

AD 718607

22 July 1969

Materiel Test Procedure 6-3-075  
U. S. Army Artillery Board

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

3447

DISTANCE MEASURING EQUIPMENT, ELECTRONIC MICROWAVE

1. OBJECTIVE

The objective of this MTP is to outline testing techniques and methodology necessary to determine, under field operating conditions, the degree to which the test item performs its mission as described in Qualitative Materiel Requirements (QMR's), Small Development Requirements (SDR's), and Military Characteristics (MC's), and to evaluate its adequacy for employment by the Army in the field.

2. BACKGROUND

To meet a long standing requirement for improvement of the surveying capability of the artillery in the field, commercially available electronic measuring devices (Tellurometer) have been adopted for army use and placed in service for a number of years.

Subsequently, various designs of distance measuring equipment, using different scientific means of functional performance (microwave, collimated light beam, radar, and laser rangefinders) have been developed. The more promising of these applications appear to be electronic microwave and laser rangefinders (see MTP 6-3-165, Laser Rangefinders).

Development of smaller, lighter weight, electronic microwave distance measuring equipment is continuing, with the objective of producing a man-portable system that will stand up under field use and produce accurate distance data. Such a system, in conjunction with a gyroscopic direction finder, is expected to improve and give flexibility to standard artillery survey techniques.

3. REQUIRED EQUIPMENT

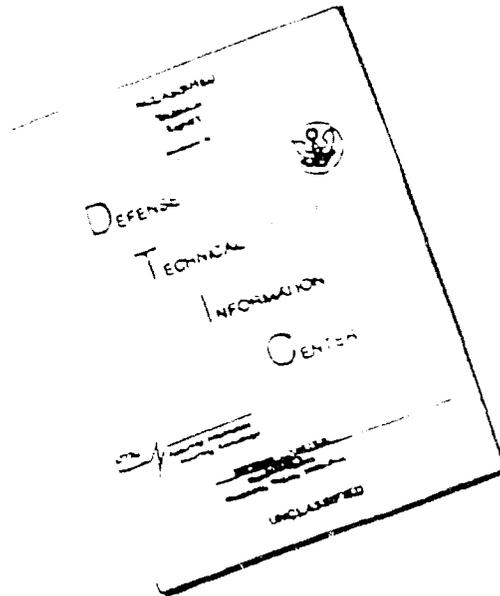
- a. Surveyed reference points, as required (first or second order).
- b. Vehicles for transporting and mounting the test item, as required.
- c. Maintenance support facilities, as required.
- d. Special tools and equipment, as required.
- e. Power Generators, as required.
- f. Radio and wire communications.
- g. Binoculars and Compasses.
- h. Representative electronic equipment, as required for electrical interference subtests.
- i. Still and Motion Picture Cameras, with film.

4. REFERENCES

- A. QMR for the test item.
- B. USATECOM Regulation 385-6, Verification of Safety of Materiel During Testing.

2004 0205 001

# DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

- C. USATECOM Regulation 700-4, Reliability Program for USAMC Materiel.
- D. USATECOM Regulation 705-4, Equipment Performance Reports.
- E. USATECOM Regulation 705-12, Preliminary Operating and Maintenance Manual.
- F. USATECOM Regulation 750-15, Maintenance Portion of the Service Test.
- G. USAMC Regulation 70-7, Test and Evaluation of Materiel.
- H. AR 705-5, Army Research and Development.
- I. AR 705-15, Research and Development of Materiel, Operation of Materiel under Extreme Conditions of Environment.
- J. AR 705-25, Research and Development of Materiel, Reliability Program for Materiel and Equipment.
- K. TB MED 270, Control of Hazards to Health from Microwave Radiation.
- L. MTP 6-3-165, Laser Rangefinders.
- M. MTP 6-3-500, Physical Characteristics.
- N. MTP 6-3-501, Technical Inspection.
- O. MTP 6-3-502, Personnel Training Requirements
- P. MTP 6-3-504, Ease of Installation and/or Rigging and Operation.
- Q. MTP 6-3-505, Emplacement, Action and March Order.
- R. MTP 6-3-506, Durability.
- S. MTP 6-3-509, Effects of Weather.
- T. MTP 6-3-510, Transportability of Communication, Surveillance, and Electronic Equipment.
- U. MTP 6-3-512, Compatibility with Related Equipment.
- V. MTP 6-3-513, Qualitative Electromagnetic Interference.
- W. MTP 6-3-517, Electrical Power Requirements.
- X. MTP 6-3-523, Safety.
- Y. MTP 6-3-524, Maintenance Evaluation.
- Z. MTP 6-3-525, Human Factors.
- AA. MTP 7-3-512, Air Drop Capability (Suitability of Equipment for).
- AB. MTP 7-3-515, Air Transportability, Internal (Suitability of Equipment for).
- AC. MTP 3-1-002, Confidence Intervals and Sample Size.

5. SCOPE

5.1 SUMMARY

This MTP describes the methodology, techniques and the subtests required to determine the man-equipment compatibility and capability and suitability of the test item as a distance measuring instrument under field operating conditions. The major areas and their included subtests are:

- a. Pre-Test Operations consisting of:
  - 1) Technical Inspection - A check to verify that the test item is complete and in satisfactory condition prior to the start of testing.
  - 2) Physical Characteristics - A verification of the physical characteristics of the test item.

- 3) Electrical Characteristics - A verification of the test item's electrical characteristics and a determination of its power requirements to include battery life.
- b. Operational Characteristics consisting of an evaluation of the following:
- 1) Emplacement and Preparation for Action
  - 2) Operation
  - 3) March Order
- c. Accuracy - A determination of the degree of accuracy of measurement that the test item can attain, including verification of the adequacy of the atmospheric refraction correction value.
- d. Electrical Interference - A determination of the degree of and security against mutual interference from communication and electronic equipment operating in proximity to the test item to include limits and operations of employment considerations.
- e. Transportability Tests consisting of:
- 1) Surface Transportability - A determination of the suitability of the test item for surface transport.
  - 2) Air Transportability - A determination of the suitability of the test item for internal transport by helicopter and air drop.
- f. Vulnerability to Detection - A determination of the degree of security from aural and visual detection that the test item offers in its various configurations. Ground and aerial observations are included.
- g. Compatibility with Related Equipment - A determination of the suitability of the test item for operations with its related equipment, (to include existing DME's used by the Army), in various configurations.
- h. Full-Test Evaluations consisting of:
- 1) Durability - An evaluation of the capability of the test item to withstand being manhandled and transported over various types of terrain for a specified number of miles.
  - 2) Maintainability and Reliability - An evaluation to determine the suitability of the test item to be maintained, the adequacy of its maintenance package, and its overall ability to operate over long periods of time without adjustment or replacement of components.
  - 3) Effects of Weather - An evaluation of the effects of various weather conditions on the operability of the test item.
  - 4) Human Factors - An evaluation of the suitability of the test item for operation, servicing, transport and storage by service personnel without causing undue fatigue and mental errors.
  - 5) Safety - An evaluation of the safeness of the test item in its various configurations, under a variety of conditions, and any resultant safety hazards to service personnel.
  - 6) Value Analysis - Observations of the test item during the period of testing to determine possible ways to eliminate unnecessary costs at various stages of the design development and testing program.

i. Post-Test Inspection - A repetition of the technical inspection to determine any adverse effects of testing 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. Ensure the availability of service personnel who have been, or are being, trained using the criteria of MTP 6-3-502 and who are knowledgeable of the operation and maintenance of the test item.

NOTE: Personnel required for operating and maintaining the test item at organizational, direct support, and general support level will attend special instruction classes conducted by the manufacturer or equivalent engineering agency prior to the beginning of the test. The training shall consist of oral instruction, on the job application, and study and review of pertinent literature. Personnel skills shall be evaluated to determine needs for additional instruction or special training devices.

b. Record the following for all service personnel:

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

c. Ensure that experienced personnel are available for the duration of testing.

d. Determine and record the adequacy of the training literature furnished with the test item.

6.1.1.2 Equipment and Facilities

a. Select and schedule the use of required test sites and facilities.

b. Make necessary arrangements for use of equipment, and instruments listed under paragraph 3.

c. Ensure that maintenance support facilities (organizational, direct and general support) are readily available.

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

- 1) Request authority to operate the electronic equipment on

- required frequencies during specific periods.
- 2) Required transportation.
  - 3) Assistance of the U. S. Army Airborne Electronics and Special Warfare Board (USAAESWBD) in conducting the air transportability procedure of this test.

#### 6.1.2 Safety

- a. Obtain the Safety Release from Hqtrs., USATECOM as prescribed in reference 4B.
- b. Review the Safety Release and assure that the service test plan meets all safety requirements therein.
- c. Verify that all service test personnel have been adequately trained in the safety requirements and the safety restrictions pertaining to the test item.

#### 6.1.3 Pre-Test Operations

##### 6.1.3.1 Physical Characteristics

Determine the physical characteristics of the test item as described in the applicable sections of MTP 6-3-500.

##### 6.1.3.2 Technical Inspection

Perform a technical inspection of the test item as described in the applicable sections of MTP 6-3-501 including the completeness of the maintenance package.

##### 6.1.3.3 Electrical Characteristics

Determine the test item's electrical characteristics and power requirements as described in the applicable sections of MTP 6-3-517 with emphasis on the following:

- a. Electronic center with relation to plumb bob
- b. Frequency
- c. Panel illumination
- d. Internal power
- e. Converter, if applicable
- f. Receptacles
- g. Color coding
- h. Power cables

#### 6.2 TEST CONDUCT

NOTE: Subtests shall be conducted concurrently with, or in conjunction with, other subtests, whenever possible.

##### 6.2.1 Operational Characteristics

NOTE: As applicable, the procedures of paragraph 6.2.1.1 through 6.2.1.3

shall be performed under varying conditions of light, temperature, humidity, precipitation and on various types of terrain.

Record the following during all operational characteristics tests:

- a. Light conditions
- b. Temperature
- c. Relative humidity
- d. Type of precipitation, if any
- e. Type of terrain

#### 6.2.1.1 Emplacement and Preparation for Action

Determine the time required to, ease of operation for, and optimum crew size to emplace the test item and prepare it for action as described in the applicable sections of MTP 6-3-505. Record applicable data of MTP 6-3-505 and include the following:

- a. Time required:
  - 1) To complete emplacement from receipt of command until the test item is ready for action.
  - 2) For equipment warmup.
  - 3) For test item orientation.
  - 4) To perform all preoperational checks and adjustments.
- b. Difficulties encountered:
  - 1) During emplacement
  - 2) During warmup
  - 3) During orientation
  - 4) Performing all preoperational checks and adjustments
- c. Adjustments required.
- d. Minimum and optimum crew size.
- e. Suitability and adequacy of auxiliary equipment.
- f. Survey techniques most suitable for test item emplacement (triangulation vs. trilateration).

NOTE: Survey Information Center should indicate best orientation method.

#### 6.2.1.2 Operation

Determine the time required to, ease of operation, and optimum crew size to operate the test item, using the criteria of MTP 6-3-504, while performing a tactical mission and record the following:

- a. Time required to make distance measurements.
- b. Difficulties encountered.

- c. Test item peculiarities, i.e., sequence of operations, counter or computer readouts, adjustments required, etc.
- d. Minimum and optimum crew size.

#### 6.2.1.3 March Order

a. Determine the time required to, ease of, and optimum crew size to perform march order and stow the test item for travel as described in the applicable sections of MTP 6-3-505. Record the applicable data of MTP 6-3-505 and the following:

- 1) Time required to complete march order and to stow the test item.
- 2) Difficulties encountered.
- 3) Minimum and optimum crew size.

b. At the completion of step a, or as specified in the test plan, subject the test item to a Technical Inspection as described in the applicable sections of MTP 6-3-501.

#### 6.2.2 Accuracy

NOTE: Accuracy tests shall be performed during all types of weather and over all types of terrain.

a. Emplace the test item over surveyed markers selected to furnish the highest order of accuracy of known distances attainable at the test site.

NOTE: First or second order baselines shall be used for all accuracy work.

b. Calibrate the test item, as required, and perform a minimum of two sets of measurements.

- NOTE:
1. Sample size shall be determined using the criteria of MTP 3-1-002.
  2. A set shall consist of two complete measurements from each test item at the ends of a baseline. The mean distance computed from a set shall be corrected by the true refractive index and converted to a geodetic distance.

c. Determine and record the following:

- 1) Minimum range capability of the test item.
- 2) Maximum range capability of the test item.
- 3) Whether or not the test item meets the required accuracy standards by comparing corrected test item measurements to known data.
- 4) Method and effectiveness of applying corrections to measured (readout) data.

d. Determine and record the following:

- 1) Effects of weather on accuracy
- 2) Effects of terrain on accuracy

### 6.2.3 Electrical Interference

Determine the effects of electronic signals on the operability of the test item, and the test item's effect on local electronic equipment by performing the tests described in the applicable sections of MTP 6-3-513 and the following:

a. Representative radio, radar, and other electronic equipment normally operated in the vicinity of the test item will be emplaced and operated in conjunction with the test item to reflect any degradation of effects on the emplaced equipment, the test item, or both.

b. Two sets of test item equipment will be emplaced at various distances apart for determination of any mutual interference or effects on the accuracy of readings.

c. Record the following:

- 1) Effects of the test item's operation on radios, radars, and other electrical equipment within the immediate area.
- 2) Effects of operating an emplaced radio, radar, and other electrical equipment on the test item's operation.
- 3) Any mutual interference between two test items operating simultaneously in the same immediate vicinity.

### 6.2.4 Transportability Tests

#### 6.2.4.1 Surface Transportability

a. Determine the surface transportability of the test item as described by the applicable sections of MTP 6-3-510.

b. At the completion of the testing, subject the test item to a technical inspection as described by the applicable sections of MTP 6-3-501.

c. Verify the operability of the test item by subjecting it to an accuracy and precision test as described in paragraph 6.2.2, steps a through c.

#### 6.2.4.2 Air Transportability

NOTE: The conduct of air transportability testing shall be coordinated with the U. S. Army Airborne, Electronics and Special Warfare Board (USAAESWBD), if required.

a. Determine the suitability of the test item for air drop as prescribed by the applicable sections of MTP 7-3-512.

b. Determine the suitability of the test item for internal air transport (helicopter) as described by the applicable sections of MTP 7-3-515.

c. At the completion of testing, subject the test item to a technical inspection as described by the applicable sections of MTP 6-3-501.

d. Verify the operability of the test item by subjecting it to an accuracy and precision test as described in paragraph 6.2.2, steps a through c.

## 6.2.5 Vulnerability to Detection

Observations of the test item shall be made during operational testing.

### 6.2.5.1 Daylight Conditions

a. Determine and record the maximum distance at which the test item and its associated power equipment are audible to:

- 1) Unaided ear
- 2) Acoustic aids

b. Determine and record the maximum distance at which the test item is discernible without camouflage and with camouflage from ground positions using:

- 1) Unaided vision
- 2) Optical instruments
- 3) Electronic instruments, when applicable

c. Determine and record the maximum altitudes at which the test item is discernible without camouflage and with camouflage from aerial observations using:

- 1) Unaided vision
- 2) Optical instruments
- 3) Aerial photography

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

### 6.2.5.2 Darkness (Blackout) Conditions

Repeat paragraph 6.2.6.1 under conditions of darkness (blackout).

## 6.2.6 Compatibility with Related Equipment

Determine the compatibility of the test item with related components and devices (to include existing DME's used by the Army) as described by the applicable sections of MTP 6-3-512.

## 6.2.7 Full Test Evaluations

During the conduct of this MTP, the following test item characteristics shall be determined and/or evaluated.

### 6.2.7.1 Durability

a. Determine the durability and ruggedness of the test item as described by the applicable sections of MTP 6-3-506.

NOTE: The test item shall be transported over paved roads, unpaved roads, and cross-country terrain for a minimum of 300 miles, in all transportable configurations.

b. Evaluate the ability of the test item transit case(s) to protect the test item from shock and vibration.

#### 6.2.7.2 Maintainability and Reliability

NOTE: The overall evaluation of the maintainability and reliability of the test item shall be made according to the criteria of reference 4F.

a. Complete the authorized maintenance tasks in accordance with the test item maintenance instructions and technical literature.

b. Determine the maintainability of the test item as described by the applicable sections of MTP 6-3-524.

c. Record the following, as applicable:

- 1) Time and number of personnel required to perform scheduled and non-scheduled maintenance tasks on the test item.
- 2) Frequency of repairs.
- 3) Test item downtime (cumulative).
- 4) Nomenclature of repair parts used.
- 5) Maintenance responsibilities and capabilities at organizational, direct support and general support levels.

d. Evaluate the adequacy and accuracy of the test item maintenance package.

e. Determine the test item reliability as described in the applicable section of MTP 6-3-524 using the statistical methods of MTP 3-1-002.

#### 6.2.7.3 Effects of Weather

a. Determine the effects of weather on the test item operability as described by the applicable sections of MTP 6-3-509.

b. Evaluate the ability of the test item transit case(s) to protect the test item from moisture, dust and other debris.

#### 6.2.7.4 Human Factors

a. Determine the suitability of the test item design with respect to the man-equipment relationship as described by the applicable sections of MTP 6-3-525 with special attention to the following:

- 1) Location and ease of identification of meters, indicators, indices, dials, markings, knobs, levers, handles, fasteners, cable connectors and controls.
- 2) Operations which are unduly fatiguing or dangerous.

b. Determine and record the suitability and the compatibility of the test item with the service personnel who will operate and service it, with

respect to their skills, aptitudes and physical limitations.

NOTE: Each test item detail requiring human attention and/or manipulation shall be observed and evaluated.

#### 6.2.7.5 Safety

Determine the test item safety hazards resulting from storage, transport, operation, and maintenance as described by the applicable sections of MTP 6-3-523.

#### 6.2.7.6 Value Analysis

Record observations concerning possible ways to eliminate unnecessary costs during the design, development and procurement of the test item without compromise to the following:

- a. Quality of components
- b. Reliability (overall)
- c. Maintainability
- d. Operational performance
- e. Mission accomplishment

NOTE: Observations shall include, but shall not necessarily be limited to, non-essential or nice-to-have features, components or accessories.

#### 6.2.8 Post-Test Inspection

Upon completion of testing the test item shall be subjected to a technical inspection as described by the applicable sections of MTP 6-3-501 and any deleterious effects on the test item due to the testing program shall be recorded.

### 6.3 TEST DATA

#### 6.3.1 Preparation for Test

##### 6.3.1.1 Personnel

a. Record the following for all military personnel:

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

b. Record the adequacy of the training literature.

##### 6.3.1.2 Pre-Test Operations

###### 6.3.1.2.1 Physical Characteristics -

Record data collected as described in the applicable sections of MTP 6-3-500.

6.3.1.2.2 Technical Inspection -

- a. Record data collected as described in the applicable sections of MTP 6-3-501.
- b. Record missing maintenance package parts, if any.

6.3.1.2.3 Electrical Characteristics -

Record data collected as described in the applicable sections of MTP 6-3-517.

6.3.2 Test Conduct

6.3.2.1 Operational Characteristics

- a. Record the following during all operational characteristic tests:

- 1) Light condition (daylight, darkness, blackout)
- 2) Ambient temperature, in °F
- 3) Relative humidity, in percent
- 4) Type of precipitation, if any

6.3.2.1.1 Emplacement and Preparation for Action -

Record data collected as described in the applicable sections of MTP 6-3-505 and the following for each operation under the various weather and terrain conditions encountered:

- a. Time required, in minutes, to:

- 1) Emplace the test item
- 2) Adequately warmup the test item
- 3) Orient the test item
- 4) Perform all operational checks and adjustments

- b. Difficulties encountered:

- 1) During emplacement
- 2) During warmup
- 3) During orientation
- 4) Performing preoperational checks and adjustments

- c. Adjustments required

- d. Minimum and optimum crew size

- e. Suitability and adequacy of auxiliary equipment

- f. Survey technique employed

6.3.2.1.2 Operation -

Record the following for each observation under the various weather and terrain conditions encountered:

- a. Time required to make distance measurements
- b. Difficulties encountered
- c. Test item peculiarities
- d. Minimum and optimum crew size

#### 6.3.2.1.3 March Order -

a. Record collected data as described in the applicable sections of MTP 6-3-505 and the following for each operation under the various weather and terrain conditions encountered:

- 1) Time required to complete march order and stow equipment, in minutes.
- 2) Difficulties encountered.
- 3) Minimum and optimum crew size.

b. Record the technical inspection data collected as described in the applicable sections of MTP 6-3-501.

#### 6.3.2.2 Accuracy

Record the following for each set of measurements taken:

- a. Ambient temperature, in °F
- b. Relative humidity, in percent
- c. Type of precipitation, if any
- d. Type of terrain
- e. Set number
- f. Computed distance, in meters
- g. Actual distance, in meters
- h. Method used for applying corrections to test item readouts
- i. Ability of test item to meet accuracy standard
- j. Minimum range capability of the test item
- k. Maximum range capability of the test item
- l. Effects of weather on accuracy
- m. Effects of terrain on accuracy

#### 6.3.2.3 Electrical Interference

Record data collected as described in the applicable sections of MTP 6-3-513 and the following:

- a. Effect of test item operation on radios, radar, etc.
- b. Effect of radios, radar, etc., on test item operation
- c. Effect of two test items operating simultaneously on each other

6.3.2.4 Transportability Tests -

6.3.2.4.1 Surface Transportability -

- a. Record data as collected under the applicable sections of MTP 6-3-510.
- b. Record technical inspection data, collected as described in the applicable sections of MTP 6-3-501.
- c. Record data, collected as described in step c of paragraph 6.2.2.

6.3.2.4.2 Air Transportability -

- a. Record data as collected under the applicable sections of MTP 7-3-512 and MTP 7-3-515.
- b. Record technical inspection data, collected as described in the applicable sections of MTP 6-3-501.
- c. Record data, collected as described in step c of paragraph 6.2.2.

6.3.2.5 Vulnerability to Detection -

- a. Record the following for each aural observation:
  - 1) Visibility condition (daylight, darkness).
  - 2) Maximum distances, in meters, at which the test item and associated equipment can be detected by:
    - a) Unaided ear
    - b) Acoustic aids
  - 3) Test item operational condition (operational, standby).
- b. Record the following for each visual observation from ground positions:
  - 1) Visibility condition (daylight, darkness).
  - 2) Test item emplacement condition (camouflaged, uncamouflaged).
  - 3) Maximum distances, in meters, at which the test item is discernible by:
    - a) Unaided vision
    - b) Optical instruments
    - c) Electronic instruments, when applicable
- c. Record the following for each visual observation from aircraft:
  - 1) Visibility condition (daylight, darkness).
  - 2) Test item emplacement condition (camouflaged, uncamouflaged).
  - 3) Maximum altitudes, in feet or meters, at which the test item can be detected by:
    - a) Unaided vision

- b) Optical instruments
- c) Aerial photography

6.3.2.6 Compatability with Related Equipment

Record data as collected under the applicable sections of MTP 6-3-512.

6.3.2.7 Full-Test Evaluations

6.3.2.7.1 Durability -

Record the following:

- a. Data as collected under the applicable sections of MTP 6-3-506.
- b. Ability of the test item transit case(s) to protect it from shock and vibration.

6.3.2.7.2 Maintainability and Reliability -

Record the following:

- a. Data as collected under the applicable sections of MTP 6-3-524.
- b. Type of maintenance performed (scheduled, non-scheduled).
- c. Time required to perform each maintenance task, in hours and minutes.
- d. Number of personnel required to perform each maintenance task.
- e. Frequency of repairs over the period of testing (record dates).
- f. Test item downtime (cumulative), in hours and minutes.
- g. Nomenclature of repair parts used.
- h. Adequacy of the maintenance package.
- i. Maintenance responsibilities and capabilities at organizational, direct support and general support levels.

6.3.2.7.3 Effects of Weather -

Record data as collected under the applicable sections of MTP 6-3-509.

6.3.2.7.4 Human Factors -

Record the following:

- a. Data as collected under the applicable sections of MTP 6-3-525.
- b. Observations of service personnel during testing, and the suitability of the test item with respect to their:

- 1) Skills
- 2) Aptitudes
- 3) Physical limitations

6.3.2.7.5 Safety -

Record data as collected under the applicable sections of MTP 6-3-523.

#### 6.3.2.7.6 Value Analysis -

Record observations concerning possible ways to eliminate unnecessary costs during the design, development and procurement of the test item without compromise to the following:

- a. Quality of components
- b. Reliability (overall)
- c. Maintainability
- d. Operational performance
- e. Mission accomplishment

#### 6.3.2.8 Post-Test Inspection

- a. Record data as collected under the applicable sections of MTP 6-3-501.
- b. Record any deleterious effects of the test program on the test item.

#### 6.4 DATA REDUCTION AND PRESENTATION

Data obtained from all subtests covered by applicable MTP's shall be summarized and evaluated according to procedures described in those applicable MTP's. Appropriate charts, graphs, and tabulated summaries shall be used to present the data in a clear manner. Special consideration shall be given to any condition or circumstance contributing to any test result.

Calculations shall be performed as specified by the individual MTP's and references, wherever applicable, and all photographs, motion pictures and illustrative material shall be suitably identified.

The evaluation of the test item measurement accuracy shall be based on the summarized data and on the comparison with the actual distance data and presented in tabular form to readily compare test item measured distance with known distance, with the difference in plus or minus values, and as indicated in Figure 1 depicting a frequency distribution of errors.

The qualitative and quantitative data collected shall also be evaluated in terms of the requirements specified in the QMR's and TC's, which are applicable, to determine the degree of fulfillment of the test item performance specifications, and to indicate the minimum, maximum and mean times required for equipment warm-up and time required to obtain distance measurements.

For the evaluation of the vulnerability of the test item to detection, average distances and altitudes shall be computed, tabulated and compared for the various observation methods under the various conditions.

A Safety Confirmation Recommendation based on data from paragraph 6.3.2.7.6, shall be presented in accordance with USATECOM Regulation 385-6.

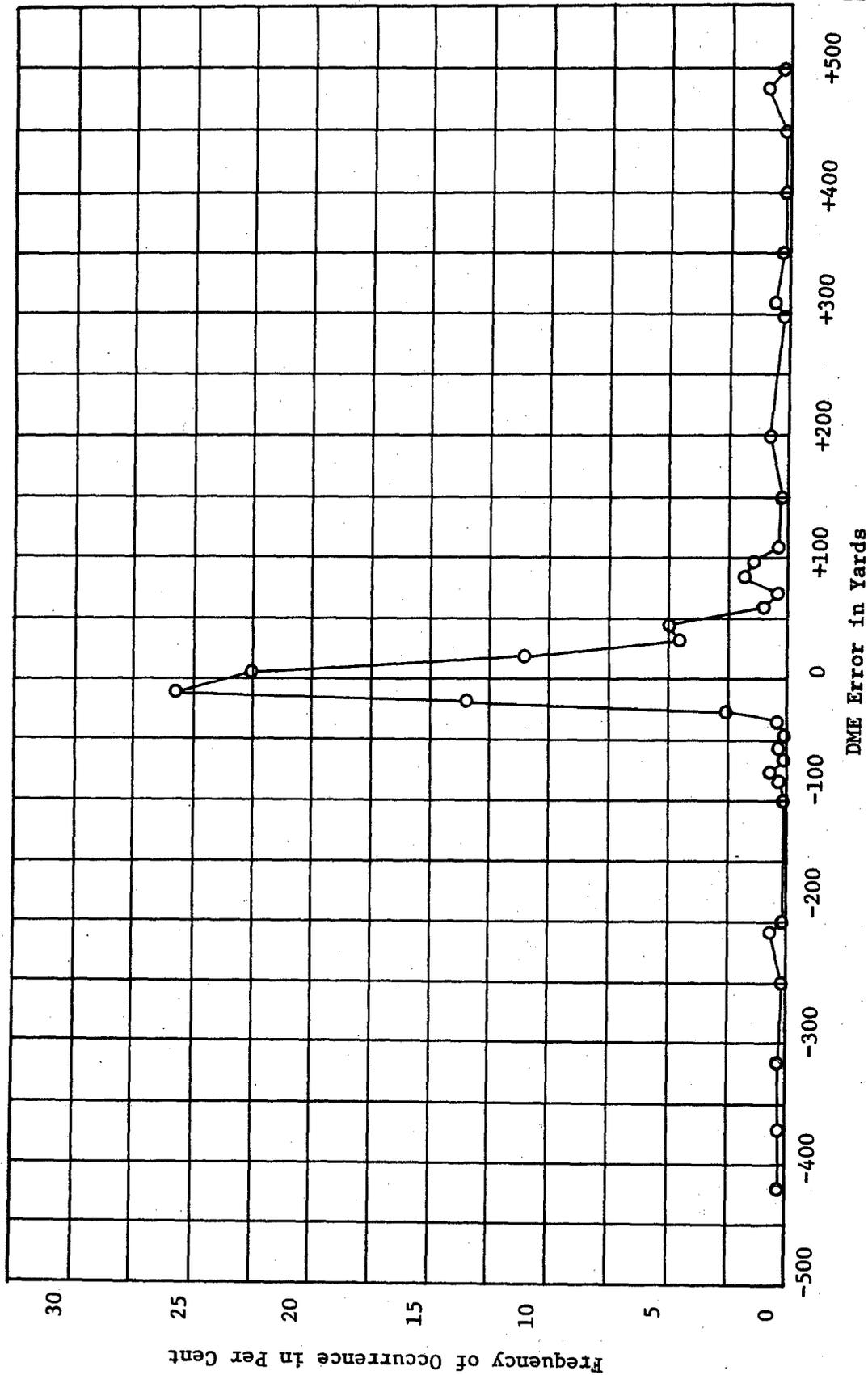


Figure 1. Frequency Distribution of Errors of All DME Interrogations