UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
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MTMOC 2306

STUDENT OUTLINE

CALIBRATION CONTROL PROGRAM

LEARNING OBJECTIVES:

1. Terminal Learning Objective: Given the reference material, completed calibration control records, and statements pertaining to the procedures for establishing a calibration control program, direct the use of establishing equipment calibration control procedures, per MCO 4733.1, MCO P4790.2, TI 4733-15/1, and TM 4700-15/1. (3510.2.20)

2. Enabling Learning Objective: Given the reference material, completed calibration control records, and statements pertaining to the procedures for establishing a calibration control program, per MCO 4733.1, MCO P4790.2, TI 4733-15/1, and TM 4700-15/1:

a. Identify test, measurement, and diagnostic equipment (TMDE). (3510.2.20a)

b. Identify three types of systems used for control of TMDE. (3510.2.20b)

c. Identify the preventive maintenance requirement for TMDE. (3510.2.20c)

d. Audit calibration control records. (3510.2.20d)

e. Identify inventory procedures. (3510.2.20e)

f. Identify types of calibration and associated labels/cards. (3510.2.20f)

OUTLINE:

1. PURPOSE OF THE MARINE CORPS CALIBRATION CONTROL PROGRAM

a. The Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP) has been developed to provide and maintain prescribed accuracies in standards of measurement and to make sure satisfactory performance of all Marine Corps TMDE at posts and stations in the Fleet Marine Forces.

b. The Marine Corps policy is to have all TMDE calibrated only to the extent and at the intervals necessary to adequately perform the measurement involved. It is also the policy of the Marine Corps to accomplish such calibration in the most cost-effective way that will satisfy operational requirements.

c. Calibration Terminology and Related Definitions

(1) Accuracy. The degree of correctness with which a measured value agrees with the true or nominal value.

(2) Calibration. The comparison of a measurement system or device of unverified accuracy to a measurement system or device of known or greater accuracy to detect and correct any variation from required performance specifications of the unverified measurement system or device.

(3) Calibration facility. Laboratories designed to provide direct calibration support for all Marine Corps TMDE.

(4) Calibration cycle/interval. The period of time between calibration tests/events during which each item of TMDE is expected to maintain a precise and accurate measurement.

(5) Precision. A measure of consistency or repeatability of measurements among themselves.

(6) Tolerance. The permissible deviation from a specified value.

2. RESPONSIBILITIES OF ORGANIZATIONS HOLDING TMDE

a. Using Organizations Holding TMDE will:

(1) Submit for calibration all TMDE requiring calibration.

(2) Schedule TMDE for calibration in such a manner as to maintain, on hand, a sufficient amount of TMDE to preclude the loss of required test capabilities.

(3) Make sure all items of TMDE submitted for calibration are complete and have had the proper preventive maintenance performed.

(4) Make sure that TMDE is adequately protected during transportation to and from the TMDE calibration and maintenance facility by using packing materials and/or containers.

(5) Make sure all items of TMDE without current calibration labels are not used. TMDE received directly from the supply system with a current calibration affixed should not be used until a cross-check has been performed.

(6) Submit to the supporting unit calibration facility a list of all items of TMDE which are to be included in the calibration program when such a program is provided by the calibration facility.

(7) Analyze measurement requirement and request special calibration for TMDE when its entire measurement capability is not being utilized.

(8) Request inactive calibration labels from the calibration facility for specifically identified TMDE.

(9) Make sure the TMDE is used properly to preclude damage to the equipment or the item being tested.

(10) Request assistance, as necessary, from the supporting calibration facility for education of personnel in analyzing measurement requirements and proper use of TMDE.

b. To accomplish the above tasks outlined in the responsibilities for the using unit, the using unit must:

(1) Identify TMDE

(a) Annually, units should conduct an inventory of all their TMDE to ensure calibration control records are accurate and complete.

(b) The unit's T/E and allowance list (to include special allowances) can be used by the MMO and maintenance personnel to identify all items of TMDE the unit is authorized.

(c) The Federal Logistics Data on compact disc (FEDLOG) also identifies all TMDE that requires calibration by placement of the number "3" under the OTC (operational test code). The OTC can be found in FEDLOG management view screen under the service/agency (S/A) MGMT CTL data element in position 6. If a question still remains concerning

the need for calibration or the calibration interval, the personnel at the local calibration facility should be consulted.

(2) Locate TMDE

(a) All items of TMDE within the unit/commodity should be located. As the equipment is located, the control system should be annotated to identify the section/area holding the equipment.

(b) During the search to locate TMDE, it must be kept in mind that many items are component parts; e.g., pressure gages, meters, et cetera.

(3) Inventory TMDE. When all equipment has been located, the MMO and maintenance representative should match the equipment and control cards/charts with the T/E and the unit allowances to ensure that all items have been accounted for and are complete.

(4) Scheduling TMDE for Calibration.

(a) The end result of scheduling TMDE for calibration is to establish calibration due dates for the TMDE. However, when preparing the calibration schedule, the section/unit must ensure that sufficient assets are on hand for day-to-day operations.

(b) There are four categories of calibration. All TMDE should be assigned to one of these categories and have a current label affixed. Assignment of the categories should be based not only on the equipment's present use but also on requirements to task organize, form detachments, or field contact teams.

1 Equipment Requiring Full Calibration. Those items which must be accurate across their full range of measurements.

2 Special Calibration. Those items which must be accurate across a portion of their full range of measurements. Items labeled "Special Calibration" will have a calibration tag affixed indicating limitations.

3 Calibration Not Required (CNR). Those items which are used for other than quality or quantity measurements and, therefore, accuracy of the measurement is not a factor.

4 Inactive Calibration. Those items not required for use for at least their next calibration period but which still are required for future contingencies.

(c) Calibration scheduling.

1 Calibration scheduling is automatic; the next scheduled calibration period is that date entered on the calibration label affixed to the equipment by the calibration facility. Equipment must be promptly turned in for calibration. The exceptions to this are as follows:

a Due to repair, receipt of new equipment, training exercises, et cetera; several items of the same type of equipment may become due for calibration at the same time.

b Training exercises or actual commitments may dictate a change in calibration scheduling.

c You may not be able to turn in an item due for calibration because it is mission-essential, and its replacement has been delayed in its return from calibration.

2 The mentioned exceptions as well as poor management can cause uneven calibration scheduling. This may result in a reduced capability within a unit to perform its mission by having a majority of a specific type of equipment due for calibration during the same period. An even spread across the calibration cycle is required.

(5) Control of TMDE. The unit commander will designate in the unit's MMSOP which of the two manual systems (card index or wall chart) are to be used for calibration control at the unit level. Units are also authorized to make use of locally developed automated control systems in lieu of the manual methods as long as the basic data is incorporated. The SOP should also state the procedures for opening an ERO and evacuating the TMDE for repair and calibration. The calibration control system chosen by the unit may be maintained centrally for the entire unit or decentralized within each of the commodity areas.

(6) Inspect. The MMO and maintenance officer/commodity manager will ensure that, as part of the normal inspection process within the unit, the equipment is properly labeled and within the calibration interval.

c. Preventive Maintenance (PM) Requirements

(1) Operator PMCS combined with an operational check of the equipment per equipment technical manuals constitutes an organizational PMCS for all categories of TMDE and requires no scheduling. Calibration laboratories and units authorized intermediate maintenance

on test equipment will accomplish PMCS during calibration. Intermediate PMCS requires no scheduling.

(2) TMDE designated as "CALIBRATION NOT REQUIRED" will be maintained in a clean and complete condition with functionally clean air filters and functionally charged batteries if so equipped. Any missing components must be on a valid requisition.

(3) TMDE designated as "INACTIVE" will be maintained in a clean condition with functionally clean air filters if so equipped. TMDE equipped with batteries will have them removed while designated as "INACTIVE." At the end of the 3-year "INACTIVE" period, units will reevaluate the need for the equipment and the category of calibration. When the unit no longer requires the equipment, a request for deletion from the T/E should be submitted and the item tagged indicating this action.

d. Special Calibration Requirements

(1) Items of TMDE designated as CNR or INACTIVE will have their status reviewed and validated annually.

(2) TMDE in an inactive period at the end of three years will be reevaluated by the unit to determine the need to retain the equipment as well as the requirement to calibrate the equipment. If the unit no longer requires the equipment, the equipment should be processed in accordance with local supply procedures.

(3) Items that are repair parts for TMDE, other than those listed in the applicable SL-3 for the TMDE, are exempt from the aforementioned TMDE calibration requirements.

3. PREPARATION INSTRUCTIONS FOR THE CALIBRATION CONTROL CARD, NAVMC 11052. The card index system is best suited for a unit that possesses a large quantity of TMDE, and it has the advantage of providing historical data.

a. Utilizing the annual inventory, prepare a NAVMC 11052 for each item of test, measurement, and diagnostic equipment possessed.

(1) Determine and enter the nomenclature, serial number, I.D. number, and NSN of the item. If the item is a component, enter the end item nomenclature, I.D. number, and serial number in the "Location/ Component Of" block. If the item is an end item, its physical location (section, toolroom, et cetera) may be entered in the "Location/ Component Of" block.

(2) Date calibration due. This date may be obtained from the calibration label affixed to the item. If the item has never been calibrated, it should be immediately submitted to the supporting calibration facility unless it is determined that calibration is not required or the equipment is to be placed in INACTIVE status. In this case, the unit should request the appropriate labels from the calibration facility. For items designated as INACTIVE or CNR enter the date of the next annual validation.

(3) Date calibration performed. The completion of this field is optional except for items designated as INACTIVE OR CNR. For items designated as CNR or INACTIVE enter the date of the annual validation.

(4) Remarks. The "Remarks" column is to be utilized as follows:

(a) Indicate items designated as CNR or INACTIVE across from the date so designated.

(b) Indicate items designated as "Special Calibration" and the parameter of that calibration.

(c) Enter the ERO/document/voucher number in pencil for items inducted for calibration/repair.

(d) Enter the location if the item is deployed.

(e) Enter any additional amplifying information.

b. Preparation and Use of the Card Index File

(1) Preparation of the file with index guides.

(a) Prepare two sets of index header cards of different colors, covering the months of the year. Designate one set as the even year and one set as the odd year. Having two sets allows for scheduling over the end of the year and for those items with a calibration cycle exceeding twelve months. Use of different color tabs or writing to distinguish the year is authorized.

(b) One index header card will be labeled INACTIVE.

(c) One index header card will be labeled (AT CAL FAC), at calibration facility.

(d) One index header card will be labeled CNR.

(2) Using the card index system for calibration control.

(a) File the prepared index cards using the calibration due date as a determining criterion. File the items designated CNR and INACTIVE behind the appropriate header card.

(b) Submission of TMDE due for calibration.

1 Remove the equipment cards for the appropriate month.

2 For each item requiring calibration, prepare an ERO and submit the equipment to the supporting calibration facility.

a Indicate on the ERO if the equipment is a component of another item.

b If the item is a component, make sure the end item, nomenclature, serial number, and ID number are entered on the ERO and that a "3" MIMMS transaction is submitted to change the nomenclature.

3 Indicate the ERO number in pencil in the "Remarks" column of the index card.

4 Place the index card(s) in the "AT CAL FAC" section of the file.

(c) Upon receipt of the item from calibration:

1 Retrieve the item's card from the "AT CAL FAC" section of the file.

2 Annotate the new calibration due date on the index card.

3 Write in the date calibrated. For categories other than "INACTIVE or CNR" USE OF THIS FIELD IS optional.

4 Erase the ERO number, and indicate any pertinent remarks.

5 File the card behind the month when the equipment is next due for calibration, observing the color-coded (odd or even) calendar year.

(d) Filing instructions for INACTIVE items are as follows:

1 File the cards for INACTIVE items in the "INACTIVE" section.

2 Prior to using the item, follow the same procedures for the submission of an item for calibration.

3 If a previously calibrated item is to be placed in INACTIVE status, note the date of inactivation on the card in the remarks block; obtain an INACTIVE label from the calibration facility and affix the label to the equipment; and file the card in the INACTIVE section of the card index.

(e) File the cards for all items which do not require calibration in the "CAL NOT REQ" section. Use of this section will provide the unit with the necessary mechanism to effect control over those items normally requiring calibration but which are used for relative, vice quantitative, measurements and, do not require calibration. This section can also be used as a means of extending inventory control of TMDE, to include that which normally does not require calibration, but does require validation of "CNR" status.

(f) Validate the status of "CNR/INACTIVE" items. Record the date of the annual validation in the "Date Cal Perf" block and schedule the next annual validation in the "Date Cal Due" block.

4. PREPARATION INSTRUCTIONS FOR THE CALIBRATION CONTROL CHART

a. The chart system for calibration control will adequately fill the control requirement for a unit which possesses a small quantity of TMDE, but does not provide a means of collecting historical data. The control record can be made up as a wall chart or on a standard size paper. If made up as a wall chart covered with acetate, it is recommended that the entries in the first four columns be made semi-permanent in nature; and those entries subject to change be made with a grease pencil. If the chart is to made on the standard size paper for retention in a binder, it is recommended that the permanent entries be typed and the sheet inserted in a document protector. All other entries can be made with a grease pencil to facilitate updating.

b. Instructions for the Preparation of the Calibration Control Chart are as Follows:

(1) Equipment Nomenclature and ID No. Utilizing the annual inventory, enter the noun nomenclature and ID No. of each type of TMDE possessed. If the ID No. is not available, enter the NSN. It is not necessary to repeat these entries for all items of a type.

(2) Serial No. List the serial numbers of all items held of the type listed in the nomenclature column.

(3) Location/Component Of. Enter the location of the item. If the item is a component of another item, identify the parent equipment by ID No./nomenclature and serial number if required to distinguish between multiples of the parent equipment.

(4) Date Calibration Due. Obtain the calibration due date from the calibration label affixed to the item. If the item has never been calibrated, it should be submitted to the calibration facility immediately unless it is determined that calibration is not required or that the item is to be placed in an INACTIVE status. In this case, the appropriate labels should be requested from the calibration facility. For items designated as "CNR" and "INACTIVE," enter the date the next annual validation.

(5) Date Calibration Performed. For items designated as "CNR" or "INACTIVE," enter the date of the annual validation. For items designated other than "CNR" or "INACTIVE" use of this field is optional.

(6) Remarks. The remarks column is to be used as follows:

(a) Indicate items designated as "CNR" or "INACTIVE" and the date so designated.

(b) Indicate items designated as "Special Calibration" and the requirements for this condition.

(c) Enter the ERO/document/voucher number in pencil for items inducted for calibration/repair.

(d) Enter the location if the item is deployed.

c. Using the Chart System

(1) At the beginning of each month, determine which items are scheduled for calibration during that month.

(a) For each item requiring calibration prepare an ERO and submit the equipment to the supporting calibration facility. If the item is a component ensure that the end item nomenclature, serial number, and ID number are entered on the ERO and that a "3" MIMMS transaction is submitted to change the nomenclature. Request verification/completion of any required outstanding modifications.

(b) Annotate the ERO number in pencil in the "Remarks" column.

(2) Upon return of the equipment from calibration, record the following on the chart:

(a) The new calibration due date.

(b) The date calibration was performed. For categories other than "CNR" or "INACTIVE," use of this field is optional.

(c) Erase the ERO number and indicate pertinent remarks.

(3) Validate the status of CNR/INACTIVE items. Record the date validated in the "Date Cal Perf" block and schedule the next validation in the "Date Cal Due" block.

5. FILING AND DISPOSITION OF THE CALIBRATION CONTROL CARD AND CHART

a. The calibration control chart/card system shall be maintained for the entire unit or decentralized at each of the commodity areas as indicated in the unit MMSOP. The chart entry or control card for the equipment will be retained for as long as the equipment is held by the unit. The calibration control record may be destroyed (card index system) or the entry deleted (chart system) when the equipment is no longer held by the unit.

b. Remarks: When a centralized system is maintained, each shop/section within the unit maintaining TMDE should establish its own calibration control program.

c. New Items of Equipment. Calibration requirements for new items of equipment received from the supply system should be determined upon receipt. If the item is of a type already possessed, the requirement will be the same as those held. If the item is a totally new item to the unit, calibration requirements may be obtained from the supporting calibration facility. In either case, the equipment should be entered into the unit's calibration control program and submitted for calibration, if required. If calibration is not required or the equipment is to be placed in the INACTIVE status, the appropriate labels should be obtained from the supporting calibration facility.

c. Unserviceable Equipment. If notified by the calibration facility that the equipment has been declared unserviceable or beyond the repair capability of the facility and a recoverable item report (WIR) has been submitted, pull the item's card from the index or delete the entry on the chart. Requisition a replacement item in accordance

with procedures contained in the MMSOP. If the unserviceable item was a component, indicate in the "Remarks" section of the requisition that the requested replacement is a component and identify the end item.

d. Units may, until the development by Headquarters, Marine Corps of a Class I automated calibration control system, use a locally developed automated calibration control system in lieu of the manual method of calibration control. The locally developed automated system must provide the same data as required by the manual system.

6. IDENTIFICATION AND USE OF CALIBRATION LABELS, TAGS, AND SEALS

a. The Marine Corps calibration labels, tags, and seals are identified by size, shape, and color. At least one label shall be used to show the calibration status of each item of TMDE. All label/tag blocks will be appropriately completed using the following guidelines:

(1) The "LAB" block will be completed with the assigned three-letter code of the calibrating facility.

(2) The "TECH" block will be completed with the calibrating technician's last name or technician number. The first initial will be included if more than one person at the facility has the same last name.

(3) The "DUE DATE" block will be completed with the day-month-year sequence that the next calibration is due; e.g., 04 Oct 98.

(4) The "DATE" block (CNR, INACTIVE, AND REJECTED only) will be completed with the date that the label was applied/issued by the calibration facility.

b. The types of calibration labels, tags, and seals and a description of each are as follows:

(1) CALIBRATED labels (black on white) shall be affixed to items of TMDE that the using unit has determined is required for use to the fullest extent of its capability. The label indicates that the TMDE has been adjusted within the specifications approved by the Marine Corps. A CALIBRATED label further indicates that all functions of the TMDE have been tested as required by the calibration procedures and provides the next calibration due date.

(2) SPECIAL CALIBRATION labels and tag (black on green) shall be affixed to items of TMDE that the using unit has determined are not used to the maximum extent of their capabilities and the calibration facility has been provided the specific ranges, functions, et cetera to be calibrated. Only those functions required by the using unit have

been calibrated. A completed accompanying SPECIAL CALIBRATION tag shall also be affixed to the TMDE.

(3) CALIBRATION NOT REQUIRED labels (orange on white) shall be affixed to an item of TMDE that the using unit has determined is not used in any quantitative/ qualitative application. Equipment designated as CALIBRATION NOT REQUIRED will not be calibrated unless specifically requested by the using unit. Equipment bearing an INACTIVE sticker shall be reviewed three years from the date the sticker was applied.

(4) INACTIVE labels (green on white) will be affixed to items of TMDE that the using unit has determined are not being used and are not expected to be used in the near future. TMDE in the inactive status requires calibration prior to use.

(5) A REJECTED label (black on red) shall be affixed to an item of TMDE which is to be returned, unserviced, to the owning organization for failure to meet the acceptance criteria of the calibration laboratory. An accompanying REJECTED tag (black on red) shall remain on the TMDE until it is repaired or calibrated.

(6) The purpose of the VOIDING SEAL (red on white) is to increase confidence in the reliability of TMDE which has current calibration labels affixed. A broken seal indicates that an instrument control, chassis, or plug-in unit may have been adjusted, replaced, removed, or tampered with to the extent that the validity of the calibration is questionable.

c. Only calibration facility personnel are authorized to remove calibration labels, seals, and tags, except when the using unit is provided CALIBRATION NOT REQUIRED or INACTIVE labels.

REFERENCE:

MCO 4733.1
MCO P4790.2
TI 4733-15/1
TM 4700-15/1.