

INCH-POUND

ATPD-2171A

16 MAY 2013

SUPERSEDING

ATPD-2171

7 NOVEMBER 1990

## PURCHASE DESCRIPTION

### LIGHT TACTICAL TRAILER

This purchase description is approved for use by the U.S. Army Tank-Automotive and Armaments Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This purchase description covers a family of Light Tactical companion trailers for the High Mobility Multipurpose Wheeled Vehicle (HMMWV). The trailers should comply with all federal legal requirements applicable on the date of manufacture. The LTT-Light (LTT-L) trailer variant should possess a trailer cargo box and 1,940 pound payload capacity. The LTT-L should be compatible with the Group I/II and III HMMWV. Tasks for the LTT-Heavy (LTT-H) trailer require a cargo box and 2,740 pound payload. Tasks for the LTT-Heavy Chassis (LTT-HC) include generator transport and require 3,025 pound payload. All the LTT-H and the LTT-HC should be compatible with the Group III, Heavy HMMWV Variant.

1.2 General Use. All trailers should have a service life of 20 years while operating off-road, on trails, and on secondary and primary roads. Where trailer requirements are set forth, they should apply to all trailer configurations except when specifically stated otherwise herein.

#### 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must

Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or emailed to [usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil](mailto:usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

ATPD-2171A

meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, Standards and Handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

COMMERICAL ITEM DESCRIPTIONS

- A-A-50271 - Plate, Identification
- A-A-52513 - Bracket Assembly, Liquid Container, Five Gallon
- A-A-52550 - Pintle Assembly, Towing

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-10924 - Grease, Automotive and Artillery
- MIL-PRF-46176 - Brake Fluid, Silicone, Automotive, All Weather, Operational and Preservative
- MIL-DTL-53039 - Coating Aliphatic Polyurethane, Single Component Chemical Agent Resistant
- MIL-DTL-53084 - Primer, Cathodic Electrodeposition, Chemical Agent Resistant
- MIL-DTL-64159 - Coating Aliphatic Polyurethane, Chemical Agent Resistant
- MIL-DTL-53072 - Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection
- MIL-DTL-53022 - Primer, Epoxy Coating, Corrosion Inhibiting, Lead and Chromate Free
- MIL-DTL-53030 - Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free
- MIL-DTL-32361 - Composite Light, Tail Stop, Turn and Marker

DEPARTMENT OF DEFENSE STANDARDS

- MIL-STD-209 - Interface Standard for Lifting and Tiedown Provisioning
- MIL-STD-642 - Identification Marking of Combat and Tactical Transport Vehicles
- MIL-STD-810 - Environmental Engineering Considerations
- MIL-STD-814 - Requirement for Tiedown, Suspension and Extraction Provisions on Military Equipment
- MIL-STD-889 - Dissimilar Metals

ATPD-2171A

- MIL-STD-913 - Requirements for the Certification of Externally Transported Military Equipment by Department of Defense Rotary Wing Aircraft
- MIL-STD-1179 - Lamps, Reflectors and Associated Signaling Equipment for Military Vehicles
- MIL-STD-1180 - Safety Standards for Military Ground Vehicles
- MIL-STD-1366 - Interface Standard for Transportability criteria
- MIL-STD-1472 - Design Criteria Standard for Human Engineering
- MIL-STD-1791 - Designing for Internal Aerial Delivery in Fixed Wing Aircraft

DEPARTMENT OF DEFENSE HANDBOOKS

- MIL-HDBK-46164 - Rustproofing for Military Vehicles and Trailers

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

2.2.2 Other Government Documents, Drawings and Publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ARMY REGULATIONS

- AR 70-38 - Research, Development, Test and Evaluation of Material for Extreme Climatic Conditions

(Copies of this regulation are available from <http://www.apd.army.mil/>)

CODE OF FEDERAL REGULATIONS (CFR)

- 49CFR393 - Parts and Accessories Necessary for Safe Operation

(Copies of these documents are available from [www.fdsys.gov](http://www.fdsys.gov) or U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000.)

U.S. ARMY DRAWINGS

- 11640481 - Jack-Scissor
- 12255298 - Handle, Jack
- 57K4152 - Soft Top Kit, Standard Camouflage
- 57K4153 - Soft Top Kit, Green
- 57K4154 - Soft Top Kit, Tan

## ATPD-2171A

57K4155	-	Soft Top Kit, White Camouflage
12339345	-	Harness Assembly, Body
12340532	-	Basic Issue Items
12460176	-	Wheel and Run Flat Assembly
10948047	-	Tiedown, Universal
13228E1644	-	Trailer, Light Tactical (LTT) Camouflage Pattern
12479550	-	Ground Combat Vehicle Welding Code - Steel
12472301	-	Ground Combat Vehicle Welding Code – Aluminum
13230E6520	-	Power Unit – 5 kW, 60 Hz, PU-797A
13230E6530	-	Power Unit – 10 kW, 60 Hz, PU-798A
13230E6540	-	Power Unit – 10 kW, 400 Hz, PU-799A
13230E6550	-	Power Unit – 15 kW, 50/60 Hz, PU-801A
13230E6560	-	Power Plant – 5 kW, 60 Hz, AN/MJQ-35A

## US ARMY TACOM TECHNICAL DOCUMENTS

Army Ground System Design Guides for Corrosion Control  
ES7450 - Preparation, Application, and Quality Assurance of CARC  
Failure Definition and Scoring Criteria for the Light Tactical Trailer

(Copies of these documents are available from U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-EN/STND/TRANS MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or can be requested by sending an email to [usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil](mailto:usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil).)

## U.S. ARMY DEVELOPMENTAL TEST COMMAND TEST OPERATIONS PROCEDURES

TOP 2-2-608 - Braking, Wheeled Vehicles (DTIC 719084)

(Copies of this document are available from Defense Technical Information Center, 8725 John J. Kingman Rd., STE 0944, Fort Belvoir, VA 22060-6218 or <http://itops.dtc.army.mil/RequestForDocuments.aspx>.)

## U.S. AIR FORCE AERONAUTICAL SYSTEMS DIVISION, AFSC DOCUMENT

AFSC Design Handbook, DH 1-11, Air Transportability Handbook

(Application for copies should be addressed to Wright-Patterson AFB, ASC/ENS, Wright-Patterson AFB, OH 45433-7101 or [Engineering.Standards@wpafb.af.mil](mailto:Engineering.Standards@wpafb.af.mil)).

2.3 Non-Government Publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ATPD-2171A

ASTM INTERNATIONAL

- ASTM D1149 - Test Method for Rubber Deterioration-Surface Ozone Cracking in a Chamber
- ASTM D2000 - Rubber Products in Automotive Applications

(Copies of these documents are available from [www.astm.org](http://www.astm.org) or ASTM International, P.O. Box C700, West Conshohocken, PA 19428-2959.)

EUROPEAN UNION DIRECTIVES

- 2002/95/EC - DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the restriction of the use of certain hazardous substances in electrical and electronic equipment

(Copies of these documents are available from <http://eur-lex.europa.eu/> or EU - EU/EC - European Union/Commission Legislative Documents, 175 Rue De La Loire, Brussels, Belgium, BEL 1049)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- ISO 688 - Series I Freight Containers – Classification, Dimensions, and Ratings

(Copies of these documents are available from [www.iso.org](http://www.iso.org) or [www.ansi.org](http://www.ansi.org) or ANSI Customer Service Department, 25 W. 43rd Street, 4th Floor, New York, NY 10036.)

SAE INTERNATIONAL

- SAE J134 - Brake System Road Test Code - Passenger Car and Light Duty Truck-Trailer Combinations
- SAE J684 - Trailer Couplings, Hitches and Safety Chains - Automotive Type

(Copies of these documents are available from [www.sae.org](http://www.sae.org) or SAE Customer Service, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of Precedence. In the event of a conflict between the text of this purchase description and the references cited herein, the text of this purchase description shall take precedence. Nothing in this purchase description, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS.

Unless otherwise specified herein, all requirements shall be met at Gross Combined Vehicle Weight (GCVW) which is defined as the Gross Vehicle Weight (GVW) of the Prime Mover plus the GVW of the trailer.

3.1 System Definition. The M1101 and M1102 are highly mobile, all terrain vehicles capable of operating on cross country, unimproved roads, and improved roads, and shall meet all performance parameters of this purchase description without modification to the HMMWV. The M1101 and M1102 shall be compatible with the HMMWV throughout the HMMWV mission profile with minimal degradation of system performance.

3.1.1 Production Verification Test (PVT). Unless otherwise specified, the contractor shall furnish sample trailers for PVT (see 4.4) to verify compliance with the requirements stated herein. Any change or deviation of production units from the furnished samples shall be subject to the approval of the Government.

3.1.2 Trailer Weights. The payload and gross trailer weights for the three trailer types are shown in table I with their corresponding maximum static tongue load. The trailer shall have an even weight distribution (+/- 5%) to each tire. The LTT-L and LTT-H shall be payloaded at full GVW for 90% of the full mission profile and at curb weight (no payload) for 10% of the full mission profile. The LTT-HC shall be payloaded for 100% of the full mission profile. For the LTT-L and LTT-H, the payload vertical CG height is 28 inches above the cargo bed floor (45 inches above ground). For the LTT-HC, the payload vertical CG height is 23 inches above the top of the cross members.

TABLE I. Trailer weights.

Trailer Type	Maximum Trailer Weight	Payload	Maximum Gross Weight	Tongue Weight
LTT-L	1460 lbs.	1940 lbs.	3400 lbs.	250 lbs.
LTT-H	1460 lbs.	2740 lbs.	4200 lbs.	420 lbs.
LTT-HC	1175 lbs.	3025 lbs.	4200 lbs.	420 lbs.

The payload CG shall be on the transversal center line of the trailer and at full GVW, the trailer CG shall be vertically no greater than 50 inches above the ground.

3.1.3 Mission Profile. Throughout the useful life of the trailers, the mission profile is expected to be consistent with its prime mover. Therefore, reliability characteristics listed herein shall be achieved by all trailer configurations when operated for 12,000 miles (19,312 km) over test courses shown in table II.

TABLE II. Mission profile.

<u>Course</u>	<u>Average Course Speeds</u>	<u>Max Speeds</u>	<u>Mileage</u>
Primary Roads (30%)	50-55 mph	course speed	3,600 miles
Secondary Roads (30%)	25-35 mph	course speed	3,600 miles
Cross Country (40%)	15-20 mph	course speed	4,800 miles

3.1.4 Maintenance Ratio. Total scheduled maintenance excluding driver/crew checks and services shall be less than two (2) manhours, per semi-annual service, and the total unscheduled maintenance shall be less than or equal to 22.5 manhours during the first 12,000 miles of operation in accordance with the operational profile. The maximum total unscheduled maintenance per 12,000 miles shall consist of 21.5 hours at the organizational (unit) level and 1.0 hours at the direct support level. The sum of the total scheduled and unscheduled maintenance equates to a Maintenance Ratio (MR) of 0.0022 Maintenance Manhours per Mile of Operation (MMH/M). The total MR consists of an organizational (unit) level MR of 0.0021 MMH/M and a direct support level MR of 0.0001 MMH/M. Scheduled maintenance intervals shall be every six (6) months, or every 4,450 miles of operation, whichever comes first for the Production Verification Test (PVT) only.

3.1.5 Preventative Maintenance Checks & Services (PMCS). Before operations checks and after operations checks shall take 5 minutes each or less. Scheduled services shall be performed on a semiannual basis and shall be completed within 2 man-hours.

3.1.6 Mean Miles Between Hardware Mission Failure (MMBHMF). Trailers shall achieve a MMBHMF of at least 4,900 miles.

3.2 Performance Characteristics. Unless otherwise specified, the fully equipped trailer shall exhibit the required performance characteristics at curb weight and at GVW.

3.2.1 Grade and Slope Operations.

3.2.1.1 Side Slope. The HMMWV and LTT-L trailer shall be capable of traversing a 40 percent side slope on dry pavement without slipping or overturning. The heavy HMMWV and LTT-H or LTT-HC shall be capable of traversing a 30 percent side slope without slipping or overturning.

3.2.1.2 Longitudinal Grade. The HMMWV and LTT-L trailer shall be capable of ascending/descending a 60% longitudinal grade on dry pavement without slipping or overturning. The heavy HMMWV and LTT-H or LTT-HC trailer shall be capable of ascending/descending a 40% longitudinal grade on dry pavement without slipping or overturning. There shall be no interference between the HMMWV equipped with shelter or soft top and the trailer equipped with a soft top.

3.2.2 Speed/Oscillation. When towed on level primary roads, the fully equipped trailer towed behind the HMMWV shall be capable of maintaining posted speed limits and conform to Federal Motor Carrier Safety Regulation 393.70 which limits trailer oscillation.

3.2.3 Turning. The turning radius of a HMMWV equipped with trailer shall not exceed 25 ft (7.62 m) (50 feet (15.24m) diameter curb to curb) in both directions right and left. Interference between the HMMWV and trailer is not permissible.

3.2.4 Vertical Step. The trailer when towed behind the HMMWV shall negotiate (ascend and descend) an 18 inch vertical step. The trailer shall have a minimum ground clearance of 16 inches for a distance of 47.5 inches centered at the mid-point between the tires, and a minimum ground clearance of 13 inches for the remaining total distance between and to the inside edge of both tires.

3.2.5 Fording. The trailer without prior preparation, shall ford hard bottom water crossings (fresh or salt water) to a depth of 60 inches (152.4 cm), including wave height, for at least 15 minutes without damage or additional maintenance prior to further operation. Lubricant contamination shall not exceed 2% by volume. Trailer shall be designed to prevent water retention and be equipped with a method of draining residues.

3.2.6 Transportability. The trailers shall meet the following transportability criteria when transported individually and when transported while connected to the HMMWV as specified. The transportability criteria shall be in accordance with (IAW) MIL-STD-209 and MIL-STD-1366. Except for removal of the soft top kit as specified below, preparation for shipment by any mode, or subsequent operation, shall not be required. The trailers shall be transportable worldwide without restriction by air, marine, rail and US and NATO highway modes.

3.2.6.1 Rotary Wing Aircraft Transport. Without the soft top kit installed, the trailers shall be externally transportable by UH-60A, L, M models in a high-hot scenario as a single point load. The trailers shall also be externally transported in a high-hot scenario by CH-47D and CH-53E both individually as a single point load, and in combination with the HMMWV as a dual point load. The trailer shall be IAW MIL-STD-913.

3.2.6.2 Fixed Wing Aircraft Transportability. With the soft top kit installed, the trailers shall be transportable individually or in combination with the HMMWV by C-5A, C-141E, and C-130 aircraft. Trailer restraints shall be as specified in MIL-STD-209.

3.2.6.3 Airdrop Without the soft top kit installed, the trailers at GVW shall meet the criteria of MIL-STD-814 for airdrop either individually or when coupled to the HMMWV.

3.2.6.4 Rail Transport. With the soft top kit installed, the trailers shall meet the dimensional requirements of the Gabarit International de Chargement (GIC) outline diagram in MIL-STD-1366. The trailers shall individually withstand the rail impacts specified in MIL-STD-810 method 516.4, procedure VIII, without degradation or damage.

3.2.6.5 Marine Transport. Without the soft top kit installed, the LTT shall be individually transportable by the LACV-30 and larger vessels IAW MIL-STD-1366.

3.2.6.6 Intermodal Containers. Without the soft top kit installed, the trailers shall individually meet the dimensional characteristics and gross weight limitations of the American National Standards Institute/International Organization for Transportation in Standardization (ANSI/ISO) containers IAW ISO 688.

3.2.6.7 Lifting and Tiedown Provisions. The trailers shall be equipped with lifting and tiedown provisions in accordance with MIL-STD-209. Provisions shall be classes 1, 2 or 3 for Type II equipment.

3.3 Component Rating. Trailers shall be comprised of components, parts and accessories which meet or exceed the requirements of this purchase description. The trailers and all of their components shall meet or exceed all manufacturers' rated capacities consistent with off road usage at GVW.

3.4 Material. Required materials shall be free of all defects and imperfections that affect the serviceability and function of the finished product. No asbestos material shall be used in the construction of the trailer.

3.4.1 Rubber Components - Low Temperature and Ozone Resistance.

3.4.1.1 Low Temperature. All rubber components shall satisfy the F-19 low temperature requirement for Grade M3BG materials as specified in ASTM D2000 except test temperature shall be -50oF (-46.6oC).

3.4.1.2 Ozone Resistance. All rubber components shall evidence no cracking after 72 hours of exposure in an ozone chamber as detailed in ASTM D1149, using Type B specimens with the ozone partial maintained at 50 mPa.

3.4.2 Recycled, Virgin and Reclaimed Materials. All material shall be new and unused. Approved recycled material is acceptable when processed to make new material. When processing used or recycled polymeric materials, up to 20% regrind may be added to virgin materials.

3.4.3 Dissimilar Metals. Dissimilar metals, as defined by MIL-STD-889, shall not be used in intimate contact with each other and shall be protected against galvanic corrosion in accordance with MIL-STD-889.

3.4.4 Corrosion Control. The vehicle shall be capable of operating for a total service life of twenty (20) years which can include varying or extended periods in a corrosive environment involving high humidity, salt spray, road de-icing agents, gravel impingement and atmospheric contamination with no corrosion past Stage one (1) (see 6.13), nor corrosion impairment of fit or function. Corrosion control shall be achieved by a combination of design features\*, material

selection (e.g., composites, galvanized steel, E-coat, Coil Coating), production techniques, process controls, inspection and documentation. Rust-proofing material such as MIL-HDBK-46164 is not allowed.

No action beyond normal washing, periodic inspection, repair of accidentally damaged areas shall be necessary to keep the corrosion prevention in effect. Damaged areas are defined to mean any fault that is not a result of a deficiency in design, material, manufacturing, or normal wear.

\*Such as those found in the TACOM Design guide for corrosion prevention, March 1988.

### 3.5 Finishing and Marking.

3.5.1 Painting. All painted surfaces shall be compatible with Chemical Agent Resistant Coating (CARC). All painted surfaces shall be cleaned, pretreated, primed IAW MIL-DTL-53072 and topcoated with CARC in accordance with the requirements of MIL-DTL-53039 or MIL-DTL-64159.

3.5.2 Topcoat Color. Topcoat color, including camouflage patterns, shall be specified by color codes IAW drawing number 97403-13228E1644 or by color IAW MIL-DTL-53072.

3.5.3 Priming. Primers used during production shall be IAW MIL-DTL-53084, MIL-DTL-53022, MIL-DTL-53030.

3.5.4 Markings. Trailer exterior markings shall identify the registration number IAW MIL-STD-642. Marking colors shall be non-reflective. A National Symbol shall not be applied.

3.5.5 Data Plates. Instruction, caution, identification, shipping, operating and data plates shall be IAW A-A-50271.

3.5.5.1 Identification Plate. An identification plate shall be mounted on the curbside of the trailer. The identification plate shall be IAW A-A-50271 Type III, Class 1 or 2. A preproduction sample is not required. The plate shall identify the military model number, nomenclature, national stock number (NSN), contract number, month/year of manufacture, manufacturer's serial number and military registration number.

3.5.5.2 Shipping Data Plates. The shipping data plates shall show the silhouette of the vehicle in transport position indicating the location and capacity of the vehicle tiedown attachments, supplementary points of tiedown, the vehicle center of gravity, weight, and cubic measurements IAW MIL-STD-209.

3.6 Lubricants/Fluids. Trailer shall be capable of being maintained using grease IAW MIL-PRF-10924 at all required lubrication points and brake fluid IAW MIL-PRF-46176 without any adverse performance, reliability or durability impact.

3.7 Welding. All Arc Welding shall be IAW Ground Combat Welding Code-Steel (Drawing No. 12479550) and for Aluminum (Drawing No.12472301).

3.8 Manpower and Personnel Integration (MANPRINT).

3.8.1 Human Factors Engineering (HFE). The vehicles shall be configured to ensure use, efficiency, and safety of operation in performance of all necessary functions by operational and maintenance personnel. In particular, the trailer design shall be IAW trailer sections of MIL-STD-1472 and shall be compatible with 5th percentile female soldier to 95th percentile male soldier personnel wearing NBC and cold weather protective clothing.

3.8.2 Safety. The trailer shall conform to safety requirements as defined in MIL-STD-1180 except as specified. The system shall have no uncontrolled safety or health hazards to the best of commercial practices.

3.8.2.1 Asbestos, Cadmium and Radioactive Material. Asbestos, beryllium, beryllium alloys, cadmium, cadmium alloys, Class I and Class II Ozone Depleting Substances, hexavalent chromium, lead, leaded alloys, mercury, nickel, nickel alloys, radioactive materials and other Group 1 Agents classified as "carcinogenic to humans" by the International Agency for Research on Cancer (IARC) Monographs, shall not be present in or on any delivered materials, required for the operation and sustainment of the system, or used in final system manufacture and assembly processes. The following materials may be used without prior approval from the Government:

- a. Cadmium on electrical connectors and back shells used to mate with cadmium electrical connectors on Government Furnished Equipment (GFE)
- b. Chemical Agent Resistant Coating (CARC) primers and topcoats
- c. Lead-acid batteries
- d. Lead solder
- e. Steel containing up to 0.35 % lead by weight
- f. Aluminum containing up to 0.4 % lead by weight
- g. Copper and Brass alloys containing up to 4 % lead by weight
- h. Beryllium and Beryllium alloys used in electrical components
- i. Nickel and Nickel alloys used in electrical components
- j. Mercury containing components compliant with European Union (EU) Directive 2002/95/EC (RoHS)"

3.8.2.2 Temperature, Pressure and Electrical Hazard. For exposed components and subsystems which are subject to high temperatures or high pressures, or which are electrically actuated or inherently hazardous, the design characteristics shall provide safeguarding and insulating features IAW MIL-STD-1472.

3.8.2.3 Environmental. The vehicle and its components shall be capable of operating worldwide in hot, basic, and cold climatic conditions as outlined in AR 70-38. The trailer, without any kit or special maintenance operation, shall operate from -50 °F to +120 °F.

3.9 Fenders. The LTT-L and LTT-H shall have fenders which provide maximum splash and stone throw protection without the use of mud flaps and without interfering with trailer operation.

3.10 DS2 Decontamination. Mounting bracket, A-A-52513 or equivalent, shall be provided and mounted. The DS2 decontamination bracket shall be located somewhere near or on the cargo bed walls of the LTT-L and LTT-H. It shall be mounted on the tongue of the LTT-HC. Mounting locations shall not interfere with operation or payload of the trailer.

3.11 Ride Quality. The trailer at GVW shall have no more than 3.0g acceleration at the center of the cargo bed floor while negotiating a half round obstacle of 8 inches in height at speeds up to and including 15 miles per hour.

3.12 Braking.

3.12.1 Parking Brake. The parking brake shall be applied independently of the service brake and when applied and with the front landing leg and the rear stabilizer legs lowered shall hold the LTT at GVW on a 40 percent longitudinal grade, headed either upgrade or downgrade, on a dry hard surface that is free from loose material, IAW MIL-STD-1180, requirement 105. The force required to set the brakes under these conditions shall not exceed that which can be applied by a 5th percentile female soldier. The parking brakes shall conform to 49CFR393.41 except it shall not be required to hold the trailer on slopes exceeding 40 percent.

3.12.2 Service Brake. The trailer shall have inertia brakes which are actuated by forces between the tow pintle of the prime mover and the lunette of the trailer. Under all conditions of loading, the brakes shall control, decelerate and stop the vehicle combination IAW 49CFR393.52 in the forward direction. In addition, the government shall evaluate the combination using the brake test referenced in Section 4.8.29. The brake design shall not require operator preparation prior to backing the trailer.

3.12.3 Breakaway. The trailer shall be equipped with a breakaway feature which conforms to 49CFR393.43.

3.13 Deleted.

3.14 Track Width. The trailer track width shall be the same as the HMMWV. The center to center tire distance shall be 71.6 inches (+/- 1.0 inch).

3.15 Departure Angle. The trailer departure angle at GVW shall be a minimum of 38 degrees.

3.16 Electrical. All lights shall be 24 volt potential. Lighting shall conform to MIL-STD-1179. Black-out tail and stop lamps shall be provided. It is desirable that composite lamp MIL-DTL-32361 be used.

3.16.1 Electrical Connector. The electrical system shall be compatible with the HMMWV. Trailer connector shall interface with the 12 pin HMMWV trailer connector shown on Ordnance Drawing 12339345.

3.17 Kits.

3.17.1 Soft Top Kit. When specified (see paragraph 6.2), the contractor shall provide soft top kit (57K4152, 57K44153, 57K4154 57K4155) for the LTT-H and LTT-L. The support structure shall not allow water to pool on the top of the soft top.

3.17.2 Advanced Medium Mobile Power sources (AMMPS) Mounting Kit. When specified (see paragraph 6.2), the contractor shall provide a universal AMMPS mounting kit for the LTT-HC that will have mounting rails to accommodate the generators used in the PU-797A (30554-13230E6520), PU-798A (30554-13230E6530), PU-799A (30554-13230E6540), PU-801A (30544-13230E6550) and AN/MJQ-35A (30554-13230E6560) systems. The AMMPS kit shall also provide fenders, operator floor, step floor, and mounts for an accessories box, a fire extinguisher and a switch box that is used only with the AN/MJQ-35A. The accessories box shall be located at the front of the trailer, except for the AN/MJQ-35A where it will be located between the generators. This kit shall not negatively impact the operation, accessibility (e.g. AMMPS door openings and fluid drain provisions) and the maintainability of the generator sets mounted on the LTT-HC.

3.17.2.1 Trailer/AMMPS Kit Combination Weights. The LTT/AMMPS Kit combination with generator equipment installed shall be capable of accepting an additional 400 pounds of ballast payload consisting of sand bags on the floor areas. The tongue weight with ballast shall be approximately 10% of system GVW. The maximum weights and tongue weights for the Trailer/AMMPS Kit combination without ballast shall be as follows:

Table III. Trailer/AMMPS kit combination weights.

Trailer/AMMPS Kit	Maximum Weight	Maximum Tongue Weight
PU-797A	3160 lbs.	200 lbs.
PU-798A	3160 lbs.	200 lbs.
PU-799A	3160 lbs.	200 lbs.
AN/MJQ-35A	3400 lbs.*	250 lbs.**
PU-801A	4200 lbs.	420 lbs.
* Desired 3160 lbs.		
** Desired 200 lbs.		

3.17.2.2 Transportability. The LTT-HC shall be transportable by all modes (ref. paragraph 3.2.6) with the AMMPS kit and generator equipment installed.

3.17.2.3 AMMPS Mounting Kit Structural requirement. The AMMPS mounting kit shall not permanently deform while mounting the generators through the mission profile (ref. 3.1.3) while completing a test length of 4,900 miles.

3.18 Tailgate. Trailers shall be equipped with a fold down, removable tailgate. The tailgate shall be full width across the rear of the cargo opening and shall be removable by the vehicle operator using HMMWV Basic Issue Items in 2 minutes or less. The tailgate shall be capable of maintaining a horizontal open position which can support an evenly distributed minimum of 1,000 pounds static load on the LTT-L and 1,500 pounds on the LTT-H. Chains or other hardware used in the tailgate assembly shall have noise dampening material which minimizes trailer affect on the system's noise signature.

### 3.19 Standardization.

3.19.1 Rims, Tires and Runflat Devices. The trailers shall be furnished with HMMWV radial wheels, radial tires, and associated runflat devices as shown on ordnance drawing 12460176. The trailer shall operate with one tire air out for a minimum of 30 miles at 30 miles per hour on a flat paved surface.

3.19.2 Tools. The trailer shall be capable of using the HMMWV jack (11640481), jack handle (12255298), and lug wrench for tire changes. In addition, all operator maintenance actions shall be accomplished using the BII for the HMMWV (12340532). For all other maintenance actions, no new tools and/or test equipment be necessary for maintenance of the LTT.

3.19.3 Pintle Interface. Trailers shall be compatible with Group I/II HMMWV pintles, Group III HMMWV pintles and CUCV pintles (A-A-52550). The ground to lunette height is 22 to 25 inches for the CUCV, 24 to 29 inches for the Group I/II HMMWV, and 20 3/8 to 28 1/8 inches for the Group III HMMWV.

3.19.4 Emergency Operation. The trailers shall be compatible with all tactical trucks, 5 ton and smaller, of adequate rated towing capacity, during safe emergency operation conditions. The trailers shall be capable of operating safely at curb weight and at GVW for five (5) miles at a minimum average speed of 10 mph on Secondary roads without damage to the trailer/prime mover combination. The ground to lunette height is 30 to 35 inches for the 5 and 2 1/2 ton series of trucks and 33 to 37 inches for the Family of Medium Tactical Vehicles.

### 3.20 Dimensional/Strength Requirements.

3.20.1 Cargo Box. The minimum, uninterrupted, internal dimensions shall be at least 84 inches long and 50 inches wide to permit pallet loading for both the LTT-H and LTT-L.

3.20.1.1 Cargo Floor/Tailgate Capacity. The cargo floor/tailgate capacity of the trailer shall be equal to or greater than 12.0 pounds per square inch.

3.20.1.2 Cargo Tiedowns. LTT-L and LTT-H cargo trailers shall be equipped with a minimum of twelve universal tiedown anchors (PIN 10948047) or equivalent. Tiedowns shall conform to MIL-STD-209. The tiedown anchors shall be recessed, self-draining, with a hinged ring that lifts up, pivots 180 degrees, rotates 360 degrees, and is flush below the surface of the floor when not in use. These tiedown anchors shall be installed in the cargo bed floor.

3.20.2 Overall Length and width. The overall trailer length shall not exceed 135 inches. The overall width of the trailer shall not exceed 88 inches between outer edges of footman loops.

3.20.3 Sidewalls and Endwalls. Sidewalls and endwalls shall be provided with LTT-L and LTT-H trailers with a minimum height of 18 inches and shall be strong enough to support the entire weight of a full capacity payload evenly distributed over the entire sidewalls and endwalls. This force will be applied at a right angle to the vertical interior surfaces of the cargo box.

3.20.4 Chassis. Trailer chassis (LTT-HC) shall have a minimum clear chassis area of 96 inches long and 55.5 inches wide with five load bearing cross members spaced at approximately equidistant intervals centered about the axle. Any four of the five cross members shall support the payload. Mounting of the payload to the cross members will be made with reinforcement plates/brackets and 3/8 inch bolts through the cross members. The center of gravity of the payload will be centered above the axle and not exceed 23 inches vertical above the crossmembers with consideration given for the tongue weight. Welding to cross members will not be used. No fenders or cargo floor is required.

3.20.5 Safety Chains. To protect from loss of trailer control in the event of pintle or lunette failure, safety chains shall be provided on all trailers which conform to SAE J684, Class 3.

### 3.21 Pedestal/Stabilizer Requirements.

3.21.1 Pedestal/Retractable Landing Device. An adjustable leg shall be provided to allow a trailer without prime mover to be leveled on longitudinal slopes from zero to plus or minus 10 percent. The landing device shall possess a combination wheel and plate with a total ground contact area of at least 20 square inches. The device shall provide leveling capability in soft soil conditions should the wheel or fork be disabled.

3.21.2 Rear Stabilizer Legs. Rear stabilizer legs shall be provided which stabilize the trailer on longitudinal slopes from zero to plus or minus 40 percent and provide a minimum of 18 inches of ground clearance when not in use. The capacity of each stabilizer leg shall be a minimum of 50 percent of the trailer GVW. The stabilizer legs shall be of adequate length to stabilize the trailer when leveled on longitudinal slopes from zero to plus or minus 10 percent. Each rear stabilizer leg shall have a ground contact area of at least 100 square inches.

3.22 Coupling & Uncoupling the Trailer. The trailer, at GVW, shall be capable of being coupled and uncoupled by two people, one of whom is a 5th percentile female soldier on level hard surface.

3.23 Visibility in Prime Mover. The trailer shall be visible from the driver's position in both exterior rear view mirrors when tracking directly behind the HMMWV. Since the HMMWV has been fielded with two different mirrors on the Group I vehicles, both installations shall be used to evaluate this requirement.

3.24 Workmanship. Defective components or parts and assemblies which have been repaired or modified to overcome deficiencies shall not be furnished without the approval of the contracting officer. Bolted and riveted construction shall be in accordance with the approved Product Configuration Identification (PCI). Each trailer shall be free of cracks, dents, loose parts and missing fasteners. Weld slag shall be removed prior to painting. To preclude injury to personnel, the trailers shall have no sharp edges or corners.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection. When specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein.

4.1.1 Responsibility for Compliance. All items shall meet all requirements of sections 3 and 5.

4.1.2 Reserved.

4.2 Classification of Inspection. The inspection requirements specified herein are classified as follows.

- a. First Production Vehicle Inspection (4.3).
- b. Production Verification Test (4.4).
- c. Quality Conformance Inspection (4.5).
- d. Control Tests (4.6).
- e. Comparison Tests (4.7).

#### 4.3 First Production Vehicle Inspection.

4.3.1 In-Process Inspection. During fabrication of the first production trailers, in-process inspections will be conducted to evaluate conformance of materials and workmanship to requirements of specified documents. Trailers and all components shall be available for inspection. These inspections shall be made prior to application of primer and paint. Processing and welding procedures, quality system, inspection records, calibration procedures and certifications will be reviewed and evaluated during the in-process inspections.

4.3.2 Completed First Production Vehicle Inspection. One of the first five vehicles of each model produced shall be randomly selected and subjected to the First Production Vehicle Inspection specified herein (Section 4.3.2 thru 4.3.5). The term "First Production Vehicle", wherever referenced in this purchase description (inclusive) shall apply to these vehicles.

4.3.2.1 Inspection. The first production vehicles shall be road tested and inspected. The First Production Vehicle Inspection shall include, as a minimum, the inspections referenced in Table V for characteristics listed in Table IV. The road test shall be conducted, on cargo models only, with actual or simulated payload on a smooth, dry, hard-surfaced road for a distance of not less than 50 miles. The Government may elect to witness and/or participate in the contractor inspection and road tests.

4.4 Production Verification Test. To determine conformance to Section 3 (inclusive) after completion of the First Production Vehicle Inspection (Section 4.3), a minimum of three, NTE six vehicles shall be selected from the initial production quantity and subjected to the Production Verification Test. A minimum of three vehicles (one LTT-H, one LTT-HC and one LTT-L) shall be subjected to a 7,500 mile road test as detailed in Table II, and six vehicles, one of each model, at two locations for a total of six, shall be subjected to the performance tests referenced in Table V (minimum). The vehicles shall be tested with actual or simulated payload IAW with paragraph 3.1.2.

4.4.1 Test Deficiencies. Test vehicle(s) deficiencies discovered during, or as a result of, the Production Verification Test, shall be cause for rejection of the vehicle.

#### 4.5 Quality Conformance Inspection.

4.5.1 Quality Conformance Examination. Each vehicle shall be inspected for the characteristics listed in Table IV. The inspections shall include, as a minimum, those examinations/tests referenced in Table V. The purpose of the final inspection is to verify conformance of end items to the requirements of this purchase description. The inspections shall be conducted utilizing Final Inspection Record (FIR).

4.5.2 Quality Conformance Testing. As a minimum, each of the first 20 vehicles produced, after completion of Quality Conformance Examination, shall be operated for a distance of not less than 5 miles. The vehicles shall be completely assembled and serviced prior to road test. Proper operation and adjustment of all functional components shall be confirmed during or following the road test as applicable. Upon completing 20 consecutive road tests with no major defects being present, the reduce road tests to one per day. The tester shall reinstitute 100% road test when a major defect occurs during road test and maintain this level of testing until 20 consecutive vehicles are again road tested and found to be free of major defects.

4.5.3 Examination or Test Failure. If any vehicle fails to pass any examinations or tests (4.5.1 and 4.5.2) specified herein, acceptance may be withheld until evidence has been provided that corrective action has been taken to correct such deficiencies.

4.6 Control Tests. Control Tests for maintaining control of manufacturing operations shall be conducted as specified below.

4.6.1 Frequency. One vehicle per month shall be selected at random for control tests.

4.6.2 Fifty Mile Test. The test vehicles shall be equipped with either actual or simulated payload and operated for a distance of not less than 50 miles. The test course shall be a smooth, hard-surfaced road. Prior to conducting the 50 mile control test, each test vehicle shall be inspected to ascertain conformance to the requirements as referenced in Table V.

4.6.3 Test Failure. All deficiencies detected by either the contractor or the Government on control test vehicles during inspection(s) or road tests may be presumed to be present in all vehicles produced since last acceptable control test. The Government may withhold acceptance of subsequent produced vehicles until evidence has been provided that corrective action has been taken to repair deficiencies and to prevent reoccurrence of such deficiencies.

4.7 Comparison Test. Six vehicles may randomly be selected, two of each model, at the start of each production year and subject these vehicles to all applicable tests referenced in Table V as well as a 3,000 mile road test. Prior to submission for comparison testing, perform the road test to the full extent of the recommended break-in mileage.

4.7.1 Test Deficiencies. Comparison test vehicle(s) deficiencies found during, or as a result of the Comparison Test, may be cause for rejection of subsequent produced vehicles until evidence has been provided that corrective action has been taken to eliminate the deficiency. Any deficiency found during, or as a result of the Comparison Test shall be prima facie evidence that all vehicles currently or subsequently produced are similarly deficient, unless satisfactory evidence is furnished that they are not similarly deficient. Such deficiencies on all vehicles shall be corrected.

4.8 Method of Examination and Test. During the Production Verification Test, to determine compliance with Section 3 and 5 inclusive, the Government will evaluate each model trailer for all specified characteristics. In some instances the Government may actually test each model for compliance with a particular characteristic, while in other instances only one model will be tested. Whether the Government will actually test each model, as indicated throughout this section, will be determined by the differences/similarities between the models and the relevancy of specific test data from one trailer model to the other models.

4.8.1 Trailer Weights. To determine conformance to 3.1.2, each vehicle type shall be weighed, unloaded, in its final configuration with all operational items, lubricants and fluids installed. The empty weight shall not exceed the following: LTT-L and LTT-H - 1,460 lbs, LTT-HC - 1,175 lbs. The empty weight of each trailer shall be equally distributed at each tire, +/- 5%. The tongue weight shall be measured with the trailers loaded with the maximum specified payload evenly distributed over the load space. The trailers ability to transport the specified load shall be confirmed during the Production Verification Test (PVT).

4.8.2 Maintenance Ratio. To determine conformance to 3.1.4, the Maintenance Ratio shall be calculated, using the scored Test Incident Reports (TIRs) from PVT for all trailers tested, and shall not exceed the specified man-hours/per mile. The Maintenance Ratio shall be calculated using the total cumulative maintenance man hours, scheduled and unscheduled, divided by the total operating miles.

4.8.3 Preventative Maintenance Checks and Services (PMCS). To determine conformance to 3.1.5, the time to perform before and after operational checks and semiannual scheduled services shall be measured during PVT, using the operator and maintenance manuals provided.

4.8.4 Mean Miles Between Hardware Mission Failure (MMBHMF). To determine conformance to 3.1.6, the MMBHMF shall be assessed using the scored Test Incident Reports (TIRs) from PVT for the LTT-H and LTT-HC combined, and shall not be less than the specified MMBHMF. The LTT-L will be assessed separately and it shall not be less than the specified MMBHMF. The MMBHMF is computed by dividing the total cumulative test miles by the total number of associated mission failures as defined in the Failure Definition and Scoring Criteria for the Light Tactical Trailer.

4.8.5 Grade and Slope Operations. To determine conformance to 3.2.1, each model trailer, in its operational configuration, shall be operated on the specified side slopes and longitudinal grades. The HMMWV and trailer combination shall not slip or overturn and there shall be no interference between the vehicles when configured as specified.

4.8.6 Speed/Oscillation. To determine conformance to 3.2.2, the HMMWV and curb and GVW trailer of each model, shall be operated on the specified terrain and evaluated for degree of oscillation at up to posted speed limits.

4.8.7 Turning. To determine conformance to 3.2.3, the minimum turning radius of the HMMWV and trailer combination, with each trailer model, shall be measured in both directions. The turning radius shall not exceed the curb to curb specification and there shall be no interference between the HMMWV and trailer when configured as specified.

4.8.8 Vertical Step. To determine conformance to 3.2.4, each model trailer, payloaded as specified, shall be towed, in the forward direction, over the 18 inch vertical step at the lowest speed possible to negotiate the step. There shall be no interference between the trailer and step and no damage to the trailer as a result of negotiating the step. To confirm the minimum specified ground clearance, each model trailer shall be measured while parked on a level hard surface.

4.8.9 Fording. To determine conformance to 3.2.5, each model trailer shall be payloaded as specified and forded for at least 15 minutes up to a depth of 60 inches. Each trailer shall then be examined for proper drainage and the lubricant tested for contamination, which shall not exceed 2% by volume.

4.8.10 Transportability.

4.8.10.1 Lifting and Tiedown Test. To determine conformance to 3.2.6.7, the vehicle shall be tested IAW MIL-STD-209 for adequacy of tiedown, lifting eyes, instructions for component removal when required for transport, markings on the vehicle at each tiedown and lifting point, and tiedown procedures. The tiedowns and lifting eyes shall be inspected for proper installation. The contractor shall certify to the Government prior to the First Production Vehicle Inspection (Section 4.3) that the tiedown and lifting provisions meet the requirements of MIL-STD-209 and MIL-STD-1366.

4.8.10.2 Rotary Wing Aircraft Transport. To determine conformance to 3.2.6.1, each model trailer, at GVW, shall be tested IAW MIL-STD-913, or otherwise evaluated, for being externally transportable by the specified helicopters. Procedure instructions shall be checked for their adequacy to allow the vehicle to operate unhindered with all lift slings attached and in a ready-to-lift configuration.

4.8.10.3 Fixed Wing Aircraft Transportability. To determine conformance to 3.2.6.2, each model trailer, individually and in combination with the HMMWV shall be tested, or otherwise evaluated, for internal transport on the specified aircraft. The contractor shall certify to the Government, prior to First Production Vehicle Inspection (Section 4.3), that vehicle components and tiedowns meet restraint criteria in MIL-STD-1791 and MIL-STD-209. DH 1-11 can be used as guidance for internal air transport.

4.8.10.4 Airdrop. To determine conformance to 3.2.6.3, each model trailer, dependent upon differences between models both individually and in combination with the HMMWV, shall be payloaded as specified, and subjected to Low Velocity Air Drop (LVAD). The contractor shall certify to the Government, prior to FPVI, that vehicle components and tiedowns meet design criteria of MIL-STD-814. DH 1-11 can be used as guidance for LVAD

4.8.10.5 Rail Transport. To determine conformance to 3.2.6.4, each model trailer shall be tested or otherwise evaluated for compliance to rail impact test requirements of MIL-STD-810, method 516.4, procedure VIII. Trailers shall be payloaded as specified and tested while coupled to the HMMWV and individually. Following impact testing trailers shall be evaluated for damage and tested for operability. The contractor shall certify that each model meets the GIC outline diagram.

4.8.10.6 Marine Transport. To determine conformance to 3.2.6.5, each model trailer shall be evaluated for transportability by LACV-30 and larger vessels.

4.8.10.7 Intermodal Containers. To determine conformance to 3.2.6.6, each model trailer shall be evaluated for transportability in standard ANSI/ISO containers.

4.8.11 Component Rating. To determine conformance to 3.3, the contractor shall certify that the trailer, components and accessories meet or exceed requirements of this purchase

description, that their rated capacity is suitable for off-road usage at GVW and that the manufacturer's rating have not been increased to meet requirements of this purchase description.

4.8.12 Material. To determine conformance to 3.4 and 3.4.2, the contractor shall certify that no defective components or material have been used in construction of the trailer and that all materials are new and unused or recycled and are asbestos and cadmium free as specified.

4.8.13 Rubber Components - Low Temperature and Ozone Resistance. To determine conformance to 3.4.1.1 and 3.4.1.2, the contractor shall certify that all rubber components meet the specified requirements of ASTM D2000 to -50 degrees Fahrenheit and specified ozone test requirements of ASTM D1149.

4.8.14 Dissimilar Metals. To determine conformance to 3.4.3, the contractor shall certify that all dissimilar metals, as defined by MIL-STD-889, have been insulated from one another by one of the specified methods. The certification shall include a description of methods used at each location that insulation of metals is required.

4.8.15 Corrosion Control. To determine conformance to 3.4.4, the contractor shall certify that corrosion control procedures employed are consistent with the specified service life of 20 years and the extent of periodic maintenance specified. The certification shall include a description of methods/materials used to achieve this design requirement.

4.8.16 Finishing and Marking. To determine conformance to 3.5.1, 3.5.2, 3.5.3 and 3.5.4, the contractor shall certify that the trailer and all painted components have been cleaned and treated in accordance with MIL-DTL-53072, primed as specified in paragraph 3.5.3, and top coated with CARC in accordance with MIL-DTL-53039 or MIL-DTL-64159. The CARC adhesion test shall be accomplished in accordance with TACOM document ES7161. The finished paint surface shall be inspected to the requirements of the camouflage pattern provided by the Government. All exposed surfaces shall be visually inspected for proper paint application. Paint thickness requirements shall be confirmed on the adhesion test trailers. Trailer registration number and acronym "CARC" shall be checked for proper color and location.

4.8.17 Data Plates. To determine conformance to 3.5.5 (inclusive), data plates shall be inspected for proper size, composition and location in accordance with A-A-50271. The information on the shipping data plate shall be checked IAW with MIL-STD-209.

4.8.18 Lubricants/Fluids. To determine conformance to 3.6, the trailers shall be operated with the specified lubricants/fluids. The contractor shall certify that the trailer is fully compatible with MIL-PRF-10924 lubricants and MIL-PRF-46176 fluids.

4.8.19 Welding. To determine conformance to 3.7, Welding procedures, workmanship specimens and welder certifications will be reviewed during the FPVI and Control Test.

4.8.20 Human Factors Engineering (HFE). To determine conformance with 3.8.1, 3.12.1, 3.22 and 3.23, a Human Factors Engineering Evaluation will be performed by the

## ATPD-2171A

Government during PVT. The contractor shall certify that the trailer design is in accordance with MIL-STD-1472 and is compatible with operation by required personnel, equipped as specified.

4.8.21 Safety. To determine conformance to 3.8.2, the contractor shall certify, that the trailer conforms to safety requirements of MIL-STD-1180.

4.8.22 Asbestos, Cadmium and Radioactive Material. To determine conformance 3.8.2.1, the contractor shall certify that the trailer and all its components are free of asbestos, cadmium and radioactivity in excess of specified limits.

4.8.23 Temperature, Pressure and Electrical Hazard. To determine conformance to 3.8.2.2, the contractor shall certify that there are no hazardous conditions of the type specified or identify such conditions and provide certification that each such condition has been safeguarded in accordance with MIL-STD-1472.

4.8.24 Environmental and Climatic Operating Conditions. To determine conformance to 3.8.2.3, the trailers shall be climatically tested during FA/PQT at the specified temperature extremes. All systems shall remain operational and there shall be no evidence of deterioration in any components. The contractor shall certify that all materials used in construction of the trailer, including, but not limited to, seals, gaskets, grommets, cables and sheathing and electrical wiring are rated for use at -50 degrees to +120 degrees Fahrenheit.

4.8.25 Fenders. To determine conformance to 3.9, the LTT-L and the LTT-H shall be observed for maximum splash and stone throw protection without interfering with trailer operation during performance testing.

4.8.26 DS2 Decontamination. To determine conformance to 3.10, mounting provisions for the M13 shall be confirmed.

4.8.27 Ride Quality Check. To determine conformance to 3.11, the trailer/HMMWV combination at operational GVW shall be tested for the ride quality requirements specified.

4.8.28 Parking Brake. To determine conformance to 3.12.1, each model trailer, at GVW shall be parked, both headed up and down, on a dry, hard surface 40% longitudinal slope. The parking brake shall then be set, the trailer front landing leg and rear stabilizer legs shall be deployed and the HMMWV shall be moved to provide clearance between the pintle and lunette so that trailer movement is possible. The trailer shall remain stationary. Any rolling movement shall constitute failure of this test. The force to set the parking brake under these conditions shall be measured and shall not exceed that which can be applied by a 5th percentile female soldier. The contractor shall certify that the parking brakes conform to 49CFR393.41. During Conformance Inspection, the parking brakes shall be checked for proper assembly, adjustment and operation.

4.8.29 Service Brakes. To determine conformance to 3.12.2 and 3.12.3, the brakes of the HMMWV and loaded trailer of each model, shall be applied simultaneously while the combination is traveling forward at 20 mph on a dry, smooth, level road. The brakes shall bring the combination to a stop within a distance of 35 feet. The trailer shall be evaluated for proper function of the breakaway feature. The loaded HMMWV and loaded trailer shall also be subjected to a mountain brake test in accordance with Test Operating Procedure 2-2-608. The contractor shall certify that the HMMWV and trailer combination conforms to SAE J134, that the trailer brake system conforms to 49CFR393.52 and the breakaway feature conforms to 49CFR393.43(d). The brake system shall be examined for proper assembly, adjustment and operation.

4.8.30 Reserved.

4.8.31 Track Width. To determine conformance to 3.14, the tire center to center distance on each model trailer shall be measured and shall equal 71.6 inches, +/- 1.0 inch.

4.8.32 Departure Angle. To determine conformance to 3.15, the departure angle shall be measured with each model trailer loaded to GVW and parked on level ground.

4.8.33 Electrical. To determine conformance with 3.16 and 3.16.1, the trailer lighting system shall be connected to a 24 volt power supply, using the specified connector, and checked for proper operation. Wiring shall be inspected for tightness of connections, protection for exposed wiring and installation of grommets and support clips in required locations. The contractor shall certify that the lighting conforms to MIL-STD-1179.

4.8.34 Kits.

4.8.34.1 Soft Top Kit. To determine conformance to 3.17.1 inclusive, the kit shall be sprayed indirectly to assure that water shall not pool on the top. The trailer shall be operated with the kit installed during longitudinal grade testing to assure that there is no interference between the kit and the HMMWV. The contractor shall certify that the kit conforms to all specified material and performance requirements.

4.8.34.2 Advanced Medium Mobile Power Sources (AMMPS) Mounting Kit. To determine conformance to 3.17.2 inclusive, AMMPS mounting kits and the various generator configurations shall be installed on the Production Verification Test chassis trailers. Each configuration shall be evaluated for universality, accessibility and operability, weighed to determine compliance with the maximum specified configuration and tongue weight, and then be subjected to the Production Verification road and performance tests specified below. AMMPS mounting kit test deficiencies discovered are to be treated IAW paragraph 4.4.1. When factory installed, the AMMPS kit shall be inspected for completeness of assembly and proper installation.

4.8.34.2.1 AMMPS Mounting Kit Road Test. Two of each of the following generator configurations, PU-798 and PU-801, with AMMPS mounting kit installed, and ballast payloaded

in accordance with (IAW) paragraph 3.17.2.1, shall be subjected to a 2,500 mile road test IAW the LTT-HC mission profile at a GVW of 4,200 pounds. If practical, the AMMPS road testing will be accomplished during the 12,000 mile Production Verification road test of chassis trailers. To determine conformance to the AMMPS mounting kit structural requirement (ref. paragraph 3.17.2.3), each AMMPS kit shall exhibit no permanent deformation or failure which impacts any of the essential missions of the LTT-HC as defined in the LTT FD/SC during the first 4,900 miles of road testing. At the end of each 8 hour test shift the generators shall be started and inspected for proper operation. Following completion of each 2,500 mile cycle each generator shall be subjected to the applicable electrical performance and load tests. Generator deficiencies discovered will be documented on Informational Test Incident Reports.

4.8.34.2.2 AMMPS Mounting Kit Performance Testing. The LTT-HC, with AMMPS kit and any generator configuration installed, and ballast payloaded IAW paragraph 3.17.2.1, and payloaded to a GVW of 4200 pounds, shall exhibit all specified performance and transportability characteristics (3.2 inclusive) except that the trailer fording requirement (3.2.5) shall be limited as necessary to prevent submersion of installed generators and related electrical equipment. The actual LTT-HC payload configuration for some specific performance tests will be determined by engineering analysis of generator similarities to reduce test iterations.

4.8.35 Tailgate. To determine conformance to 3.18, the tailgate shall be inspected for proper installation, operation and adjustment. During PVT the tailgate static load requirement shall be evaluated.

4.8.36 Rims, Tires and Runflat Devices. To determine conformance to 3.19.1, the contractor shall certify that the rims, tires and runflat devices are IAW with the applicable drawings. To determine desired performance characteristics of the run flat devices in this application the HMMWV/trailer combination shall be operated over the specified terrain at 30 mph for at least 30 miles.

4.8.37 Tools. To determine conformance to 3.19.2, tire changes and other operator maintenance actions required during PVT shall be accomplished using the HMMWV jack/lug wrench and other BII.

4.8.38 Pintle Interface. To determine conformance to 3.19.3, the pintle/lunette interface of each model trailer with the specified HMMWV shall be evaluated during the PVT road and performance tests.

4.8.39 Emergency Operation**Error! Bookmark not defined.** To determine conformance to 3.19.4, compatibility with the 5 ton and smaller tactical trucks shall be accomplished through physical test or Engineering analysis, depending upon trailer characteristics.

4.8.40 Dimensional/Strength Requirements. To determine conformance to 3.20 inclusive, during the FPVI, each trailer model shall be measured for the applicable specified dimensions. During conformance inspection, sideboard, and safety chains shall be inspected for

ATPD-2171A

proper assembly/installation. During the PVT each model trailer shall be operated with the specified payload to confirm cargo floor strength. The tiedowns shall be tested in accordance with MIL-STD-209. The contractor shall certify that cargo floor design capacity equals or exceeds the specified pounds per square inch and that the safety chains conform to SAE J684, Class 3.

4.8.41 Pedestal/Retractable Mount Leg. To determine conformance to 3.21.1, the adjustable leg shall be inspected for proper size, installation and operation. During Government testing the loaded trailer shall be parked on a dry, hard 10% longitudinal slope, the parking brake shall be set and the trailer disconnected from the HMMWV. The trailer shall then be leveled using the retractable leg and stabilized using the rear stabilizer legs (4.8.42).

4.8.42 Rear Stabilizer Legs. To determine conformance to 3.21.2, the rear stabilizer legs shall be inspected for proper size, installation and operation. The specified ground clearance shall be confirmed with the legs in the stowed position. During Government testing the rear stabilizer legs shall be tested in conjunction with the parking brake (4.8.28) and the Pedestal/Retractable Mount Leg (4.8.41) in all applicable positions. The rear stabilizer legs shall be deployed and the parking brake set. The prime mover shall be disconnected from the trailer. The trailer shall remain stable in the fore and aft direction. The contractor shall certify that the design capacity of each leg is at least 50% of the trailer GVW.

4.8.43 Workmanship**Error! Bookmark not defined.** To determine conformance to 3.24, the vehicle shall be examined for removal of sharp edges and weld slag. Fasteners shall be examined for proper installation and presence of any required locking devices. Proper disposition of nonconforming material shall be periodically confirmed.

TABLE IV. CLASSIFICATION OF DEFECTS.

Defect No.	Defect Characteristics	Method of Inspection
<b>MAJOR</b>		
101	Frame – improper components, improperly welded, improperly riveted	Visual
102	Axles – improperly assembled, improperly installed, improperly welded	Visual, functional
103	Suspension system – damage, improper assembly and ground clearance	Visual, functional
104	Electrical system, cables, wiring, ground straps – malfunction, improper lighting sequence, improper components, improper operation, damage	Visual, functional
105	Wheels and tires – condition and assembly	Visual, functional
106	Service and parking brakes – inoperative, malfunction, component damage, leaks	Visual, functional

ATPD-2171A

Defect No.	Defect Characteristics	Method of Inspection
107	Automatic brake actuator – inoperative, improper operation, component damage	Visual, functional
108	Safety chains, intervehicular cable and connection – improper lengths, missing, improper coupling, damage	Visual, functional, inspection equipment
109	Lunette eye – improper casting, improper size	Visual, functional, inspection equipment
110	Landing legs and jack – malfunction, improperly installed, incomplete assembly	Visual, functional
111	Paint – improper paint, compounding of curing, lack of adhesion	Visual, functional, scribe test
112	Faulty workmanship affecting performance	Visual, functional
113	Dimensions, departure angle, dimensions affecting interchangeability	Inspection equipment
<b>MINOR</b>		
201	Sheet metal – improper assembly and installation	Visual
202	Suspension system – improper assembly and installation of components	Visual, functional
203	Electrical system – improper coding, protection, or assembly	Visual
204	Tailgate – improper fit, chain adjustment	Visual
205	Wheels and tires – improper size, type, mounting or inflation	Visual, inspection equipment
206	Brake system – improper assembly, clearance, and installation	Visual
207	Lunette eye – improper assembly and installation	Visual
208	Tiedowns, lashings, lifting eyes – missing, improper installation, improper welding	Visual
209	Landing device – improper assembly, clearance, and installation	Visual
210	Paint – improper color, improper application	Visual
211	Rustproofing – missing, incomplete coverage, incorrect film thickness	Visual, inspection equipment
212	Marking, identification – missing, incomplete, improper size, improper installation	Visual
213	Lube fittings – missing, improper installation	Visual
214	Lubrication – missing, improper grade	Visual
215	Hydraulic fluid – incorrect grade or level	Visual
216	Workmanship – loose nuts, bolts, stripped fasteners, rust, scale, burrs, sharp edges	Visual

NOTE: Refer to paragraph 4.5.1 concerning proper utilization of this table.

ATPD-2171A

TABLE V CLASSIFICATION OF INSPECTIONS AND TESTS

Title	Req.	Meth.	FPVI	PQT	QCI	CT	CPT
First Production Vehicle Inspection		4.3	X				
Product Verification Test		4.4		X			
Quality Conformance Inspection		4.5			X		
Control Test		4.6				X	
Comparison Test		4.7					X
Trailer Weight	3.1.2	4.8.1	X	X			X
Maintenance Ratio	3.1.4	4.8.2		X			X
PMCS	3.1.5	4.8.3		X			X
MMBHMFF	3.1.6	4.8.4		X			
Grade and Slope	3.2.1	4.8.5		X			X
Speed Oscillation	3.2.2	4.8.6		X			X
Turning	3.2.3	4.8.7		X			X
Vertical Step	3.2.4	4.8.8		X			X
Fording	3.2.5	4.8.9		X			X
Lifting & Tie Down Provisions	3.2.6.7	4.8.10.1	X	X	X		X
Rotary Wing Aircraft Transport	3.2.6.1	4.8.10.2		X			X
Fixed Wing Aircraft Transport	3.2.6.2	4.8.10.3		X			X
Air Drop	3.2.6.3	4.8.10.4		X			X
Rail Impact	3.2.6.4	4.8.10.5		X			X
Marine Transport	3.2.6.5	4.8.10.6		X			X
Intermodal Containers	3.2.6.6	4.8.10.7		X			
Component Rating	3.3	4.8.11					
Material	3.4	4.8.12	X		X		
Recycled, Virgin, and Reclaimed Materials	3.4.2		X				
Rubber Components	3.4.1.1	4.8.13	X	X			X
Ozone Resistance	3.4.1.2		X				
Dissimilar Metals	3.4.3	4.8.14	X			X	
Corrosion Control	3.4.4	4.8.15	X			X	
Finishing & Marking	3.5.1	4.8.16	X		X		
Topcoat Color	3.5.2		X		X		
Priming	3.5.3		X			X	
Markings	3.5.4		X		X		
Data Plates	3.5.5	4.8.17	X		X		
Lubricants/Fluids	3.6	4.8.18	X	X		X	

ATPD-2171A

Title	Req.	Meth.	FPVI	PQT	QCI	CT	CPT
Welding	3.7	4.8.19	X			X	
Human Factors	3.8.1	4.8.20	X	X			
Maneuvering Trailer w/o Prime Mover	3.22		X	X			
Visibility in Prime Mover	3.23			X			
Safety	3.8.2	4.8.21	X	X		X	
Radioactive Material	3.8.2.1	4.8.22	X				
Hazards	3.8.2.2	4.8.23	X	X		X	
Climatic Operation	3.8.2.3	4.8.24		X			X
Fenders	3.9	4.8.25		X			X
Decontamination	3.10	4.8.26	X	X	X		X
Ride Quality	3.11	4.8.27		X			
Parking Brake*	3.12.1	4.8.28	X	X	X		X
Service Brakes*	3.12.2	4.8.29	X	X	X		X
Breakaway*	3.12.3	4.8.29	X	X	X		X
Reserved	3.13	4.8.30					
Track Width	3.14	4.8.31	X	X			X
Departure Angle	3.15	4.8.32	X	X			X
Electrical	3.16	4.8.33	X	X	X		X
Kits	3.17	4.8.34	X	X			X
Tailgate	3.18	4.8.35	X	X	X		X
Rims & Tires*	3.19.1	4.8.36	X	X	X		X
Tools	3.19.2	4.8.37		X			X
Pintle Interface	3.19.3	4.8.38		X			X
Emergency Operation	3.19.4	4.8.39		X			
Dimensions/Strength	3.20	4.8.40	X	X	X		X
Rear Stabilizer Leg	3.21.2	4.8.42	X	X			X
Workmanship	3.24	4.8.43	X	X	X	X	X

NOTE: The inspections/tests referenced in Table V may be modified at the discretion of the Government by the deletion or addition of examinations to assure adherence to specification/contractual requirements. Quality Conformance Inspection and Control Testing is to include verification of function safety, adjustment and servicing of vehicle systems. Specific performance parameters for tests marked with an asterisk will only be verified during Government PVT and Comparison Tests.

## 5 PACKAGING **Error! Bookmark not defined.**

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or

within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

6.1 Intended Use. The trailers covered by this purchase description are intended for use by the United States Army in transporting cargo during tactical military operations in the forward area. The vehicle is intended for use under extreme or unusual conditions of climate, weather, terrain, and military service which includes air transportation and tactical air drop by parachute.

6.2 Ordering Data. Procurement documents must specify the following:

- a. Title, number and data of this specification.
- b. If required, the specific issue of individual documents referenced (see 2.2.1, 2.2.2 and 2.3).
- c. Soft Top kit, if required (see 3.17.1).
- d. Advanced Medium Mobile Power Sources Mounting Kit, if required (see 3.17.2).
- e. Selection of applicable level and packaging requirements (see 5.1).
- f. Selection of topcoat color (3.5.2).

6.3 Radioactive Material. Radioactive material is defined as material requiring specific licensing under the regulations issued pursuant to the Atomic Energy Act of 1954, as amended and set forth in Title 10 Code of Federal Regulations (CFR) or other radioactive material not requiring specific licensing in which the radioactivity per gram is greater than 0.002 microcuries.

6.4 Fluid Leaks.

6.4.1 Classification**Error! Bookmark not defined..**

- a. Class I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
- b. Class II - Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being inspected.
- c. Class III - Leakage of fluid great enough to form drops that fall from the item being inspected.

6.4.2 Category of Defect.

- a. Class I - minor defect.
- b. Class II - major defect.
- c. Class III - critical defect.

6.5 Mission. The mission order of precedence for the vehicle is combat, combat support and combat service support roles respectively. The trailers will be utilized with prime movers configured in these roles.

6.5.1 Combat Roles. Configured as a weapon carrier to support anti-armor, reconnaissance, air defense, rear area combat operations, base defense and close air support.

6.5.2 Combat Support Role. Fire support team; target acquisition; command, control and communications; naval gunfire control; battlefield obscuration; Nuclear Biological Chemical (NBC) reconnaissance; electronic warfare; combat engineer reconnaissance; and, demolition and barriers installation teams.

6.5.3 Combat Service Support. Logistics, medical evacuation and cargo carrier.

6.6 First Production Vehicle Inspection Defects**Error! Bookmark not defined..**

6.6.1 Repair of Defects. Defects found as a result of above inspections should be corrected by the contractor at no cost to the Government. Failure of the contractor to promptly correct defects should be cause for suspension of acceptance of production vehicles until corrective action has been accomplished.

6.6.2 Final Approval and Acceptance. Final approval and acceptance by the Government of the first production vehicles should be withheld until the Production Verification Test has been completed and a final determination has been made regarding conformity of vehicles to contractual/purchase description requirements including, but not limited to, workmanship and materials.

6.6.3 Vehicle Disposition. The first production vehicle will remain at the manufacturing facility as a production standard. The contractor should incorporate all contractually approved modifications on this trailer and should service and maintain the vehicles in accordance with applicable documents. At the discretion of the contracting officer, the vehicles may be released for shipment.

6.7 Terrain Conditions.

6.7.1 Primary Roads. Two or more lanes, all-weather, maintained, hard surface (paved) roads with good driving visibility used for heavy and high density traffic. These roads have lanes with a minimum of 9 feet, road crown to 20 degrees and the legal maximum Gross Vehicle Weight/Gross Combined Weight for the county or state is assured for all bridges. During testing at Aberdeen Proving Ground, Perryman Paved and other paved roads between test sites will be used to fulfill this test requirement.

6.7.2 Secondary Roads. Up to two lanes, all weather, occasionally maintained, hard or loose surface (e.g., large rock, paved, crushed rock, gravel) roads intended for medium-weight, low density traffic. These roads have lanes with minimum width of 8 feet and no guarantee that

the legal maximum Gross Vehicle Weight/Gross Combined Weight for the county or state is assured for all bridges. During testing at Aberdeen Proving Ground, Perryman A, Munson Belgian block, Munson gravel and Munson improved gravel will be used to fulfill the secondary road test requirement.

6.7.3 Cross-Country. Vehicle operations over terrain not subject to repeated traffic and where no roads, routes, well-worn trails or man-made improvements exist. (This definition does not apply to vehicle test courses which are used to simulate cross-country terrain.) During testing at Aberdeen Proving Ground, Perryman 1, 2, & 3 will be used to simulate level cross-country and Churchville B will be used to simulate hilly cross-country.

6.7.4 Slopes. Defined as a sharp transition from one constant grade to another constant grade which is up to a specified percentage different in any direction.

6.8 Gross Vehicle Weight. The Gross Vehicle Weight (GVW) should include the curb weight and the payload.

6.9 Curb Weight. The curb weight should include the weight of the vehicle with all attachments, accessories, equipment, and lubricants.

6.10 Vehicle Payload. The vehicle payload should include basic issue items and kits.

6.11 Reserved.

6.12 Overhaul. An overhaul is considered to have occurred when repair or corrective action required by a malfunction of any component of the referenced assemblies exceed the capabilities of the organizational and direct support maintenance levels. The corrective categories should be defined in the approved maintenance allocation chart.

6.13 Classifying Corrosion Damage. Stages of corrosion can be determined by visual examination and the use of probes, springs-loaded punches or similar devices to determine metal soundness. As an aid in evaluating corrosion damage and planning corrosion repair actions, corrosion has been classified into four stages.

- a. Stage 1 - Red, black and/or white corrosion products on surfaces accompanied by minor etching and pitting. Base metal is sound.
- b. Stage 2 - Powdered, granular or scaled condition resulting in erosion of material from surface. Base metal is sound.
- c. Stage 3 - Surface condition and corrosion deposits are similar to stage 2 except that metal in corroded areas is unsound and small pinholes may be present.
- d. Stage 4 - Corrosion has developed/advanced to a point where the surface has been penetrated. No metal remains at point of severest corrosion. There are rust holes in the surface area or metal is completely missing along the edge.

ATPD-2171A

Custodians:  
Army - AT

Preparing Activity:  
Army – AT

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.