27 March 1967

Materiel Test Procedure 10-2-501
General Equipment Test Activity

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

OPERATOR TRAINING AND FAMILIARIZATION

1. OBJECTIVE

This document provides the methods and techniques for operator training and familiarization associated with experimental items undergoing Engineering tests.

2. BACKGROUND

During Engineering tests, the test items, their supporting components and maintenance packages are evaluated to determine conformance with technical performance and safety characteristics prescribed in Qualitative Materiel Requirements (QMR's), or Small Development Requirements (SDR's), Technical Characteristics (TC's), and as indicated by the particular design; also, to determine the technical and maintenance suitability of the test item for service testing.

The procedures listed in this document are general in nature. An experimental item may require evaluation of additional and/or unusual operator training and familiarization requirements not contained herein.

3. REQUIRED EQUIPMENT

a. Manufacturer's Manuals or Literature
b. Test Item (for on-the-job training)
c. Mock-ups (as applicable)
d. Visual Aids (as applicable)

Due to the variety of equipment and instruments which could be used in operator training and familiarization, enumerating them, other than those listed above, would not be practical. The specific equipment required shall be listed in the appropriate literature for the equipment personnel are being trained to operate/maintain.

4. REFERENCES

A. USAMC Regulation 350-6, Training on New or Modified Equipment and Training Devices.
B. USAMC Regulation 385-1, Safety Responsibilities.
C. USAMC Regulation 385-12, Verification of Safety Materiel from Development through Testing and Supply Disposition.
D. USATECOM Regulation 385-6, Safety Release for USATECOM.
E. USATECOM Regulation 385-7, Safety Confirmation.
F. AR 705-5, Army Research and Development.
G. AR 705-6, Maintenance Support Planning.
H. Applicable technical literature, such as:

1) USAGETA 7-5-0622-01, Plan of Test, Air Logistics Refueling

System, August 1965.

2) Naval Training Device Center, 40-625-129, Research on Consideration of Training Functions During Design of Operational Equipment, July 1965.
3) USAGETA, 7-4-0469, Plan of Test, Truck, Forklift, Rough Terrain, Diesel Engine-Driven, 10,000-Pound Capacity, November 1965.
4) American Society for Testing and Materials-Standards (ASTM Standards).
5) Technical Association of Pulp and Paper Industry-Standards (TAPPI-Standards).
6) Instrument Society of America Recommended Practices (ISA-Recommended Practices).

5. SCOPE

5.1 SUMMARY

This MTP describes the following:

a. Training Required for Installation/Disassembly and Operation - A determination of the level of training required and the type of instruction to achieve proficiency in installation, operating and disassembly.

b. Maintenance Techniques and Familiarization - A determination of the level of training required and the type of instruction to achieve proficiency in maintenance operations.

c. Adequacy of Training - A study to determine if the method of instruction, technical manuals and/or literature, and training aids used are adequate.

5.2 LIMITATIONS

This document is limited to general supplies and equipment.

6. PROCEDURES

6.1 PREPARATION FOR TEST

6.1.1 General

a. Engineering tests will not begin on any equipment, unless otherwise directed, until safety statements from the developing agency have been received on the test item.

b. As applicable, advanced engineering information should be obtained from the manufacturer or developer pertaining to the test item.

6.1.2 Pre-Test Training

Personnel who shall be responsible for instructing the engineering test personnel who shall undergo the training procedures of this MTP shall have been instructed as follows:

a. At an Army Materiel Command School in Operator Training and Maintenance according to USAMC Regulation 350-6, New Equipment Training Course

b. Sent to the manufacturer or developer to be trained in the operation and maintenance of the test item

c. Personnel from the manufacturer or developer may give instructions regarding the item to the instructor personnel at their base or site of testing.

d. Record the following for instructor personnel:

1) Name
2) Location of training
3) Time spent in training on the test item
4) Adequacy of instructions as determined by those receiving instructions
5) For military personnel:

a) Rank
b) Army Service Number (ASN)
c) Military Occupational Specialty (MOS)
d) Experience in MOS

6) For civilian personnel (Civil Service):

a) Rating
b) Job title
c) Job description

6.1.3 Test Personnel Data Questionnaire

Engineering test personnel shall complete a Personnel Data Form prior to initiating operation/maintenance instructions. This form shall include the following information:

a. For all test personnel:

1) Name
2) Previous experience with the test item

b. For military personnel:

1) Rank
2) Army Service Number (ASN)
3) Military Occupational Specialty (MOS)
4) Experience in MOS

c. For each government employed civilian:

1) Rating
2) Job title
3) Job description

6.2 TEST CONDUCT

6.2.1 Training Required for Installation/Disassembly and Operation

If the test personnel have the correct MOS, or job title (as applicable), sufficient degree of training with the item to be tested, and if the technical manuals and literature are adequate, the test officer will perform the following:

a. Subject the test personnel to the safety aspect portion of the orientation part of training (paragraph 6.2.1.1).
b. Give the test personnel the technical manuals and/or literature to read.
c. Allow test personnel to proceed with the Engineer Tests of the item to be tested, without assistance from instructors and as realistically as possible.

However, test personnel shall be subject to a complete orientation, a demonstration, on-the-job-training or a combination of all three, as applicable, when one of the following conditions exist:

a. A new test item
b. New associated equipment
c. A revised version of a standard item
d. A new adaptation of a standard item
e. Lack of properly trained personnel
f. Inadequate technical manuals and literature

6.2.1.1 Orientation

Test installation/operation personnel shall be subject to the following instructional demonstrations when undergoing orientation:

6.2.1.1.1 Lectures - Instructors shall discourse on the following:

a. Safety - A thorough discussion on all safety aspects, including the following:

1) Installation/disassembly safety precautions concerning the equipment used
2) Safety precautions included in the draft technical manuals
3) Safety precautions derived from the safety release(s)
4) Possible adverse effects on the user personnel taking into consideration such factors as:

a) Adequacy of shielding of moving parts
b) Visual or audible warning devices
c) Latching and locking mechanisms
d) Ventilation system
e) Escape provisions
f) Electrical shock prevention

NOTE: 1. Electrical shock hazards will have been determined by measuring voltage loss.
2. High voltage areas within the item shall have proper identification, warning and shielding.

g) Mechanical hazards
h) Tripping and falling hazards
i) Existence of sharp projections
j) Tearing hazards
k) Inadequate walk-on surfaces
l) Fire hazards
m) Toxic fumes - as determined by chemical analysis for toxic levels
n) Noise levels - as measured with a sound level meter

b. A detailed description and purpose of the item to be tested and test objectives and procedures.

NOTE: If a particular Engineer test of the item is intricate, highly technical, or excessively long, test objectives and procedures will be explained prior to each such test.

6.2.1.1.2 Graphical Presentation - Extensive use will be made of photographs, diagrams, mock-ups, etc. to illustrate details of installation and operation.

6.2.1.1.3 Demonstration - A demonstration will be presented, using the item to be tested, of installation/disassembly details, operational controls and handling procedures.

6.2.1.2 Operational Training

Test personnel shall become proficient, in the installation/disassembly and operation of the item to be tested, as follows:

a. The personnel shall be given the manufacturer's operating manuals or other instructional material.
b. The personnel shall receive individual attention. As each individual progresses in his ability to perform his duties, he shall be assigned more difficult tasks until he is sufficiently proficient to perform all operations which fall within his MOS, or job title, as applicable.
c. A dry-run of all installation, operation and disassembly functions shall be performed.
d. Record the following for each type of operation:

1) Type of operation
2) Skill level required
3) Training time required

e. Where pertinent, the operating personnel requiring licensing shall have such licenses checked, issued, or renewed, as applicable.

NOTE: When necessary, test personnel may be trained as follows using the criteria of USAMC Regulation 350-6:

1) At an Army Materiel Command School in operator training and maintenance
2) At the manufacturer's or developer's location
3) At their home base by manufacturer or developing agency personnel

6.2.2 Maintenance Techniques and Familiarization

Determine the amount of training required, by maintenance test personnel, using the criteria of paragraph 6.2.1.

6.2.2.1 Orientation

Engineering test maintenance personnel shall be subject to the following instructions/demonstrations when undergoing orientation:

6.2.2.1.1 Lectures - Instructors shall discourse on the following:

a. Safety - A thorough discussion on all safety aspects as described in paragraph 6.2.1.1.1.a.
b. A detailed description and purpose of the item to be tested and test objectives and procedures.

6.2.2.1.2 Graphical Presentation - Extensive use will be made of photographs diagrams, mock-ups, etc., to illustrate maintenance details, including location of lubrication points.

6.2.2.1.3 Demonstration - A demonstration will be presented, using the test item to be tested, showing installation/disassembly details, operational controls and their effects, handling procedures, preventive maintenance activities and trouble-shooting and repair methods.

6.2.2.2 Operational Training

Test personnel shall become proficient, in the maintenance of the test item to be tested, as follows:

a. The personnel shall be given the test item's manufacturer's manuals and/or literature.
b. The personnel shall be given individual attention concerning, as applicable:

1) Scheduled maintenance
2) Troubleshooting
3) Unscheduled maintenance

c. Instructors shall test the individual maintenance test personnel trainees as follows:

1) Personnel shall be required to perform scheduled maintenance
2) Deficiencies and/or damage shall be caused to the test item **and the trainees shall be required to:**

a) Troubleshoot the test item
b) Perform the necessary maintenance and/or repairs

d. Record the following:

1) Level of maintenance instruction
2) Length of time required to achieve proficiency, as applicable:

a) Maintenance
b) Troubleshooting
c) Repair

3) Level of skill required for the level of maintenance
4) For scheduled maintenance:

5) For troubleshooting/unscheduled maintenance, as applicable:

a) Deficiency/damage encountered
b) Time required to:

(1) Determine trouble
(2) Perform maintenance/repair

6.2.3 Adequacy of Training

At the completion of the training program, the following shall be accomplished:

a. The test director shall report on the effectiveness of training and training aids as determined by observation operational training.
b. The test personnel trainees shall fill out questionnaires which shall include the following:

1) Adequacy of instructions
2) Clarity of instructions
3) Accuracy of instructions
4) Adequacy and accuracy of training aids
5) Suggested changes

6.3 TEST DATA

6.3.1 Preparation for Test

6.3.1.1 Pre-Test Training

Record the following for instructor personnel:

a. Name
b. Location of training (AMC school, manufacturer's/developer's test site)
c. Time spent in training, in weeks
d. Adequacy of instructions as determined by their receiving instructions
e. For military personnel:

1) Rank
2) ASN
3) MOS
4) Experience in MOS

f. For civilian personnel:

1) Rating (GS or WB)
2) Job title
3) Job description

6.3.1.2 Test Personnel Data Questionnaire

Record the following for test personnel:

a. Name
b. Previous experience with the test item
c. For military personnel:

1) Rank
2) ASN
3) MOS
4) Experience in MOS

d. For civilian personnel:

1) Rating (GS or WB)
2) Job title
3) Job description

6.3.2 Test Conduct

6.3.2.1 Training Required for Installation/Disassembly and Orientation

Record the following for each type of operation:

a. Reason for the training program (new item, lack of trained personnel, etc.)
b. Level of training (orientation, operational training)
c. Type of operation (install, operate, disassemble)
d. Skill level required (MOS/job title)
e. Training time required to obtain proficiency, in weeks

6.3.2.2 Maintenance Techniques and Familiarization

Record the following for each level of maintenance, as applicable:

a. Reason for training program (new item, lack of personnel, etc.)
b. Level of training (orientation, operational training)
c. Level of maintenance instruction (organizational, direct support, etc.)
d. Length of time required to achieve proficiency, in weeks, for:

    1) Maintenance
    2) Troubleshooting
    3) Repair

e. For scheduled maintenance:

    1) Maintenance performed (daily, weekly, etc.)
    2) Time required to perform maintenance, in hours

f. For troubleshooting/unscheduled maintenance:

    1) Deficiency/damage encountered
    2) Time required, in hours, to:

        a) Determine trouble
        b) Perform maintenance

6.3.3 Adequacy of Training

Record the following:

a. As part of test director's report:

    1) Effectiveness of the training program
    2) Adequacy of training aids

b. As part of each test personnel trainee's questionnaire:

    1) Adequacy of instruction
    2) Clarity of instructions
    3) Accuracy of instructions
    4) Adequacy and accuracy of training aids
    5) Suggested changes

6.4 DATA REDUCTION AND PRESENTATION

Data obtained indicating the time required to train engineer test personnel to become proficient in installation, operation, maintenance, and disassembly of the test item, and the effect of previous experience on the required learning time.