL TRUCK UTILIZES THE DEVICES SHOWN ON PAGE 25 FOR LOADING AND TIDDOWN OF THE CONTAINER.

3. A TOTAL OF FOUR WEB STRAP TIDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN ABOVE.

KEY NUMBERS:

1. SHACK ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 26. PRE-POSITION EACH SHACK ASSEMBLY AS SHOWN IN THE PLAN VIEW OF 10-TON M577/M885 HEAVY MOBILITY TACTICAL TRUCK. SEE LOADING PROCEDURES NOTE 2 ON PAGE 27. SEE FIGURE OF SYSTEM ASSEMBLY ON PAGE 2.


LOAD AS SHOWN

<table>
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<tr>
<th>ITEM</th>
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<tr>
<td>CONTAINER</td>
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10-TON M577/M885 HEAVY EXPANDED MOBILITY TACTICAL TRUCK (HEMTI)  
PROJECT ON 725-50  

PAGE 15  
7-3
SPECIAL NOTES:

1. A LOAD OF TWO CONTAINERS IS SHOWN IN A 10-TON M977/M983 HEAVY EXPANDED MOBILITY TACTICAL TRUCK, HAVING INSIDE DIMENSIONS OF 213 3/4" LONG BY 60 1/4" WIDE EQUIPPED WITH "SHOCK" TYPE RESTRAINING DEVICES AS SHOWN ON PAGE 20.

2. IF THE 10-TON M977/M983 HEAVY MOBILITY TACTICAL TRUCK IS NOT EQUIPPED WITH THE "SHOCK" TYPE RESTRAINING DEVICES USE THE PROCEDURES SHOWN ON PAGE 20 FOR LOADING AND TIGHTENING OF THE CONTAINERS.

3. WHEN POSITIONING CONTAINERS ON VEHICLES ASSURE THAT LIFTING RINGS ON CONTAINERS ARE OFFSET LONGITUDINALLY AND RESTING ON TOP OF ADJACENT CONTAINER.

4. A TOTAL OF FOUR WEB STRAP TIEDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN ABOVE.

KEY NUMBERS


LOAD AS SHOWN

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<td>CONTAINER</td>
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PAGE 16 10-TON M977/M983 HEAVY EXPANDED MOBILITY TACTICAL TRUCK (HEMT) PROJECT GM 725-90
SPECIAL NOTES:
1. A LOAD OF ONE CONTAINER IS SHOWN IN AN 11-TON M989 HEAVY EXPANDED MOBILITY AMMUNITION TRAILER, HAVING INSIDE DIMENSIONS OF 209" LONG X 92-1/2" WIDX EQUipped WITH "SHOE" TYPE RESTRAINING DEVICES AS SHOWN ON PAGE 25.
2. CAUTION: CONTAINERS MUST NOT BE POSITIONED TWO HIGH ON THIS TYPE TRAILER DUE TO THE STABILITY OF THE TRAILER.
3. IF THE 11-TON M989 HEMAT IS NOT EQUIPPED WITH THE "SHOE" TYPE RESTRAINING DEVICES DESCRIBED THE PROCEDURES SHOWN ON PAGE 25 FOR LOADING AND TIE-DOWN OF ONE CONTAINER.
4. A TOTAL OF FOUR WEB STRAP TIE-DOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN ABOVE.

KEY NUMBERS


LOAD AS SHOWN

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11-TON M989 HEAVY EXPANDED MOBILITY AMMUNITION TRAILER (HEMAT)
SPECIAL NOTES:
1. A LOAD OF TWO CONTAINERS IS SHOWN ON AN 11-TON NSREB HEAVY EXPANDED MOBILITY AMMUNITION TRAILER. HAVING INSIDE DIMENSIONS OF 205' LONG BY 10'-11½" WIDE, EQUIPPED WITH "SHARP" TYPE RESTRAINING DEVICES AS SHOWN ON PAGE 29.
2. CARRYING CONTAINERS MUST NOT BE POSITIONED TOO HIGH ON D-RING TYPE TRAILER DUE TO THE STABILITY OF THE TRAILER.
3. IF THE 11-TON NSREB HEIGHT IS NOT EQUIPPED WITH THE "SHARP" TYPE RESTRAINING DEVICES USE THE PROCEDURES SHOWN ON PAGE 8 FOR LOADING AND TIE DOWN OF THE CONTAINERS.
4. WHEN POSITIONING CONTAINERS ON VEHICLES ASSURE THAT LIFTING RINGS ON CONTAINERS ARE ORIENTED AND RESTING ON TOP OF ADJACENT CONTAINER.
5. A TOTAL OF FOUR WEB STRAP TIE-DOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN ABOVE.

KEY NUMBERS

LOAD AS SHOWN

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11-TON NSREB HEAVY EXPANDED MOBILITY AMMUNITION TRAILER (HEMAT)

PROJECT CM 725-BD

7-6