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AUTHORITY

USATEC ltr, 14 Dec 1970

U. S. ARMY TEST AND EVALUATION COMMAND
COMMON SERVICE TEST PROCEDURE

RECOVERY AND MAINTENANCE OPERATIONS

1. OBJECTIVE

The objective of this Materiel Test Procedure (MTP) is to outline procedures to be used in determining the suitability of the test item for use in recovery and maintenance operations of wheeled and tracked vehicles.

2. BACKGROUND

Timely recovery and maintenance of vehicles disabled or otherwise immobilized during combat is the most expeditious and least expensive means of maintaining the required equipment in the fighting units. In addition, timely recovery denies the enemy any possible use of those vehicles that have become immobilized.

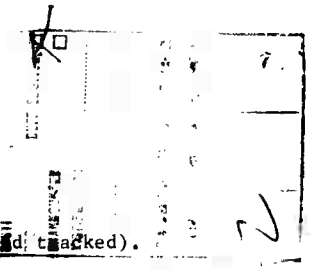
Recovery and maintenance operations under field conditions are often hampered by inclement weather, rough terrain, and poor light. The ability of recovery and maintenance crews to improvise is generally a very necessary adjunct to recovery operations. The capabilities of a recovery vehicle can be enhanced immeasurably by the skillfulness and resourcefulness of its crew. By the same token, the driver of the vehicle being recovered can influence the recovery operation by his knowledge of driving techniques and the capabilities of his own vehicle. These points are mentioned because crew capabilities can mean the difference between success or failure of a recovery vehicle or perform its mission in various circumstances and environments.

3. REQUIRED EQUIPMENT

a. Vehicles of size, weight, and characteristics found in typical organizations to which the test item will eventually be assigned.
b. Test Areas comprising the following:

1) Deep sticky mud
2) Loose sand
3) Various steep slopes (30, 45, and 60 percent in grade)
4) Deep ditches or ravines
5) Swamps
6) Inland waterways

c. Safety Boat with crew.
d. Pertinent Standing Operating Procedures (SOP), or other documents pertaining to safety during testing.
e. Appropriate Heavy Weights.
f. SOP for recovery operations.
g. Ambulance and aid man.
h. Forms for recording data.



i. Strain Gauge.
j. Salvage Vehicles (wheeled and tracked).
k. Photographic Equipment.

4. REFERENCES

A. USATECOM REG 385-6, Verification of Safety of Materiel During Testing.
B. FM 20-22, Vehicle Recovery Operations.
C. Appropriate qualitative materiel requirements (QMR) and table of organization and equipment (TOE).
D. MTP 10-3-501, Operator Training and Familiarization.

5. SCOPE

5.1 SUMMARY

This MTP outlines the following procedures:

a. Preparation for Test - A determination of associated vehicle and vehicle loads to be used, initial safety precautions to be considered, arrangement for necessary services and support and trained personnel.

b. Recovery Operations - A determination of the test vehicles ability to perform recovery operations, for associated vehicles and themselves, under various weather conditions, on various ground environments during daylight and darkness.

c. Maintenance Operations - A determination of the ability of the test vehicle to lift, swing, and carry various components and weights, necessary for removal and replacement of damaged or inoperative components, in the field.

5.2 LIMITATIONS

None.

6. PROCEDURES

6.1 PREPARATION FOR TEST

6.1.1 Safety

The test officer should ensure that a Safety Release in accordance with reference 4A has been received from HQ USATECOM and that all test personnel are familiar with its contents.

6.1.2 Personnel

a. Crews assigned to the test item and crews assigned to other vehicles used in the test should be trained in the operation and maintenance of their respective vehicles and proper use of safety equipment in accordance with pertinent technical manuals using the procedures of MTP 10-3-501. For recovery

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vehicle crews this should include recovery operations under as many different conditions as possible.

NOTE: Reference 4B should be used as a guide in determining field expedients and mechanical advantages.

b. Record the following for each of the test personnel:

1) Name and rank or grade
2) Military occupational specialty (MOS)
3) Experience in MOS

6.1.3 Facilities

Arrange for the following:

a. Medical support
b. Safety boat and SCUBA diving crews, as appropriate
c. Appropriate associated equipment

6.1.4 Area Selection and Preparation

a. Areas containing steep slopes, deep ditches or ravines, and swamps should be selected for recovery operations with test operations conducted in deep mud, loose sand and in snow.

b. For inland waterway operations a deep pond, lake, or river, with suitable entrance areas which would normally be used for inland waterway operations should be used.

c. If possible, these areas should be contiguous so that test operating time can be kept to a minimum.

6.1.5 Selection of Associated Vehicles

Vehicles to be recovered should be wheeled and tracked vehicles normally found in an organization to which the test item would be assigned. This will be determined by a review of the QMP for the test item and the TOE (reference 4C) for the various units to which the test item will be assigned.

6.1.6 Vehicle Loads

Vehicles to be recovered may or may not be stowed or loaded depending upon the weight requirements imposed by the QMR for lifting, winching, and towing by the test item. However, the test item should have on equipment materiel (OEM) and the prescribed individual clothing, equipment and weapons stowed.

6.2 TEST CONDUCT

Evaluate the test item, fully stowed, equipped and manned as in a tactical operation, while carrying out actual recovery and maintenance operations, day and night, under all conditions of weather and terrain as follows:

6.2.1 Recovery Operations

a. Operate associated tracked and wheeled vehicles, of appropriate type and weight, to the extent necessary to immobilize them under each of the following conditions:

1) Deep mud
2) Loose sand
3) Deep ditches or ravines
4) Slopes of various gradients
5) Inland waterways

b. Extricate and recover the associated vehicles using the test item boom and boom winch by winching and towing the associated vehicle.

c. Determine the test item's ability to upright overturned vehicles, both wheeled and tracked.

d. Determine the test item's ability to tow associated vehicles on unpaved roads and cross-country.

e. Immobilize the test item under the conditions of step a.1 and determine its self-recovery ability.

f. During the conduct of steps b through e, determine the suitability of all accessories furnished with the test item, spades, outriggers, other stabilizing devices, snatch blocks, power tools, wrecking tools and equipment hydraulic lockout systems, boom jacks, vehicle light, etc.) for assisting in recovery operations.

g. Photograph all recovery operations to the extent possible, especially those operations where improvised methods are used.

h. Record the following for recovery operations:

1) Date operation was conducted.
2) Specific description of each test area.
3) Description of weather (including temperature and light conditions).
4) Nomenclature, type and weights of vehicles recovered:
5) Percent of slope or depth of ravine/ditch, as applicable.
6) Distance vehicle was towed.
7) Method used in each recovery operation.
8) Problems, if any:

a) With intercom during recovery operations
b) In using integral vehicle lights and auxiliary light, when provided, during night recovery operations.
c) Positioning the test item during recovery operations.
d) Using accessory equipment.

9) Safety problems, if any.
10) Operating time for tow winch.
11) Operating time for boom winch.

6.2.2 Maintenance Operations

a. Perform normal maintenance operations in the field to determine the following:

1) Ability of the test item to:

a) Lift, swing, and carry specified components and weights.
b) Remove and replace power packages, gun barrels, armor plates, etc.

2) Suitability of test item accessories, as specified in paragraph 6.2.1.f, for aiding maintenance operations.

b. Record the following for each maintenance operation:

1) Nomenclature and weight of each component maintained
2) Operation involved
3) Problems, if any:

a) In winch and boom controls.
b) In using the spade, outriggers and/or other stabilizing devices.
c) In using test item provided power tools and tools and wrecking equipment.
d) Due to inadequacy of integral vehicle lights and auxiliary lights during night operations.
e) Maneuvering and positioning the test item.

4) Safety problems, if any
5) Operating time for boom winch

6.3 TEST DATA

6.3.1 Preparation for Test

Record the following for all test personnel:

a. Name and rank or grade
b. MOS
c. Experience in MOS in months

6.3.2 Test Conduct

6.3.2.1 Recovery Operations

a. Record the following for each recovery operation performed:

1) Date operation was conducted.
2) Specific description of each area used (mud, loose sand, ditch, ravine, swamp, slope and gradient, or inland waterway).
3) Description of weather, including temperature and light conditions.

4) For each vehicle recovered:

1) Nomenclature
2) Type
3) Weight in pounds

5) Percent of slope, when applicable.
6) Depth of ravines of ditches, in feet.
7) Distance vehicle was towed, in miles.
8) Method used in recovery (towed by winch, assisted by boom winch, etc).
9) Problems, if any:

a) With in intercom
b) Using integral vehicle lights and auxiliary lights
c) Positioning test item
d) Using accessory equipment

10) Safety problems, if any.
11) Tow winch operating time in hours.
12) Boom winch operating time in hours

b. Retain all photographs

6.3.2.2 Maintenance Operations

Record the following for each maintenance operation performed:

a. For each component:

1) Nomenclature (power packages, gun barrel, armor plate, etc)
2) Weight in pounds

b. Operation involved(lifting, lifting and swinging, lifting and carrying)
c. Problems, if any:

1) In winch and boom controls.
2) In using spade, outriggers and/or other stabilizing devices.
3) In using test item provided power tools and tools and wrecking equipment
4) Due to inadequacy of integral vehicle lights and auxiliary lights.
5) Maneuvering and positioning the test item.

d. Safety problems, if any
e. Operating time for boom in hours

6.4 DATA REDUCTION AND PRESENTATION

All data obtained by inspection, observation, photographs, testing

and maintenance should be suitably tabulated or otherwise arranged and presented in a manner to indicate whether the test item meets the applicable criteria.

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
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13. ABSTRACT

This Army Service Test Procedure describes test methods and techniques for evaluating the Ability of Wheeled and Tracked Vehicles to perform Recovery and Maintenance Operations, and for determining their suitability for service use by the U. S. Army. The evaluation is related to criteria expressed in applicable Qualitative Materiel Requirements (QMR), Small Development Requirements (SDR), Technical Characteristics (TC), or other appropriate design requirements and specifications.

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