AD 718658
Amsta - BSL

28 December 1967 3875

Materiel Test Procedure 5-3-120
U. S. Army Artillery Board

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

MISSILE CARRIER, SELF-PROPELLED

[redacted]

1. OBJECTIVE

The purpose of this MTP is to determine the effectiveness and the suitability of self-propelled missile carriers for use as specified by Qualitative Materiel Requirements (QMR) or by Technical Characteristics (TC).

2. BACKGROUND

Due to the evolution in artillery support of warfare during the past decade from short range cannons to long range missiles with a variety of warheads, the thinking in terms of artillery tactics, organization and equipment has changed. No longer can artillery weapons be limited to specific areas of operation, but must have the ability for rapid surface movement over all types of terrain without being restricted to roadways or deterred from a desired position by minor obstacles. The innovation of mounting missile launchers, transport configurations, and support equipment on wheeled and/or track-laying, self-propelled vehicles provides that capability and reduces terrain interference to an acceptable minimum. The artillery requires weapons that can be transported easily and emplaced quickly so that their employment against close and distant targets can be made with speed and precision. Hence, there is a requirement for new and improved self-propelled missile carriers and the additional need to ensure that they are able to fulfill their intended mission.

3. REQUIRED EQUIPMENT

a. Suitable Maneuver and Operational Areas to Include Applicable Water Courses
b. Required Vehicle Shop Facilities
c. Radio and Wire Communication Facilities, as required
d. High Speed Cameras and Film, as required
e. Comparison and Companion Vehicles, as required
f. Equipment and Facilities, as required by the individual tests

4. REFERENCES

A. AR 705-2300-8, Water Crossing Requirements for Future Combat and Tactical Vehicles
B. USAMC Regulation 750-15, Maintenance of Supplies and Equipment
C. USAMC Regulation 385-12, Verification of Safety of Materiel from Development through Testing and Supply to Disposition
D. USAMC Manual 385-224, AMC Safety Manual
E. USATECOM Regulation 385-6, Safety Release
F. USATECOM Regulation 385-7, Safety Confirmation
G. USATECOM Regulation 385-13, Safety Statements

20040629194

BEST AVAILABLE COPY

H. Technical Characteristics, Self-Propelled Missile Carriers
I. Qualitative Materiel Requirements, Self-Propelled Missile Carriers
J. Military Characteristics, Self-Propelled Missile Carriers
[redacted] Preoperational Inspection and Physical Characteristics
L. MTP 2-3-501, Safety Hazards
M. MTP 2-3-502, Maintenance
N. MTP 2-3-503, Cargo Capacity
O. MTP 2-3-504, Cross Country Mobility
P. MTP 2-3-505, Road Mobility
Q. MTP 2-3-507, Durability and Reliability
R. MTP 2-3-508, Stowage
S. MTP 2-3-509, Fording
T. MTP 2-3-510, Inland Waterway Operations
U. MTP 2-3-511, Security (Susceptibility to Detection)
V. MTP 2-3-512, Compatibility With Related Equipment
W. MTP 2-3-513, Fuel and Oil Consumption
X. MTP 2-3-514, Kit Evaluation
Y. MTP 2-3-515, Kit Installation
Z. MTP 2-3-516, Human Factors Evaluation
AA. MTP 2-3-519, Surface Transportability
BB. MTP 2-3-520, Logistics Over-the-Shore (LOTS)
CC. MTP 2-3-524, Personnel Training
DD. MTP 2-3-526, Cargo Loading Adaptability
EE. MTP 3-3-517, Safety Hazards
FF. MTP 5-3-500, Preoperational Inspection and Physical Characteristics
GG. MTP 5-3-501, Battlefield Mobility (Battlefield Mobility, Tactical Flexibility and Portability)
HH. MTP 5-3-503, Personnel Training
II. MTP 5-3-504, Reliability and Durability (Quantitative Measure of Mean Time Between Failures and Overhaul, Repair Time)
JJ. MTP 5-3-505, Maintenance
KK. MTP 5-3-506, Compatibility with Related Equipment
LL. MTP 5-3-507, Human Factors Engineering (Compatibility of Man-Machine by Observation)
MM. MTP 5-3-510, Safety Hazards
NN. MTP 5-3-524, Personnel Training, Combat Vehicle Mounted Systems
OO. MTP 5-3-526, Emplacement, Action, and March Order
PP. MTP 5-3-534, Camouflage
QQ. MTP 7-3-512, Air Drop Capability (Suitability of Equipment For)
RR. MTP 7-3-515, Air Transport, Internal (Suitability of Equipment For)
SS. MTP 7-3-516, Air Transport, External (Suitability of Equipment For)

5. SCOPE

5.1 SUMMARY

This materiel test procedure describes the following tests conducted on self-propelled missile carriers:

a. Pre-test Operations consisting of:

1) Preoperational Inspection and Physical Characteristics - a study to ascertain the physical characteristics of the test item(s) and to verify that they are complete and in satisfactory condition prior to the start of testing.
2) Cargo Loading Adaptability - a study to determine the ability of service personnel to combat load the test item and to determine its cargo capacity.
3) Stowage Facilities - a study to evaluate the adequacy of the test item stowage facilities to include compartments, racks, tie downs and cabinets.

b. Operational Characteristics consisting of:

1) Mobility and Maneuverability - a study to determine the ability of the test item to traverse paved roads, unpaved roads and cross-country terrain.
2) Battlefield Mobility - a study to evaluate the battlefield mobility, tactical flexibility and portability of the test item under simulated combat conditions.
3) Emplacement, Preparation for Action, and March Order Capability - a study to evaluate the ability of the average trained crew to emplace, prepare for action and march order the missile system.
4) Compatibility with Related Equipment - an evaluation of the compatibility of the test item with items of related equipment in the applicable missile system such as towed and transported components.
5) Vulnerability to Detection - a study to determine the susceptibility of the test item to visual and aural detection, detection from the air and an evaluation of the degree of security that camouflage provides.

c. Special Operations consisting of:

1) Fording - a study to determine the ability of the test item to ford streams of various depths and an evaluation of the deep fording kit, as applicable.
2) Inland Waterway Operations - a study to determine the capability of the test item to perform inland waterway operations.
3) Logistics Over-the-Shore - an evaluation of the suitability of the test item to participate in logistics over-the-shore operations.
4) Surface Transportability - a study to determine the capability of the test item to be transported by various carriers other than aircraft.

5) Air Transportability and Air Drop Capability - a study to determine whether the test item can, effectively, be carried inside or outside various aircraft and an evaluation of its suitability for air drop operations.
6) Secondary Armament Capability - a study of the suitability of the test item for secondary armament mounting, loading and firing under varying conditions and a determination of the fields of fire with various combat loads.
7) Kit Installation and Evaluation - a study to determine the effectiveness and adequacy of the various kits supplied for use with the test item.

d. Full-Test Evaluations consisting of:

1) Durability and Reliability - a study to determine the ability of the test item to operate for a given length of time over various types of terrain for a given number of miles, under various load conditions.
2) Maintainability - an evaluation of the suitability and compatibility of the test item toward the performance of scheduled and non-scheduled maintenance tasks and of the adequacy of the maintenance package, over the entire period of testing.
3) Fuel and Oil Consumption - a determination of the fuel and oil consumption of the test item over the entire period of testing.
4) Human Factors Engineering - a study to determine the suitability of the test item for operation by service personnel without causing undue fatigue, strain and mental errors.
5) Safety - a determination of the safety hazards encountered during the loading, operation, and emplacement of the test item throughout the period of testing.

e. Post-test Operations - a repeat of the preoperational inspections to determine the effects of the various tests on the test item.

5.2 LIMITATIONS

None

6. PROCEDURES

6.1 PREPARATION FOR TEST

6.1.1 Scheduling

6.1.1.1 Personnel

a. Prior to the arrival of the test item, ensure that driver, observer and maintenance personnel are adequately trained as prescribed in MTP 2-3-524, MTP 5-3-503 and MTP 5-3-524.

b. Record the following for all service personnel:

1) Rank
2) MOS
3) Training time
4) Experience

6.1.1.2 Facilities and Equipment

a. Select and schedule the use of test courses and testing sites, as required by applicable test section and the corresponding MTP.

b. Upon notice of the arrival or estimated time of arrival of the test item, arrange for or secure the following:

1) Engineering safety release or a safety statement from the engineering agency as prescribed by references 4E and 4F
2) Required "standard" vehicle(s) for comparison testing

NOTE: 1. A "standard" vehicle is a tactical vehicle having characteristics similar to the test vehicle and one which may, ultimately, be replaced by the test item.

2. If the data to be obtained during the conduct of the various portions of this test are available (under the same conditions) for a "standard" vehicle, then "standard" vehicle testing shall not be required.

3) Maintenance support facilities, organization and personnel
4) The assistance of the U. S. Army Airborne, Electronics, and Special Warfare Board (USAAESWBD) in conducting the airborne operations required in the test
5) The assistance of U. S. Army Electronic Proving Ground (USAEPG) in the conduct of the susceptibility to detection evaluation

c. Ensure the presence of the following at the cargo loading site(s), as required:

1) Mechanical handling equipment (MHE)

NOTE: MHE and qualified MHE personnel shall be available at the loading site(s) for handling heavy and unwieldy cargo elements, as required.

d. Ensure that the necessary cargo components which make up the various loads carried by the test item are available at the loading site(s), as required.

NOTE: The cargo components making up the various loads may require kits to ensure that vehicle and load configurations are compatible. Adapter kits shall be made available, as required.

e. Ensure that the required support vehicles are available during cargo handling operations.

f. Safe test procedures shall be followed throughout testing. All test operations shall be observed by project personnel and any unsafe or potentially unsafe conditions will be cause for testing to cease until all questionable conditions are resolved.

NOTE: Missile warhead sections, missile propellant sections, and stowable ammunition used as cargo during the test shall be inert and handled in accordance with reference 4D.

6.1.2 Pre-test Operations

6.1.2.1 Preoperational Inspection and Physical Characteristics

Perform the preoperational inspections and determine the physical characteristics of the test item and the associated missile system equipment as described in the applicable sections of MTP 2-3-500 and MTP 5-3-500.

6.1.2.2 Cargo Loading Adaptability

a. Determine that the test item can be combat loaded by service test personnel, as required by the applicable sections of MTP 2-3-526.

b. Determine the cargo capacity (weight and cubage) of the test item, if the data are unavailable, using the applicable sections of MTP 2-3-503.

c. Record the following for each combat load placed on the test item:

1) Load nomenclature
2) Weight
3) Physical dimensions

4) Cubage
5) Adapter kit nomenclature, if required

6.1.2.3 Stowage Facilities

Determine the adequacy of the test item facilities for stowing cargo components, tools, spare parts, ammunition, accessories, etc., as described by the applicable sections of MTP 2-3-508.

NOTE: This evaluation can be made concurrently with the cargo loading adaptability tests.

6.2 TEST CONDUCT

a. Tests shall be conducted concurrently with or in conjunction with other tests, whenever possible, so that the time taken to collect the required data can be minimized.

b. Tests shall be conducted under conditions as close as possible to those specified by this MTP.

6.2.1 Operational Characteristics

6.2.1.1 Normal Environmental Conditions

a. Determine the operational characteristics of the test item during moderate ambient temperatures and for each of the following conditions:

1) Daylight
2) Varying load conditions representing the range of combat loads required by the missile system

b. Record the conditions under which the tests are conducted.

6.2.1.1.1 Mobility and Maneuverability - Determine the ability of the test item to traverse paved roads, unpaved roads and cross-country terrain as described by the applicable sections of MTP 2-3-505 and MTP 2-3-504.

6.2.1.1.2 Battlefield Mobility - Determine the battlefield mobility of the test item and system as described by the applicable sections of MTP 5-3-501.

6.2.1.1.3 Emplacement, Preparation for Action and March Order Capability - Determine the ability of the average trained crew to emplace, prepare for action and march order the missile system as described by the applicable sections of MTP 5-3-526, and perform the following:

NOTE: The test item shall be emplaced after, approximately, each 200 miles of its travel cycle and all functional requirements shall be accomplished (including simulated missile firings or actual missile firings if the missiles are launched directly from the self-propelled carrier).

a. Prior to emplacement, perform an operational check as described in the applicable technical manual to ensure the following:

1) Operability of the missile systems checkout equipment
2) Operability of the missile systems target acquisition and tracking equipment
3) Compatibility of the missile and its checkout equipment
4) Operability of the launch equipment, if the missile system has self-test capabilities, followed by mock launches
5) Operability of power sources, maintenance equipment and relates support equipment

NOTE: Instrumentation must be energized and in use, which necessitates the instrumentation be either shielded from or invulnerable to the test environment.

b. At the completion of emplacement, repeat the procedures of step a.

6.2.1.1.4 Compatibility with Related Equipment - Determine the compatibility of the test item with items of related equipment in the system as described by the applicable sections of MTP 2-3-512 and MTP 5-3-506.

6.2.1.1.5 Vulnerability to Detection - Determine the susceptibility of the test item to visual and aural detection as described by the applicable sections of MTP 2-3-511.

Evaluate the effectiveness of camouflage in providing visual and aural security to the test item as described by the applicable sections of MTP 5-3-534.

NOTE: 1. Utilize aerial observation and aerial photography in the security evaluations for both the camouflaged and uncamouflaged test item.

2. Enlist the aid of the U. S. Army Electronic Proving Ground (USAEPG) in the conduct of portions of this test.

6.2.1.2 Adverse Lighting Conditions

Repeat the tests of section 6.2.1.1 under the condition of darkness (blackout).

6.2.1.3 Adverse Environmental Conditions

Repeat the tests of sections 6.2.1.1 and 6.2.1.2 under the following conditions, as applicable:

1) Moderate temperatures with rain
2) Frigid temperatures with:

a) Snow
b) Sleet or icy conditions

3) Hot temperatures with:

a) High humidity
b) Low humidity

6.2.2 Special Operations

a. Unless otherwise specified, the special tests shall be conducted with the test item fully combat loaded.

b. Required test areas and facilities shall be determined by the applicable procedure governing the individual tests.

c. Whenever possible, tests shall be performed concurrently.

6.2.2.1 Fording

Determine the fording capability of the test item as described by the applicable sections of MTP 2-3-509.

NOTE: If a deep fording kit is provided, the ease of installation shall be noted and the time and number of personnel required for its installation shall be recorded.

6.2.2.2 Inland Waterway Operations

Determine the capability of the test item to perform the required inland waterway operations as described by the applicable sections of MTP 2-3-510.

6.2.2.3 Logistics Over-the-Shore

Determine the capability of the test item to participate in logistics over-the-shore operations as described by the applicable sections of MTP 2-3-520.

6.2.2.4 Surface Transportability

Determine the surface transportability of the test item as described by the applicable sections of MTP 2-3-519.

6.2.2.5 Air Transportability and Air Drop Capability

Determine the suitability of the test item to be tranported by air and to be air dropped as described by the applicable sections of MTP 7-3-512, MTP 7-3-515 and MTP 7-3-516.

NOTE: The conduct of airborne operations shall be the responsibility of the U. S. Army Airborne Electronics, and Special Warfare Board (USAAESWBD).

6.2.2.6 Secondary Armament Compatibility

Conduct secondary armament tests if field of fire data from the engineering test are not available.

a. Pre-firing Tests - As applicable, perform the following:

1) Inspect the weapon mount and record any cracks, abrasions and abnormal wear.
2) Install the weapon on the mount and record the following:

a) Type of weapon mount
b) Time required to install the weapon
c) Difficulties encountered during weapon installation

3) Check the ability of the weapon mount traversing lock to restrain the weapon for travel and record the time required to release the weapon for action.
4) Record the following:

a) Weapon nomenclature
b) Weapon model number
c) Weapon serial number

5) Perform the following with the test item combat loaded and situated on level terrain:

a) Determine and record the fields of fire for 360° of weapon traverse at:

(1) Maximum elevation
(2) Zero elevation
(3) Maximum depression

b) Record the effects of weapon traverse on the gunner's body position.
c) Type of terrain

6) Repeat step 5) with the test item combat loaded and situated on:

a) Upward slope of 10°
b) Downward slope of 10°

7) Determine and record the time required to change the weapon barrel.

b. Firing Tests - Perform the following with the test item combat loaded, and situated on level terrain:

1) With the test item in the "buttoned down" condition:

a) Fire a minimum of 50 rounds through the full fields of fire (see Pre-firing tests).
b) Record the following:

(1) Gunner comments on the ease or difficulty of weapon control
(2) Gunner comments on the ease or difficulty of loading and reloading ammunition
(3) Final location of the expended cartridge cases with respect to the crew and to the missile system components
(4) Number of rounds fired
(5) Type of terrain
(6) Vehicle condition
(7) Mechanical difficulties encountered during firing

2) Repeat step 1) with the test item in the "traveling" condition.

c. Repeat step b with the test item combat loaded and situated on:

1) Upward slope of 10°
2) Downward slope of 10°

NOTE: During the conduct of firing tests, personnel shall follow the safety precautions set forth in reference 4D.

d. Evaluate the secondary weapon, during the firing tests with respect to safety hazards, as described by the applicable sections of MTP 3-3-517.

e. Post-firing Checks - Inspect the weapon mount and record any cracks or abnormal wear.

6.2.2.7 Kit Installation and Evaluation

Perform the kit installation requirements as described by the applicable sections of MTP 2-3-515. Evaluate the kits in terms of the criteria set forth in the applicable sections of MTP 2-3-514.

6.2.3 Full-Test Evaluations

6.2.3.1 Durability and Reliability

Determine the durability and the reliability of the test item and the associated missile system equipment over the entire period of testing as described by MTP 2-3-507 and the applicable sections of MTP 5-3-504.

NOTE: The total mileage accumulated during the conduct of testing shall exceed 4000 miles. If, at the conclusion of testing, the total mileage does not exceed 4000, then the additional mileage shall be accumulated as follows:

a. 50% on secondary roads
b. 25% on paved roads
c. 25% on cross-country terrain

6.2.3.2 Maintainability

Perform the following:

a. Complete authorized maintenance tasks in accordance with the test item maintenance allocation chart, technical manuals, and USATECOM Regulation 750-15.

b. Record the time and personnel required to perform scheduled and non-scheduled maintenance tasks throughout the period of testing.

c. Determine the accuracy and evaluate the adequacy of the test item maintenance package.

d. Determine the maintainability of the test item as described by the applicable sections of MTP 2-3-502 and MTP 5-3-505.

e. Record the following:

1) Test item down-time (cumulative)
2) Time taken between repairs and reason, if appropriate
3) Frequency of repairs
4) Nomenclature of repair parts used

6.2.3.3 Fuel and Oil Consumption

Determine the fuel and oil consumption of the test item during the period of testing as described by the applicable sections of MTP 2-3-513.

6.2.3.4 Human Factors Engineering

Determine the suitability of the test item design with respect to the man-machine relationship throughout the period of testing as described by the applicable sections of MTP 2-3-516 and MTP 5-3-507.

Determine and record the suitability and compatibility of the test item with the service personnel who will operate and service it, with regard to their skills, aptitudes and physical limitations.

NOTE: Each test item detail requiring human attention and/or manipulation shall be observed and evaluated as well as those for the complete missile system.

6.2.3.5 Safety

Determine the test item safety hazards resulting from storage, transport, operation and maintenance as described by the applicable sections of MTP 2-3-501 and MTP 5-3-510.

6.2.4 Post-Test Operations

At the completion of testing, the test item shall be subjected to the technical and preoperational inspections as described by the applicable sections of MTP 2-3-500 and MTP 5-3-500.

6.3 TEST DATA

6.3.1 Preparation for Test

6.3.1.1 Personnel

a. Record data as collected under the applicable sections of MTP 2-3-524, MTP 5-3-503 and MTP 5-3-524.

b. Record the following for all service personnel:

1) Rank
2) MOS
3) Training time, in MOS, in months
4) Experience, in months

6.3.1.2 Pre-Test Operations

6.3.1.2.1 Preoperational Inspection and Physical Characteristics -

Record data as collected under the applicable sections of MTP 2-3-500 and MTP 5-3-500.

6.3.1.2.2 Cargo Loading Adaptability -

a. Record data as collected under the applicable sections of MTP 2-3-526.

b. Record data as collected under the applicable sections of MTP 2-3-503.

c. Record the following for each combat load placed on the test item:

1) Load nomenclature
2) Weight, in pounds
3) Physical dimensions (length, width, height), in feet
4) Cubage, in cubic feet
5) Adapter kit nomenclature

6.3.1.2.3 Stowage Facilities -

Record data as collected under the applicable sections of MTP 2-3-508.

6.3.2 Test Conduct

6.3.2.1 Operational Characteristics

Record the following for each test conducted:

a. Time of Day
b. Lighting Condition (Daylight, Darkness)
c. Load Condition (Launcher/Erector, Missiles Power Supply, etc.)
d. Weather Conditon (Clear, Rainy, Snow, Sleet, etc.)
e. Ambient Temperature, in Degrees F.

6.3.2.1.1 Mobility and Maneuverability -

Record data as collected under the applicable sections of MTP 2-3-505 and MTP 2-3-504.

6.3.2.1.2 Battlefield Mobility -

Record data as collected under the applicable sections of MTP 5-3-501.

6.3.2.1.3 Emplacement, Preparation for Action and March Order Capability -

a. Record data as collected under the applicable sections of MTP 5-3-526.
b. Record the number of simulated firings during each emplacement.
c. Record the number of missiles fired during each emplacement, as applicable.
d. Record the effects of missile firings on the test item, as applicable.
e. For Missile System Accessory Equipment:

1) Time of checkout (prior to emplacement, after emplacement)
2) Operability of:

a) Checkout equipment
b) Target acquisition and tracking equipment
c) Launch equipment
d) Power sources
e) Maintenance equipment
f) Other support equipment

3) Compatibility of the missile and its checkout equipment

6.3.2.1.4 Compatibility with Related Equipment -

Record data as collected under the applicable sections of MTP 2-3-512 and MTP 5-3-506.

6.3.2.1.5 Vulnerability to Detection -

a. Record data as collected under the applicable sections of MTP 2-3-511.

b. Record data as collected under the applicable sections of MTP 5-3-534.

c. Record observer comments on the aerial detection operations for:

1) Uncamouflaged test item
2) Camouflaged test item

6.3.2.2 Special Operations

6.3.2.2.1 Fording -

a. Record data as collected under the applicable sections of MTP 2-3-509.

b. Record the following for a deep fording kit installation, as applicable:

1) Time required, in hours
2) Number of personnel required
3) Comments on the ease of kit installation

6.3.2.2.2 Inland Waterway Operations -

Record data as collected under the applicable sections of MTP 2-3-510.

6.3.2.2.3 Logistics Over-the-Shore -

Record data as collected under the applicable sections of MTP 2-3-520.

6.3.2.2.4 Surface Transportability -

Record data as collected under the applicable sections of MTP 2-3-519.

6.3.2.2.5 Air Transportability and Air Drop Capability -

Record data as collected under the applicable sections of MTP 7-3-512, MTP 7-3-515 and MTP 7-3-516.

6.3.2.2.6 Secondary Armament Compatibility -

a. Record the following for prefiring tests conducted on level terrain, an upward slope of 10°, and a downward slope of 10°:

NOTE: Record data for secondary armament tests if field of fire data from engineering tests are unavailable.

1) Weapon nomenclature
2) Weapon model number
3) Weapon serial number
4) Type of weapon mount (ring, cupola, etc.)

5) Cracks, abrasions and abnormal wear of weapon mount
6) Time required to install weapon in the mount, in minutes
7) Difficulties encountered in weapon installation
8) Time required to change the weapon barrel, in minutes
9) Fields of fire for the installed weapon, in mils, at:

   a) Maximum elevation, in mils
   b) Zero elevation
   c) Maximum depression, in mils

10) Effects of weapon traverse on the gunner's body position
11) Type of terrain (level, upward slope, downward slope)

b. For firing tests, record the following with the test item in the "buttoned down" condition on level terrain, an upward slope of 10°, and a downward slope of 10°:

1) Gunner comments on the ease or difficulty of weapon control
2) Gunner comments on the ease or difficulty of loading and reloading ammunition
3) Final location of the expended cartridge cases with respect to the crew and to the missile system components after firing
4) Number of rounds fired
5) Type of terrain (level, upward slope, downward slope)
6) Vehicle condition ("buttoned down")
7) Mechanical difficulties encountered during firing (weapon jamming, etc.)

c. For firing tests, record the following with the test item in the "traveling" condition on level terrain, an upward slope of 10°, and a downward slope of 10°:

1) Gunner comments on the ease or difficulty of weapon control
2) Gunner comments on the ease or difficulty of loading and reloading ammunition
3) Final location of the expended cartridge cases with respect to the crew and to the missile system components after firing
4) Number of rounds fired
5) Type of terrain (level, upward slope, downward slope)
6) Vehicle condition ("traveling")
7) Mechanical difficulties encountered during firing (weapon jamming, etc.)
8) Data as collected under the applicable sections of MTP 3-3-517

d. For post-firing checks, record cracks and abnormal wear on the weapon mount which could have occurred during firing.

6.3.2.2.7 Kit Installation and Evaluation -

a. Record data as collected under the applicable sections of MTP 2-3-515.

b. Record data as collected under the applicable sections of MTP 2-3-514.

6.3.2.3 Full-Test Evaluations

6.3.2.3.1 Durability and Reliability -

a. Record data as collected under MTP 2-3-507 and MTP 5-3-504.

b. If additional mileage is accumulated, record the following:

1) Secondary road mileage
2) Paved road mileage
3) Cross-country mileage

6.3.2.3.2 Maintainability -

Record the following:

a. Comments by maintenance personnel on the accuracy and adequacy of the test item maintenance package

b. Data as collected under the applicable sections of MTP 2-3-502

c. Time required to perform:

1) Scheduled maintenance tasks
2) Non-scheduled maintenance tasks

d. Test item down-time (cumulative), in hours

e. Time taken between repairs, in hours, and reason if appropriate

f. Frequency of repairs, in days

g. Nomenclature of repair parts used

6.3.2.3.3 Fuel and Oil Consumption -

Record data as collected under the applicable sections of MTP 2-3-513.

6.3.2.3.4 Human Factors Engineering -

a. Record data as collected under the applicable sections of MTP 2-3-516.

b. Record service personnel comments on the suitability and compatibility of the test item with respect to their skill levels, aptitudes and physical limitations in:

1) Operation
2) Maintenance

6.3.2.3.5 Safety -

Record data as collected under the applicable sections of MTP 2-3-501 and MTP 5-3-510.

6.3.2.4 Post-Test Operations

Record data as collected under the applicable sections of MTP 2-3-500 and MTP 5-3-500.

6.4 DATA REDUCTION AND PRESENTATION

Data obtained from each performance section shall be summarized, compared and evaluated according to procedures described in the individual MTP's. Appropriate charts, graphs and tables shall be used to show the summary and comparison of the test data. Special consideration shall be given to any condition or circumstance that may have contributed to any test result.

Calculations shall be performed as specified by the individual MTP's and all photographs, motion pictures and illustrations shall be properly identified.

All qualitative data collected shall be evaluated against the QMR and TC to determine the degree of fulfillment of the performance specifications.

Data collected under adverse weather conditions shall be compared to that which was collected under normal conditions.