

INCH-POUND

MIL-PRF-62195D(AT)

29 January 1998

SUPERSEDING

MIL-R-62195C(AT)

1 May 1986

PERFORMANCE SPECIFICATION

RECOVERY VEHICLE, FULL-TRACKED: MEDIUM, M88A1 NEW AND OVERHAUL

This specification 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 specification covers the requirements and inspections for the M88A1 armored, full-tracked, rear sprocket driven recovery vehicles, both new and overhauled.

1.2 Classification. Vehicles covered by this specification are of the following grades (see 6.2):

Grade A	- New Vehicles.
Grade B	- Overhaul Vehicles.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents 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 meet all specified requirement documents cited in sections 3 and 4 of this specification, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A

FSC 2350

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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 listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

- | | |
|---------------|---|
| MIL-PRF-62071 | - Power Supply: High Voltage, Solid State, 24 Volts, Direct Current. |
| MIL-PRF-62177 | - Engine, Diesel: 12-Cylinder, 90 degrees V-Type, 750 H.P. AVDS1790-2, AVDS1790-2A, AVDS1790-2C, AVDS1790-2D, AVDS1790-2DR, AVDS1790-2CA, and AVDS1790-2DA. |

(Unless otherwise indicated, copies of the above specifications are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, 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 are those cited in the solicitation.

PURCHASE DESCRIPTIONS

ARMY

- | | |
|-----------|---|
| ATPD 2062 | - Regulator, Engine Generator: 28 V DC, Solid State Dual Current Limit. |
|-----------|---|

(Copies of this purchase description are available from the U.S. Army Tank-automotive and Armaments Command, AMSTA-TR-E/BLUE, Warren, MI 48397-5000.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.1.

3.2 Design, materials, and manufacturing processes. Unless otherwise specified (see 6.2) the design, materials, and manufacturing process selection is the prerogative of the contractor as long as all articles submitted to the government fully meet the operating, interface, ownership and support, and operating environment requirements specified.

3.2.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials shall be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Operating requirements. Each vehicle shall provide the following functional, operational, and performance capabilities.

3.3.1 Sealing.

3.3.1.1 Seals. Except as noted herein, seals shall restrict the entrance of water and foreign matter and shall restrict the leaking of lubricants from the bearings.

3.3.1.2 Door, hatch and vision device seals. Seals shall prevent the entrance of water into the crew compartment.

3.3.1.3 Air cleaner outlet hose system. The air cleaner outlet hose system shall be air tight. Vacuum loss shall be not greater than 5 inches (in.) of water during a 3 minute (min) period.

3.3.2 Special kits. When specified (see 6.2), special kits shall be furnished as follows.

3.3.2.1 Winterization kit. The winterization kit shall assure satisfactory engine starting and vehicle operation in ambient temperatures of -25 to -65 degrees Fahrenheit (°F).

3.3.2.2 Fording kit (deep water). The deep water fording kit shall assure vehicle performance as specified in 3.6.2.2.

3.3.2.3 Chemical, bacteriological, radiological kit (CBR). The CBR kit shall function as a gas particulate filter system. The kit shall allow an air flow of 3.5 to 4.5 cubic feet per minute (ft³/min) for each crew position outlet when the other crew position bases are connected to their stowage orifice.

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3.3.2.4 Smoke generating kit. The two elements of this kit, the hull segment and the engine segment, shall be capable of generating smoke in volume through the vehicle's engine exhaust outlets on demand. Both the right and left exhaust outlets shall emit white smoke.

3.3.3 Power package. The power package shall consist of an engine conforming to MIL-PRF-62177 and a transmission conforming to the contractor's specifications.

3.3.4 Mechanical transmission power takeoff (PTO). The PTO shall drive a mechanical type transmission of the reduction gear, clutch type.

3.3.5 Fuel system. When ascending and descending longitudinal grades and side slopes, in forward and reverse, the fuel system shall maintain fuel supply to the engine. The entire fuel system shall exhibit no leakage.

3.3.5.1 Fuel tanks. Fuel tanks shall allow a fuel filling rate of 50 gallons per minute (gal/min). The fuel tanks shall be clean of rust, moisture, scale, welding spatter, and slag

3.3.5.2 Fuel lines. Fuel lines shall not leak fuel and provisions shall be made to assure the internal cleanliness of fuel lines and connections.

3.3.5.3 Emergency fuel shut-off. Emergency fuel shut-off shall stop engine within 10 s from the time the manual shut-off handle is actuated.

3.3.5.4 In-tank fuel pump. The pump shall be capable of producing a minimum pressure of 5 pounds per square inch (psi) at the engine end of the fuel lines disconnect, under no-flow conditions.

3.3.5.5 Fuel transfer system. The fuel transfer system shall be capable of transferring fuel from the vehicle fuel tanks to a remote receptacle at a rate of not less than 25 gal/min. Also, the system shall be capable of transferring fuel from a remote supply to the vehicle fuel tanks at a rate of not less than 15 gal/min.

3.3.5.6 Heater, fuel feed. The vehicle fuel system shall produce a minimum pressure of 7 psi at the outlet of the heater pump line.

3.3.5.7 Throttle linkage. With the throttle pedal depressed to within 0.19 in. of the pedal stop, the throttle shall be at full throttle position.

3.3.6 Hydraulic reservoir and lines. Hydraulic reservoir and line shall function without leaking.

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3.3.7 Exhaust system. Concentrations of toxic fumes in the crew compartment shall not exceed 50 parts per million (ppm) of carbon monoxide (CO) nor 5 ppm of oxides of nitrogen (NO_x) under all conditions of vehicle operation.

3.3.8 Controls. All electrical, mechanical, and hydraulic controls shall operate without malfunction or interference throughout all ranges of operation under all vehicle operating conditions.

3.3.9 Adjustment mechanisms. All adjustment mechanisms shall function properly and maintain adjustment under all vehicle operating conditions.

3.3.10 Auxiliary power unit (APU). The APU shall consist of an engine conforming to manufacturer's specifications, a hydraulic pump capable of delivering 6.9 gal/min at 1500 psi and 3000 revolutions per minute (rpm) pump input speed, and a generator system which is limited in battery charging current to approximately 150 amperes (A) at 3000 rpm. The generator output voltage shall be maintained between 27.3 and 28.7 volts direct current (V dc) under fully charged battery conditions (battery charging current of less than 50 A). The APU shall be capable of charging M88A1 vehicle batteries, or operating the auxiliary hydraulic circuit. Included in the latter is raising the spade, stowing and raising the boom, hauling main winch and hoist cable, and operating the impact wrench and the fuel transfer system.

3.3.11 Electrical system.

3.3.11.1 Generator voltage. The solid state voltage regulator shall control the generator output voltage between 27.3 and 28.7 V dc under all conditions of vehicle operation.

3.3.11.2 Auxiliary generator controls. The auxiliary power unit, with its controls, shall be capable of operating in environmental conditions as specified in 3.6.1. The voltage regulator as specified in 3.3.11.3, when a part of the APU circuit, shall control the APU generator output voltage between 27.3 and 28.7 V dc under fully charged battery conditions (battery charging current of less than 50 amperes of direct current (A dc)).

3.3.11.3 Voltage regulator solid state. The voltage regulator shall be in accordance with ATPD 2062, or equivalent.

3.3.11.4 Night vision device voltage supply. The voltage supply to the night vision device shall be as follows:

- a. When vehicle circuitry is equipped to accommodate the M24IR periscope, the high voltage supply shall be in accordance with MIL-PRF-62071 and shall show no evidence of high voltage arcing. The observed voltage shall be between 13.8 and 16.6 kilovolts (kV).

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- b. When wiring is suited for the AN-VVS-2(V) - type Passive Night Viewer, the voltage output at the night viewer connector shall be essentially equivalent to battery output voltage.

3.3.11.5 Generator blower motor. The generator blower motor shall be capable of maintaining a constant flow of air through generator.

3.3.11.6 Engine manifold heater. Operation of the push-button switch on the purge pump handle shall ignite fuel supplied to heat the manifold.

3.3.11.7 Lights. Lights, consisting of normal head and taillights, blackout head and taillights, and all interior lights, shall operate satisfactorily and all electrical contacts and connections shall maintain positive contact under all vehicle operating conditions.

3.3.12 Seating. All sliding parts and operating contact surfaces shall be free of paint.

3.3.12.1 Mechanic's and driver's seats. The seats shall freely move forward, backward, vertically, and dump when the appropriate levers are actuated. With driver or mechanic seat occupied, the force required to actuate the fore and aft seat adjustment lever shall not be more than 12 lb at the end of lever. With the seat vacated, the force required to actuate the seat vertical adjustment lever shall not be more than 14 lb at the end of the lever. The force required to trip the seat dumping lever shall not be more than 14 lb at the end of the lever.

3.3.12.2 Commander's seat. The seat shall move fore and aft, tilt and rotate 360 degrees (°) without binding or interference when appropriate levers are actuated. The seat shall lock securely in the vertical position and, when dump lever is actuated, shall be capable of dumping to horizontal position and lock securely. With seat occupied and height lever actuated the seat shall raise no less than 9 in. with spring force as weight is removed from seat. CAUTION: Do not actuate height lever without sitting on seat.

3.3.12.3 Rigger's seat. The seat shall move fore and aft, tilt and rotate 360° without binding or interference when appropriate levers are actuated. With seat occupied and height lever actuated, the seat shall raise not less than 9 in. with spring force as weight is removed from seat. CAUTION: Do not actuate height lever without sitting on seat.

3.3.13 Grades and slopes. Vehicle shall operate on longitudinal grades and side slopes.

3.3.14 Trench crossing. The vehicle shall cross trenches in a forward direction without stalling or damage to suspension, boom, and fenders.

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3.3.15 Vertical obstacles. The vehicle shall cross over vertical obstacles in a forward direction without stalling or damage to suspension, fenders, and hull floor.

3.3.16 Vehicle drift. Vehicle drift shall not exceed 3 ft per 100 ft of travel.

3.3.17 Stall speed. Stall speed shall occur at a transmission oil temperature range of 200 to 230 °F.

3.3.18 Oil pressure and temperature. Proper oil pressure and temperature shall be maintained during all conditions of operation.

3.3.19 Cooling system. Engine oil temperature from cooler shall not exceed 250°F. Transmission oil temperature into cooler shall not exceed 300°F.

3.3.20 Speed.

3.3.20.1 Speed with no load. Vehicle, without towed load, shall operate at high and low speeds without damage to the engine, transmission, and components.

3.3.20.2 Speed with towed load. The vehicle shall tow loads at sustained speeds under all conditions of operation without damage to the engine, transmission, and components.

3.3.20.3 Speed on grade. The vehicle shall tow loads at sustained speeds on various grades.

3.3.21 Acceleration. The vehicle shall accelerate and travel a distance of 200 ft in not more than 14 s.

3.3.22 Engine starting on grades and slopes. The engine shall start on longitudinal grades and side slopes.

3.3.23 Auxiliary engine starting and operating on grades and slopes. The APU shall be capable of operating on grades and slopes.

3.3.24 Climbing. Vehicle shall ascend a 60 percent (%) longitudinal grade without stalling or causing damage to power plant and power train.

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3.3.25 Braking.

3.3.25.1 Stopping. The vehicle shall stop within 45 ft from point of brake application. Vehicle drift shall not exceed 4 ft when stopping.

3.3.25.2 Holding. Service and parking brakes shall independently hold vehicle stationary when headed up and down 60% grades.

3.3.26 Turning. The vehicle shall pivot 360° in neutral steer.

3.3.27 Spade. With spade set at any position within operating range, the spade hydraulic system shall limit settling of the spade to not more than 1 inch per minute (in/min). The spade hoisting system shall be capable of raising the spade to lock position under all operating conditions.

3.3.27.1 Dozing ability. The spade, when used for dozing, shall be capable of exerting a dozing effort of not less than 20 000 pounds (lb).

3.3.27.2 Stabilization. The spade shall stabilize the vehicle when the vehicle is winching loads up to 90 000 lb and when hoisting loads up to 50 000 lb.

3.3.28 Hydraulic pump. The hydraulic pump shall have a total capability of supplying hydraulic oil at a pressure of 2000 \pm 50 psi and 84 gal/min to operate all winches, cylinders, and hydraulic motors.

3.3.29 Hoist winch, boom and hook.

3.3.29.1 Hoist winch. The hoist winch, of the 2 speed type, shall be capable of hoisting disabled tanks and comparable equipment. A hydraulic safety valve shall be provided and shall limit lift capacity to not more than 55 000 lb. The hoist shall have the cable capacity of 200 ft of 0.63 inch (in.) diameter cable.

3.3.29.2 Boom and hook. The boom and hook shall operate in the fully extended and retracted positions.

3.3.29.2.1 Lift and carry. Boom and hook shall lift and carry disabled tanks and comparable equipment

3.3.30 Main winch. The main winch shall be of the 2 speed type and shall produce a line pull sufficient to pull disabled tanks and comparable equipment under all vehicle operating conditions. The main winch shall have a cable capacity of 200 feet (ft) of 1.25 in. diameter cable.

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3.3.31 Main and hoist winch brakes. Winch brakes on the main and hoist winches shall have an automatic mechanical application and hydraulic release designed to apply and hold the load and prevent unwinding after hydraulic power has been removed. The winch brake shall control the descent of a load so as not to exceed the rate of ascent and shall be capable of stopping a descending load within 1 in. from point of brake application.

3.3.32 Main hydraulic system. The main hydraulic system shall provide smooth operation and positive control of the boom, spade, main and hoist winches, and winch brakes throughout the entire operating range and under all operational conditions specified herein.

3.3.33 Auxiliary power system. The auxiliary power system shall start and operate in environmental conditions as specified in 3.6.1 and under all conditions of vehicle operation with the exception of 3.6.2.2. The auxiliary hydraulic system shall have a constant output of 1500 \pm 50 psi at a minimum flow rate of 6.9 gal/min to raise the spade, stow and raise boom, and at a reduced speed, retrieve the main winch cable and the hoist cable with the cables at a no load condition. The auxiliary generator shall be capable of producing an output of 150 A nominal at 3000 rpm nominal equivalent to 2000 rpm nominal of the APU engine output shaft. Voltage shall be regulated by its own individual regulator under fully charged battery condition (current less than 50 A).

3.3.34 Radio suppression. Complete vehicle shall be radio interference suppressed in accordance with the emissions levels in figures 1 and 2.

3.4 Interface requirements. Each vehicle shall accommodate the following inputs and interfaces.

3.4.1 Design and construction. Vehicles, components, sub-assemblies and assemblies shall be fabricated and assembled into a completed vehicle (see 6.6).

3.4.2 Parts interchangeability. Parts shall be functionally and physically replaceable by exchange items. No modification of interchangeable items or mating parts shall be required.

3.4.3 Weight limitation. Weight of the M88A1 Recovery Vehicle shall not exceed 117 000 lb when combat loaded.

3.4.4 Stowed equipment. All basic issue items (BII) shall be stowed (combat loaded) to assure that these items will not interfere with the operation of vehicle and components in any manner.

3.5 Ownership and support requirements. Each vehicle shall possess the following life cycle and ownership characteristics.

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3.5.1 Ozone protection. All new rubber components which are under tension or which may be flexed shall be ozone resistant.

3.5.2 Reliability.

3.5.2.1 Grade A (automotive). The vehicle mean miles between failure (MMBF) shall not be less than 250 miles (mi) based on a point estimate during the first 4000 mi of operation.

3.5.2.2 Grade B (automotive). The vehicle MMBF shall not be less than 225 mi based on a point estimate, during the first 3200 mi of operation.

3.5.3 Maintainability.

3.5.3.1 Grade A. The overall maintenance ratio for the vehicle shall not exceed 1.45.

3.5.3.2 Grade B. The overall maintenance ratio for the vehicle shall not exceed 1.60.

3.5.4 Durability.

3.5.4.1 Grade A (automotive). The vehicle, with rated payload, shall have a 0.25 probability of completing the first 4000 mi (ratio of successes to sample) operation without replacement, rebuild or overhaul of power train components (engine, transmission, and final drive).

3.5.4.2 Grade B (automotive). The vehicle, with rated payload, shall have a 0.25 probability of completing the first 3200 mi (ratio of successes to sample) operation without replacement, rebuild or overhaul of power train components (engine, transmission, and final drive).

3.5.5 Painting, marking and data plates.

3.5.5.1 Painting. Unless otherwise specified (see 6.2), the exterior and interior of vehicle, components, assemblies, subassemblies, and parts that require painting shall be prepared and painted in accordance with the manufacturer's standard practices. Vehicle exterior paint and exterior non-skid paint shall be semi-gloss, dark, olive green (see 6.7). The vehicle interior paint and interior non-skid paint shall be white glossy (see 6.7).

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3.5.5.2 Marking. Marking of vehicle shall be lusterless black, clear, and permanent.

3.5.5.3 Data plates. Marking shall be applied to a nameplate attached to the vehicle by screws, bolts, or rivets in a conspicuous, protected location. The nameplate shall be made of a material suitable to withstand environmental conditions expected with a recovery vehicle. The winch nameplate shall include the following information:

- a. Title of specification.
- b. National stock number (NSN).
- c. Part or Identifying Number (PIN) (see 6.8).
- d. Manufacturer's name or identification code (CAGE).
- e. Contractor or order number.
- f. Date of manufacture.

3.5.6 Safety (see 6.5).

3.5.6.1 Fixed fire extinguisher. Extinguisher shall function under all conditions of operation and shall be readily accessible for servicing and operation internally and externally. In an ambient air temperature of 78°F, the maximum effort required to discharge the system, both internally and externally, shall be not more than 85 lb.

3.5.6.2 Portable fire extinguisher. The portable fire extinguisher shall be readily accessible for servicing and use.

3.5.6.3 Hazardous materials. The transmission shall not produce any hazards to personnel or the environment resulting from the use of asbestos, cadmium, or other hazardous materials.

3.6 Operating environment requirements. Each vehicle shall operate under the following environmental conditions.

3.6.1 Ambient temperature. Without winterization equipment installed, the vehicle shall start and operate in ambient temperature of 115°F to -25°F. With winterization equipment installed, the vehicle shall start and operate in ambient temperatures of -25°F to -65°F. The complete vehicle shall withstand storage at -65°F and +155°F without deterioration that may cause failure of any components of the vehicle.

3.6.2 Fording shallow and deep water. Accumulation of water in the hull shall be not more than 2 in.

3.6.2.1 Fording shallow water. Vehicle shall ford hard-bottom salt or fresh water crossings up to 56 in. in depth, including wave height, without special equipment and without causing damage to the vehicle or its components.

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3.6.2.2 Fording deep water. The vehicle shall ford up to 102 in., including wave height, with special equipment and without causing damage to the vehicle or its components.

3.6.2.3 Engine operation and bulkhead water leakage. Engine and all accessories shall function satisfactorily during and after flooding operation. Water leakage through the bulkhead from the engine compartment into the crew compartment shall be not more than 2 in.

3.6.2.4 Lubrication contamination. After all fording operations, the water contamination content of the transmission, final drives, and suspension system lubricants shall be not more than 2% by volume.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.1.1).
- b. Conformance inspections (CI) (see 4.1.2).

4.1.1 First article inspection. Where a first article inspection is required (see 3.1), first article inspection shall be performed on samples as specified in the contract (see 6.3), and shall include all the verifications in table I.

TABLE I. Verification methods.

Title	Requirements	Inspection
<u>Operating requirements</u>	3.3	4.3.3
Seals	3.3.1.1	4.3.3.1, 4.3.6.4
Door, hatch, and vision device seals	3.3.1.2	4.3.3.2
Air cleaner outlet hose system	3.3.1.3	4.3.3.3
Winterization Kit	3.3.2.1	4.3.3.4
Fording kit (deep water)	3.3.2.2	4.3.3.5
CBR kit	3.3.2.3	4.3.3.6
Smoke generating kit	3.3.2.4	4.3.3.7
Power package	3.3.3	4.3.3.8
Mechanical transmission	3.3.4	4.3.3.8
Fuel system	3.3.5	4.3.3.9
Fuel tanks	3.3.5.1	4.3.3.10, 4.3.3.11

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TABLE I. Verification methods - Continued.

Title	Requirements	Inspection
Fuel lines	3.3.5.2	4.3.3.11
Emergency fuel shut-off	3.3.5.3	4.3.3.12
In-tank fuel pump	3.3.5.4	4.3.3.13
Fuel transfer system	3.3.5.5	4.3.3.14
Heater, fuel feed	3.3.5.6	4.3.3.15
Throttle linkage	3.3.5.7	4.3.3.16
Hydraulic reservoir and lines	3.3.6	4.3.3.11
Exhaust system	3.3.7	4.3.3.17
Controls	3.3.8	4.3.3.18
Adjustment mechanisms	3.3.9	4.3.3.19
APU	3.3.10	4.3.3.20
		4.3.3.21
Generator voltage	3.3.11.1	4.3.3.21
Auxiliary generator controls	3.3.11.2	4.3.3.21
Voltage regulator	3.3.11.3	4.3.3.21
Night vision device voltage supply	3.3.11.4	4.3.3.21.1
Generator blower	3.3.11.5	4.3.3.21
Engine manifold heater	3.3.11.6	4.3.3.21.2
Lights	3.3.11.7	4.3.3.21
Seating	3.3.12	4.3.3.22
Mechanic's and driver's seats	3.3.12.1	4.3.3.22
Commander's seat	3.3.12.2	4.3.3.22
Rigger's seat	3.3.12.3	4.3.3.22
Grades and slopes	3.3.13	4.3.3.23
Trench crossing	3.3.14	4.3.3.24
Vertical obstacles	3.3.15	4.3.3.25
Vehicle drift	3.3.16	4.3.3.26
Stall speed	3.3.17	4.3.3.27
Oil pressure and temperature	3.3.18	4.3.3.28
Cooling system	3.3.19	4.3.3.29
Speed with no-load	3.3.20.1	4.3.3.30.1
Speed with towed load	3.3.20.2	4.3.3.30.2
Speed on grade	3.3.20.3	4.3.3.30.3
Acceleration	3.3.21	4.3.3.31
Engine starting on grades and slopes	3.3.22	4.3.3.32
Auxiliary engine starting on grades and slopes	3.3.23	4.3.3.33

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TABLE I. Verification methods - Continued.

Title	Requirements	Inspection
Climbing	3.3.24	4.3.3.34
Stopping	3.3.25.1	4.3.3.35.1
Holding	3.3.25.2	4.3.3.35.2
Turning	3.3.26	4.3.3.36
Spade	3.3.27	4.3.3.37
Spade dozing	3.3.27.1	4.3.3.37.1
Spade stabilization	3.3.27.2	4.3.3.37.2
Hydraulic pump	3.3.28	4.3.3.38
Hoist winch	3.3.29.1	4.3.3.39, 4.3.3.39.1
Boom and hook	3.3.29.2	4.3.3.37.2, 4.3.3.44,
Lift and carry	3.3.29.2.1	4.3.3.37.2.1
Main winch	3.3.30	4.3.3.40, 4.3.3.40.1, 4.3.3.44
Main hoist and winch brakes	3.3.31	4.3.3.41
Main hydraulic system	3.3.32	4.3.3.38, 4.3.3.44
Auxiliary power system	3.3.33	4.3.3.42
Radio suppression	3.3.34	4.3.3.43
<u>Interface requirements</u>	3.4	4.3.4
Design and construction	3.4.1	4.3.4.1
Parts interchangeability	3.4.2	4.3.4.1
Weight limitation	3.4.3	4.3.4.2
Stowed equipment	3.4.4	4.3.4.3
<u>Ownership and support requirements</u>	3.5	4.3.5
Ozone protection	3.5.1	4.3.5.1
Reliability	3.5.2.1, 3.5.2.2	4.3.5.2, 4.3.5.2.1, 4.3.3.39.1
Maintainability	3.5.3.1, 3.5.3.2	4.3.5.3
Durability	3.5.4.1, 3.5.4.2	4.3.5.4

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TABLE I. Verification methods - Continued.

Title	Requirements	Inspection
Fixed fire extinguisher	3.5.6.1	4.3.5.6
Portable fire extinguisher	3.5.6.2	4.3.5.7
Hazardous materials	3.5.6.3	4.3.5.8
<u>Operating environment requirements</u>	3.6	4.3.6
Ambient temperature	3.6.1	4.3.6.1
Fording shallow water	3.6.2.1	4.3.6.2.1
Fording deep water	3.6.2.2	4.3.3.5
Engine operation and bulkhead water leakage	3.6.2.3	4.3.6.2.1
Lubricant contamination	3.6.2.4	4.3.6.2.2

4.1.2 CI. CI shall be include those examinations and tests from table I as defined by the contract (see 6.4).

4.2 Order of inspection. The inspection sequence may be in any order.

4.3 Verification methods. Acceptable verification methods shall include visual and tactile inspection, functional manipulation, measurement, sample tests, full-scale demonstration tests, simulation, modeling, engineering evaluation, component properties analysis, similarity to previously-approved or previously-qualified designs, road tests, and inspection of contractor's records providing proof or certification that design, construction, processing, and materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.3.1 Verification alternatives. The manufacturer may propose alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost effective sampling procedures to verify performance. See the contract for alternatives that replace verification methods required by this specification.

4.3.2 Inspection conditions. Prior to tests, each vehicle shall be given a break-in run meeting the following requirements.

4.3.2.1 Preparation. Prior to break-in run all components requiring lubrication shall be lubricated. The vehicle shall be supplied with fuel and hydraulic fluids conforming to applicable specifications; engine governor shall be set to provide operation of the engine between 2400 and 2450 rpm at full load, full throttle. The no load operation shall be 2640 rpm maximum. For PTO

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operation, the engine throttle stop shall be set between 1750 and 1800 rpm no load and 1600 rpm minimum full load. The engine shall be operated at 800 to 1200 rpm until lubricating oil is at operating temperature and pressure. The vehicle shall be examined for fuel and lubricant leaks. All other necessary adjustments and safety checks shall be completed.

4.3.2.2 Operation and distance. Vehicles shall be driven for the distances specified in table II on smooth, level, hard surfaced roads or test track except for a section of the road as shown in figure 3. The vehicle shall be operated over the undulating section of road (see figure 3) during “a” and “b” division of the break-in run in both directions. After each division of the break-in, the vehicle shall be stopped, the engine shall be allowed to idle for not less than 2 min. The vehicle shall then driven in reverse for a distance of not less than 50 ft.

TABLE II. Speeds and distances for break-in run.

Division of run	Speed (mph)	Distance (mi)	Test conditions
a	0 to 10	10	Track (road)
b	11 to 20	25	Track (road)
c	21 to max.	5	Track (road)

4.3.2.3 Condition after break-in. After completion of the break-in run, the engine shall be run at idle speed for not less than 5 min. All suspension wheel bearings shall be checked to determine if adjustments are correct and readjusted as required. Vehicle shall be checked for damaged components or maladjustment that may cause faulty vehicle operation.

4.3.3 Operating requirements verification.

4.3.3.1 Seals. Prior to and after fording operations the vehicle shall be checked for the amount of water on the hull floor, beneath the crew compartment, and the leaking of lubricants.

4.3.3.2 Door, hatch, and vision device seals. The doors and hatches shall be closed and locked and a spray of water shall be directed on and around each door, hatch, and vision device for a period of 3 minute (min). All doors, hatches, and vision devices shall be checked for leakage.

4.3.3.3 Air cleaner outlet hose system. The duct assembly shall be sealed off. A vacuum of 25 to 30 in. of water shall be applied and the loss of vacuum shall be determined over a 3 min period.

4.3.3.4 Winterization kit. The vehicle shall have winterization equipment installed and checked for completeness of equipment, installation, and operational, functional, and performance requirements.

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4.3.3.5 Fording kit (deep water). The vehicle shall be operated in a water depth of 102 in., including wave height, for 15 min, then checked for accumulation of water and engine operation.

4.3.3.6 CBR kit. The air flow at each outlet shall be determined.

4.3.3.7 Smoke generating kit. The smoke generating switch shall be activated when the engine is warm and operating at 1600 rpm. Verify the smoke generating kit performs as specified in 3.3.2.4. NOTE: Do not test the smoke generating system for more than 15 seconds (s), nor within a building.

4.3.3.8 Power train. The power train shall be operated throughout out all gear and speed ranges and checked for functional requirements, malfunction, unusual noise, leakage, and damage.

4.3.3.9 Fuel system slope test. The vehicle shall be operated ascending and descending a 60% grade in forward and reverse gear and shall be operated on a 30% side slope, with each side of vehicle up slope.

4.3.3.10 Fuel system operational test. Fuel tank shall be filled at specified rate. The vehicle shall be operated throughout all speed and gear ranges over cross-country, hilly terrain, and on smooth, level hard-surface roads, and observed for functional requirements. The system shall be checked for leaks before and after a two mile road test. After road testing, the fuel tanks shall be examined for foreign matter.

4.3.3.11 Fuel tank, fuel line and hydraulic reservoir and line cleanliness and leakage. The fuel system, prior to engine installation, and the hydraulic system shall be pressurized at 3 to 4 psi with filtered air. Soapy water or equivalent shall be applied to the fittings and fuel tank seals. All fittings and seals shall be thoroughly checked for leakage. At the completion of this test, the lines, tanks, and connections shall be wiped dry of testing fluid.

4.3.3.12 Emergency fuel shut-off. With engine operating at not more than 1000 rpm, and the transmission in neutral position, the manual shut-off handle shall be actuated.

4.3.3.13 In-tank fuel pump. Prior to engine installation, the pump output pressure shall be verified at the engine end of fuel line quick disconnect.

4.3.3.14 Fuel transfer system. The fuel transfer system shall be operated to transfer fuel from the vehicle to a remote container and from a remote container to the vehicle. Transfer rate shall be verified.

4.3.3.15 Heater, fuel feed. With the heater pump and fuel pump operating, the heater shall be checked for functional requirements.

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4.3.3.16 Throttle linkage. The throttle pedal shall be depressed as specified and the throttle position shall be verified.

4.3.3.17 Exhaust system. The vehicle shall be buttoned up and, with heater and APU operating, the main engine shall be operated at 900 to 1000 rpm for a period of not less than 30 min, whereupon the crew compartment's content of CO and NO_x shall be determined.

4.3.3.18 Controls. Manipulate controls and inspect for malfunction throughout all conditions of operation.

4.3.3.19 Adjustment mechanisms. Inspect for malfunction throughout all conditions of operation.

4.3.3.20 APU. The power train shall be operated throughout all gear and speed ranges and checked for functional requirements, leakage, malfunction, unusual noise, and damage.

4.3.3.21 Electrical system. The requirements of 3.3.11.1 through 3.3.11.3, 3.3.11.5, and 3.3.11.7 shall be verified using one or more of the methods specified in 4.3 and/or 4.3.1.

4.3.3.21.1 Night vision device voltage supply. To determine conformance to 3.3.11.4a, the master relay switch and infrared power switches shall be turned on and the generator shall be supplying the specified voltage. The voltage shall be determined at the loose harness plug using an 80 megaohm load. To determine conformance to 3.3.11.4b, the master relay switch and night viewer power switches shall be turned on. The availability of electric power at night viewer connector shall be verified.

4.3.3.21.2 Engine manifold heater. The start button shall be depressed and the push-button switch shall be operated. The manifold shall be checked for heat.

4.3.3.22 Seating. The requirements of 3.3.12 through 3.3.12.3 shall be verified using one or more of the methods specified in 4.3 and/or 4.3.1.

4.3.3.23 Grades and slopes. The vehicle shall be operated on longitudinal grades of 40% and side slopes of 20% without slipping or upsetting.

4.3.3.24 Trench crossing. The vehicle shall be driven over trenches 36 in. or more in depth and 103 in. in width at a speed not to exceed 5 mph.

4.3.3.25 Vertical obstacles. The vehicle shall be operated across a vertical obstacle 42 in. in height and checked for performance requirements.

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4.3.3.26 Drift. The vehicle shall be operated between 15 and 26 mph and drift shall be determined.

4.3.3.27 Stall speed test. The power pack shall be operated as follows with the transmission output shafts secured against rotation:

- a. Apply vehicle brakes.
- b. Start the engine with the transmission in neutral.
- c. Run the engine for 5 min at 2000 rpm. Return to 700 to 800 rpm and shift into high range. Advance the engine to full throttle. Determine the stall speed at a transmission oil temperature range of 200 to 230°F as indicated on the vehicle's transmission temperature gage. Reduce the throttle setting and shift into neutral range.
- d. If necessary, repeat item c up to 3 times. If at the end of the 3rd attempt an engine speed of at least 1875 rpm is not achieved, the engine is under powered (defective) or in excess of 2025 rpm, the transmission high range clutch discs are slipping (defective). CAUTION: DO NOT RUN FULL THROTTLE IN HIGH RANGE FOR MORE THAN 30 CONSECUTIVE SECONDS OR EXCEED 260°F AS READ ON VEHICLE TRANSMISSION TEMPERATURE GAGE. (THIS 260°F LIMIT CORRESPONDS TO A MAXIMUM CONVERTER OUT OIL TEMPERATURE OF 300°F.)
- e. Idle engine 675 to 725 rpm for 10 min.
- f. Stop engine with electric fuel shut-off solenoid valve. Inspect for oil and fuel leaks.

4.3.3.28 Oil pressure and temperature. The vehicle shall be operated on level ground, 60% grades, and 30% side slopes, and the oil temperature and pressure checked for functional requirements.

4.3.3.29 Cooling system. The vehicle shall be operated under one or any compatible combination of the following conditions:

- a. Ambient temperatures of 115°F.
- b. Under full towed load.
- c. At full throttle with no track slippage of the vehicle when operating on smooth, level, hard-surfaced roads at or above 0.3 converter speed ratio in any transmission range.

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4.3.3.30 Speed.

4.3.3.30.1 Level road speed, no load. The vehicle shall be operated at 26 mph for not less than 10 min, and at 3 mph in low gear for not less than 1 hour without damage to the engine, transmission, or components. Vehicle shall be checked for function of components and drift shall not exceed limit specified in 3.3.16.

4.3.3.30.2 Speed with towed load. The vehicle shall tow a track laying, free rolling (final drives disconnected from transmission) load of 112 000 lb at a speed of not less than 17 mph and shall sustain a speed of 13 mph. Performance requirements shall be demonstrated on smooth, level, hard surface roads free of loose materials. The vehicle shall be operated with towed load on level and hilly cross-country terrain and sustain a speed of 2.5 mph. Vehicle shall meet performance requirements.

4.3.3.30.3 Speed on grade. The vehicle shall be operated on a prepared 10% grade with towed load of 112 000 lb at a minimum speed of 4.5 mph. Gradeability shall be demonstrated on a smooth, hard surface.

4.3.3.31 Acceleration. The vehicle shall be accelerated from a standing start on level ground. Travel distance and time shall be determined.

4.3.3.32 Engine starting on grades and slopes. The vehicle shall stand on a 60% grade for not less than 2 min with engine operating under no load between 650 and 750 rpm. The engine shall be stopped for not less than 2 min. The engine shall restart in not more than 1 min when headed up and down grade. Similar engine stopping and starting shall be accomplished on 30% side slopes with each side of vehicle up slope. The 60% grade test may be conducted in conjunction with brake holding test (see 4.3.3.35.2).

4.3.3.33 Auxiliary engine starting and operating on grade and slopes. The engine shall be operated on angles between 0° and 15°. In any plane, the vehicle shall start and oil pressure and temperatures shall be maintained, with minimum oil level as shown on the dipstick measured with the engine in horizontal (normal) operating position.

4.3.3.34 Climbing. The vehicle shall be operated on a longitudinal grade of 60%, from a standing start, in forward and reverse gear.

4.3.3.35 Braking.

4.3.3.35.1 Stopping. The vehicle shall be operated at 20 mph on dry, level, hard-surfaced road without loose material. The results of 3 stopping tests shall be averaged to verify conformance.

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4.3.3.35.2 Holding. A combat load, or a simulated load of equal weight, shall be placed on the vehicle in a position that will not restrict the flow of engine air (intake or exhaust). The vehicle shall be driven up a 60% longitudinal grade. The service brakes shall be applied with the vehicle headed up and down the grade. The vehicle shall be observed for movement. The parking brakes shall be applied and held for not less than 1 min. The vehicle shall be observed for movement. The engine starting and fuel system tests on a 60% slope may be conducted in conjunction with this test (see 4.3.3.9 and 4.3.3.32).

4.3.3.36 Turning. The vehicle shall be operated and turned to the right and to the left in full 360° pivot turn in neutral steer and checked for functional requirements.

4.3.3.37 Spade. The spade shall be operated throughout operating range and under all conditions of operation. The spade hydraulic system shall be tested for specified settling limit and the spade hoisting system shall be tested for locking capability.

4.3.3.37.1 Spade dozing. The spade shall be lowered until bottom is level with the bottom of the vehicle track. With strain gauge hook attached to lower center of blade (i.e. auxiliary bar welded to the center, bottom of spade for engagement of hook), the vehicle shall be driven forward until a pull of 20 000 lb is attained. NOTE: Strain gauge cable will be played out beneath vehicles to strain gauge positioned between rear of vehicle and anchor device.

4.3.3.37.2 Spade stabilization, boom and hook capacity. The boom and hook shall be hydraulically raised from the travel lock position to a height of 19 ft minimum above ground level (center line of hook) with an 8 ft nominal reach in front of hull in no more than 90s. From the fully forward position, the boom shall be hydraulically returned to travel lock position in no more than 100s. In a raised position and providing 4 ft of live boom flexibility, the boom and hook, hydraulically operated, shall:

- a. Lift 50 000 lb at a reach of 8 ft from the front of hull with vehicle on level ground and spade employed.
- b. With spade employed, move a 50 000 lb vertical hanging load through a fore aft distance of 4 ft. The hydraulic relief valve controlling live boom back movement shall be adjusted so that with the boom fully extended, no live boom movement shall occur for vertical loads of 55 000 lb or more. Spade stabilization shall be checked during this test.

4.3.3.37.2.1 Lift and carry. The boom and hook shall be operated in the fully extended position while lifting and carrying specified loads as follows:

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- a. Lift and carry 12 000 lb at a reach of 8 ft from the front of hull.
- b. With suspension lockout blocks installed, lift and carry 30 000 lb at no more than 3 mph (speed over level, hard-surface (gravel) terrain).
- c. With suspension lockout blocks installed, lift and carry 40 000 lb at not more than 2 mph (speed over level hard surface (gravel) terrain). NOTE: Cable must be shortened so that hoist cable operates on first, second or third layer.

4.3.3.38 Main hydraulic system. The main hydraulic system shall be operated under operating conditions applicable to this vehicle and checked for specified requirements. Winch operation shall typify normal operations and the system shall exhibit no evidence of overheating (170 °F in reservoir), malfunction, or failure. The hydraulic pump operation shall be checked at a speed range of 1350 to 1450 rpm for specified requirements. Hydraulic subsystem relief valves shall be adjusted as follows:

- a. Main winch control valve shall produce a minimum line pull of 83 000 lb and not to exceed 87 000 lb using the main winch in low gear on a bare drum. Hydraulic pressure not to exceed 1900 psi.
- b. Hoist winch control valve shall provide a vertical lift over the boom of 50 000 lb minimum and not to exceed 55 000 lb using the hoist winch in low gear and a four part line on a bare drum. Hydraulic pressure not to exceed 1000 psi.
- c. Boom control valve, with the boom fully extended, shall produce a live boom back movement for a vertical hanging load of 50 000 lb. With the boom fully extended live boom movement shall not occur when the vertical load exceeds 55 000 lb. Hydraulic pressure shall not exceed 1700 psi.
- d. APU relief valve shall produce hydraulic pressure of 1450 to 1550 psi with the APU engine operating at 2000 rpm nominal.

4.3.3.39 Hoist winch. With winch in low gear and under load sufficient to obtain proper spooling, the winch shall reel in cable on the bare drum at a rate of not less than 30 ft/min. The hoist winch shall be tested to insure a vertical lifting capacity over the boom of not less than 50 000 lb using a four-part line and the cable shortened to operate on bare drum. The winch and hydraulic system shall suspend loads in midair and resume lifting without apparent downward movement of load. When using a four-part line, winch shall be tested that to insure that downward movement of the load shall be controllable to increments not exceeding 1 inch.

4.3.3.39.1 Functional reliability requirements. Testing shall be conducted using 200 ft cable, four-part line, and a lifting load of 32 000 lb. The hoist winch shall be operated for 0.5 h then idle for 0.4 h. Test cycle shall be started only when a full 0.5 h of operation can be achieved without exceeding the specified temperatures of the hydraulic system. Sequence of test shall be as follows:

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- a. Lift specified load no less than 3 ft off the ground, pause 30 s.
- b. Resume lifting until the load is no less than 6 ft off the ground, pause 30 s.
- c. Lower load to the ground, pause 3 min before repeating above cycle.

4.3.3.40 Main winch. The winch shall be operated in low gear and under load sufficient to obtain proper spooling, and shall reel in cable on bare drum at a measured rate of no less than 20 ft/min. With the cable operating over the nose roller the winch shall produce a line pull of 83 000 to 87 000 lb. (This corresponds to a straight line pull off the nose roller of 88 000 to 92 000 lb.) The hydraulic relief valve shall prevent the exertion of a line pull in excess of 92 000 lb. Spade stabilization shall be verified during this test.

4.3.3.40.1 Functional reliability. Functional reliability of the main winch shall be established at 8 h of operation accrued in 0.5 hour (h) increments with a spooling load of up to 20 000 lb on the first, second, and third layer, and utilizing a test load of 51 000 lb on the fourth layer. The main winch shall be operated in low gear under load sufficient to obtain proper spooling. Spooling rate shall be 20 ft/min on bare drum. The main winch shall be operated for 0.5 h and then remain idle a minimum of 0.5 h. Test cycle shall be started only when a full 0.5 h of operation can be achieved without exceeding the specified temperature of the hydraulic system. Sequence of test shall be as follows:

- a. The main winch cable shall be spooled out to bare drum (no less than 3 wraps remaining on drum), pause 30 s.
 - b. Utilizing a test load of 51 000 lb, reel in until all but 25 ft of cable has been wound on drum, pause one minute.
 - c. The main winch cable shall again be spooled out to bare drum, pause 30 s.
- Repeat operation using steps 2 and 3.

4.3.3.41 Main hoist and winch brakes. Operating under specified loads and conditions, the brakes shall be checked for holding, rate of descent, and stopping capability, without causing winch or hydraulic system chatter.

4.3.3.42 Auxiliary power system. The auxiliary power shall be operated and checked for relief valve setting, functional requirements, and leakage. The auxiliary power system shall be checked to provide hydraulic power to retrieve the main winch cable without load with all cable played out less 4 wraps on the winch drum at 5 ft/min with the winch in high gear. The auxiliary power unit shall be checked to provide power to retrieve the hoist winch cable without load with all cable played out less 4 wraps on the winch drum at 18 ft/min with the winch in high gear.

4.3.3.43 Radio suppression. The vehicle shall be subjected to a radio interference suppression test.

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4.3.3.44 Winch test frequency. One hour tests in the sequence shown in 4.3.3.37.2.1 shall be performed every 500 mi during the initial production test to accrue a total of 8 h test time. The 1 h of testing shall be accomplished in 0.5 h increments. The test cycle shall be started only when a full 0.5 h of operations can be achieved without exceeding the specified temperatures of the hydraulic system.

4.3.4 Interface requirements verification.

4.3.4.1 Design, construction, and part interchangeability. Design, construction, and part interchangeability shall be verified using one or more of the methods listed in 4.3.

4.3.4.2 Weight inspection. The vehicle shall be combat loaded and weight shall be determined.

4.3.4.3 Stowed equipment. Operate vehicle and components without interference of BII.

4.3.5 Ownership and support requirements verification.

4.3.5.1 Ozone protection. Ozone protection shall be verified using one or more of the methods listed in 4.3 and/or 4.3.1.

4.3.5.2 Reliability. The specified miles of operation shall consist of 20% hard surface roads, 40% cross-country, and 40% hilly cross-country operation. Thirty to 40% of the test mileage shall be accomplished while towing a tracked vehicle of equal weight. Operation of the main winch, hoist winch, hydraulic system and APU shall be equally dispersed throughout the test duration. A reliability requirement will be verified as a point estimate during initial production tests. The MMBF shall not be less than specified.

4.3.5.2.1 APU test frequency. The APU shall be tested by operating for a period of 0.5 h after every 8 h of vehicle running time. Test period shall consist of 15 min electrical load and 15 min hydraulic load as follows:

- a. Electrical load - 150 A load bank connected through the vehicle slave receptacle.
- b. Hydraulic load - 1500 psi hydraulic pressure (the hydraulic system selector valve set in "Auxiliary" position).

4.3.5.3 Maintainability. The maintenance ratio, equal to all maintenance man-hours divided by operating time, shall be based upon an average vehicle speed of 10 mph under the same terrain conditions specified in 4.3.5.2. Maintainability requirements shall be verified during initial production tests.

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4.3.5.4 Durability. The durability requirement shall be verified as a point estimate during initial production tests.

4.3.5.5 Painting, marking, and data plates. Visually inspect vehicle for application and coverage of proper materials. Check for incomplete or missing data and improper location or size of data plates.

4.3.5.6 Fire extinguisher. The fixed fire extinguisher shall be checked for proper installation, excessive pull, functional requirements.

4.3.5.7 Portable fire extinguisher. The portable fire extinguisher installation shall be checked for accessibility.

4.3.5.8 Hazardous materials. The omission of hazardous materials shall be verified using one or more of the methods specified in 4.3 and/or 4.3.1.

4.3.6 Operating environment requirements verification.

4.3.6.1 Temperature. The vehicle, properly serviced and equipped, shall be operated under the ambient temperatures specified in 3.6.1 and observed for performance requirements. With the vehicle operating in ambient temperature of 115°F, the vehicle shall be checked for performance in all transmission ranges with a converter speed ratio of 0.3 or greater.

4.3.6.2 Fording. The vehicle shall be operated in water of specified depth for 15 min and checked for water accumulation in the hull.

4.3.6.2.1 Engine operation and bulkhead leakage shallow water. The vehicle shall be tested as specified in 4.3.6.2 for shallow water with the engine compartment flooded with clear water to a depth of 48 in. (from ground level) by removing the engine compartment drain cover. The engine shall be operated at 1000 rpm for 15 min, then stopped, and shall restart within 3 min. The vehicle shall be examined for water accumulation on the hull floor.

4.3.6.2.2 Lubrication contamination. After all fording operations, the vehicle shall be examined for contamination of lubricants of the transmission, final drive, and road wheels 2, 3, 4, 5, and one of their corresponding arms, on each side of the vehicle.

5. PACKAGING

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

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packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The recovery vehicle is required to be compatible with the main battle tank. The recovery vehicle covered by this specification is military unique because it must be capable of accompanying and providing hoisting, winching, towing, and on-the-spot maintenance, and battlefield rescue and recovery of disabled tanks and comparable equipment. The recovery vehicle will move disabled vehicles to positions where transporters can evacuate.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Classification of vehicle, PIN, and quantity of vehicles (see 1.2 and 6.8).
- c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
- d. When first article is required (see 3.1).
- e. If design, materials, or manufacturing is other than as specified (3.2).
- f. If special kits are required (see 3.3.2).
- g. If painting should be other than specified (see 3.5.5.1).
- h. Packaging requirements (see 5.1).

6.3 First article. When requiring a first article inspection, contracting documents should provide specific guidance to offerors. This guidance should cover whether the first article is a first article sample, a first production item, or the number of test items. These documents should also include specific instructions regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Pre-solicitation documents should provide Government waiver rights for samples for first article inspection to bidders offering a previously acquired or tested product. Bidders offering such products who wish to rely on such production testing must furnish evidence with the bid that prior Government approval is appropriate for the pending contract.

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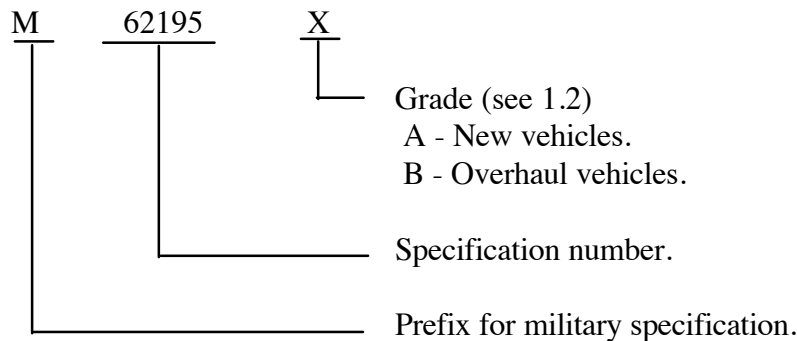
6.4 Conformance inspection. Affordable conformance inspection with confidence varies depending upon a number of procurement risk factors. Some of these factors include: Contractor past performance, government schedules and budget, product material and design maturity, manufacturing capital equipment and processes applied, the controlled uniformity of those processes, labor skill and training, and the uniformity of measuring processes and techniques. During the solicitation, contracting documents should indicate those tests desired from table I and their designated frequency based on a risk assessment for the procurement.

6.5 Safety precautions. Caution should be used in handling carbon dioxide fire extinguisher cylinders. Extreme care should be exercised during reinstallation to avoid tripping fire extinguisher control system since physical injury is highly probable.

6.6 Supplemental drawings. Historically, Army Drawings 8736950, Recovery Vehicle, Full Tracked, Medium (M88A1), 11672012, Lube Chart, 10862159, Spade assembly, and 11671379, Hydraulic Diagram (for M88A1), have been used to procure this vehicle. Copies of these drawings are available from the U.S. Army Tank-automotive and Armaments Command, AMSTA-TR-E/BLUE, Warren, MI 48397-5000.

6.7 Paint color. Historically, dark, olive green paint has conformed to color chip X24087 of FED-STD-595, and white glossy paint has conformed to color chip 17875 of FED-STD-595.

6.8 Part or Identifying Number (PIN). The PINs to be used for recovery vehicles acquired to this specification are created as follows:



6.9 Subject term (key word) listing.

Chemical, bacteriological, radiological kit (CBR)
Fording
Hoisting
Night Vision Device
Smoke generating kit
Tank

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Towing
Winching
Winterization kit

6.10 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

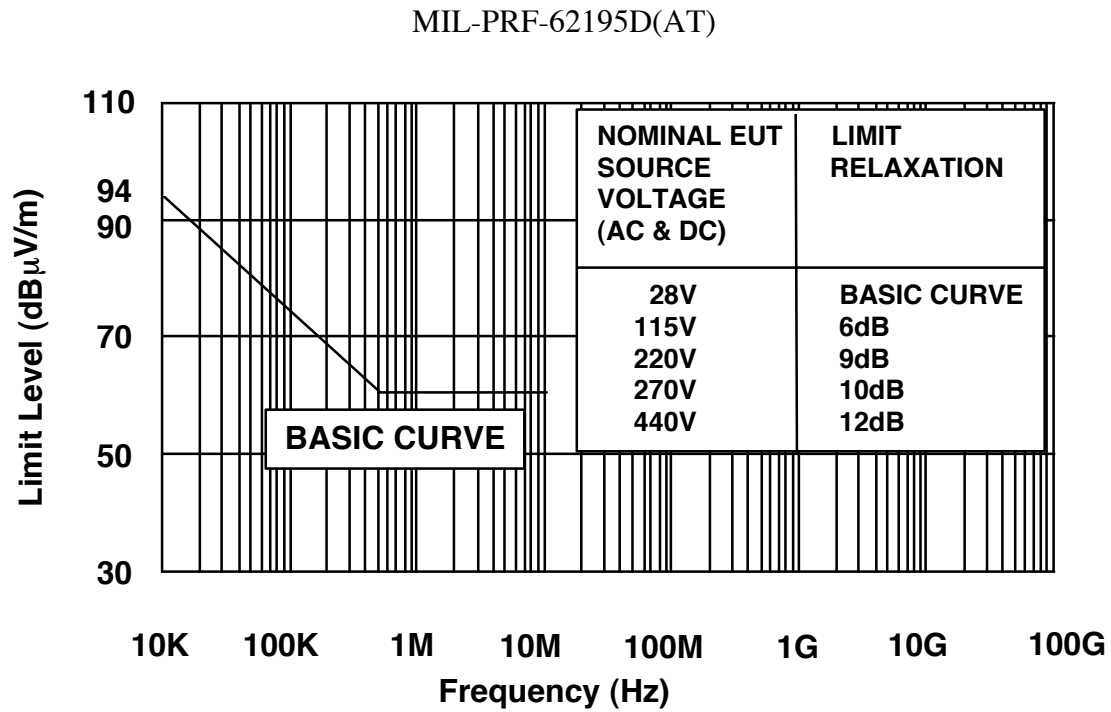


FIGURE 1. Conducted emissions levels.

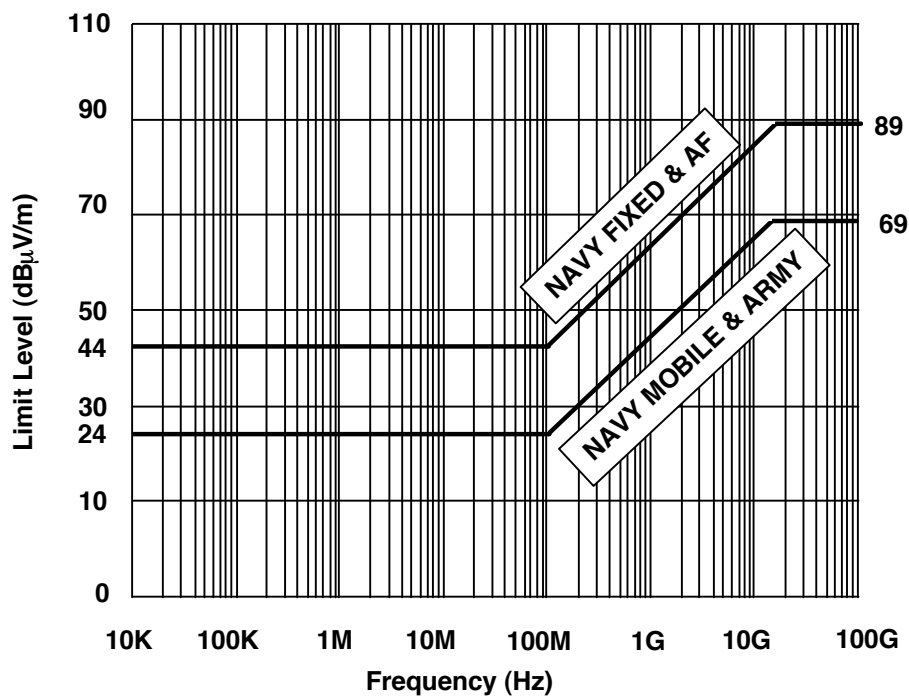


FIGURE 2. Radiated emissions levels.

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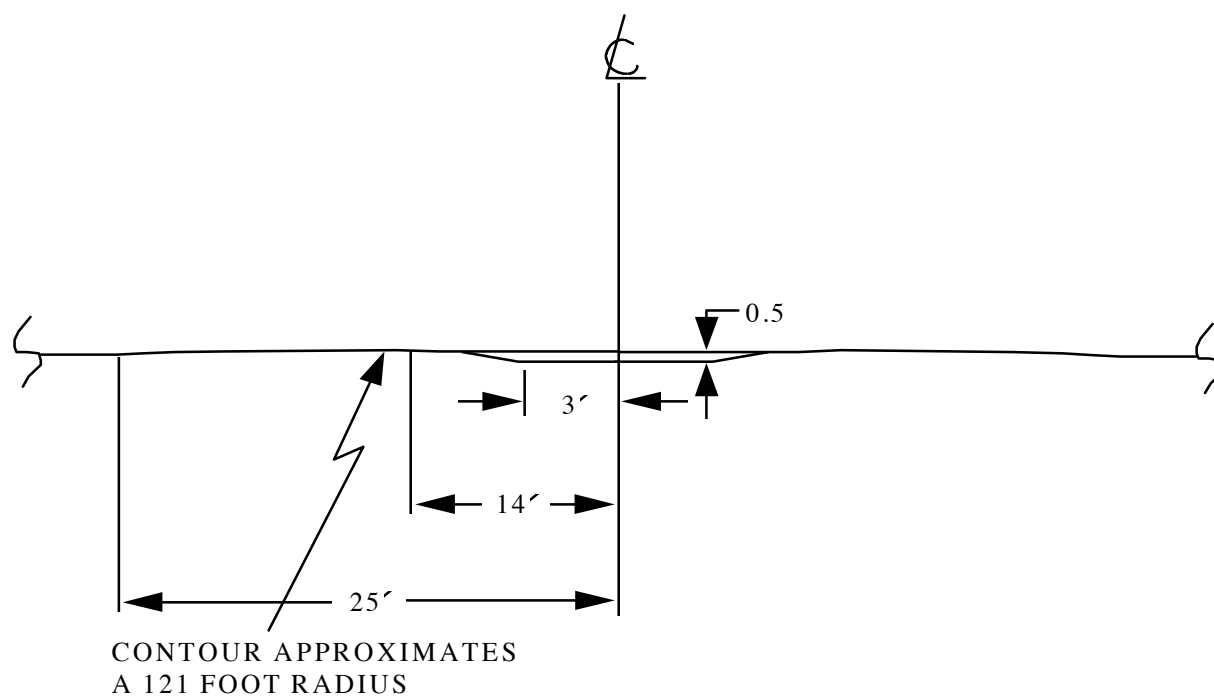


FIGURE 3. Profile of test track (artificial bump).

Custodian:
Army - AT

Preparing Activity:
Army - AT

(Project 2350-0480)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-PRF-62195D(AT)

2. DOCUMENT DATE (YYMMDD)

980129

3. DOCUMENT TITLE

Recovery Vehicle, Full-Track: Medium, M88A1, New and Overhaul

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

(1) Commercial
(2) AUTOVON
(If applicable)

7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME

b. TELEPHONE (Include Area Code)

(1) Commercial (810) 574-8745 (2) AUTOVON 786-8745

c. ADDRESS (Include Zip Code)

Commander
U.S. Army Tank-automotive and Armaments Command
ATTN: AMSTA-TR-E/BLUE
Warren, MI 48397-5000

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
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