

## Chapter 6

# Test, Measurement, and Diagnostic Equipment Calibration and Repair Support

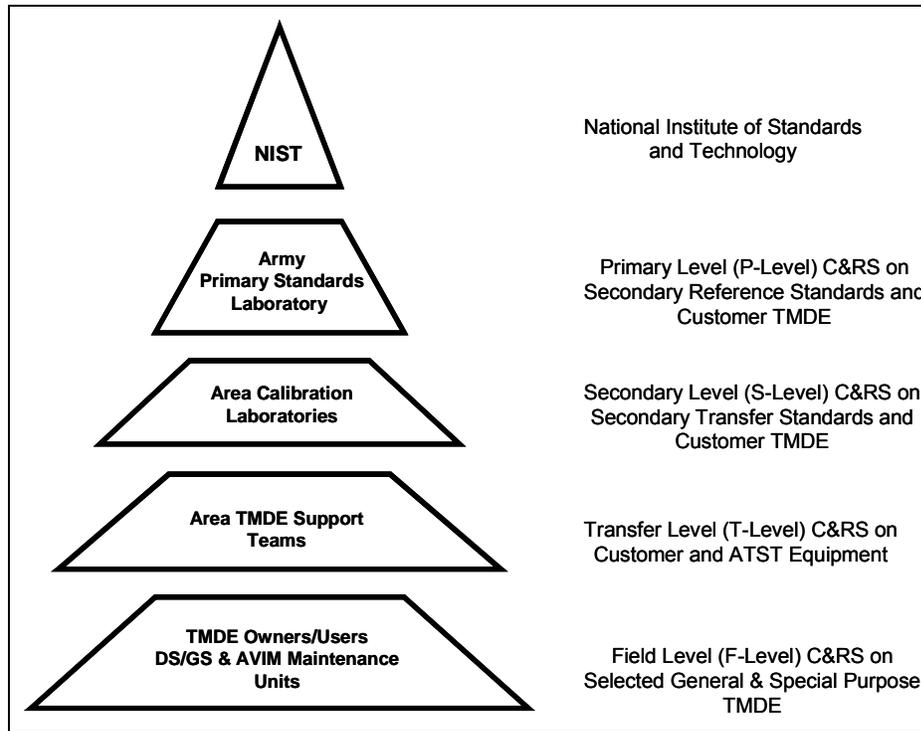
### GENERAL

6-1. TMDE is defined as any system or device used to evaluate the operational condition of an end item or subsystem thereof to identify and/or isolate any actual or potential malfunction. In general, usage TMDE refers to both general purpose (GP) and special purpose (SP) TMDE. TMDE-SP is developmental in nature for a specific weapon or support system. TMDE-GP can be used in a variety of applications and is normally procured as commercial off-the-shelf items. Types of TMDE range from torque wrenches in a toolbox to complex equipment supporting sophisticated weapon systems. The Army's TMDE program supports a number of technical parameters such as:

- Infrared.
- Electro-optics.
- Direct current and low frequency.
- Microwave.
- RADIAC.
- Mechanical, hydraulics, and pneumatics.

### TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT PROGRAM OBJECTIVES

6-2. The objective of the Army's TMDE program is to ensure accurate and serviceable TMDE is available for Army use with measurement accuracies traceable to the National Institute of Standards and Technology (NIST). A highly technical force of military, civilian, and contractor personnel carry out the execution of this Army program. The integrity of the Army's TMDE C&RS program is based on a hierarchy of traceable calibration accuracies. The accuracy of a calibration can be traced from the owner's/user's item of TMDE to the standards used by the C&RS elements with subsequent traceability of supporting standards through Army calibration laboratories to the NIST. Figure 6-1, page 6-2, reflects the hierarchy of calibration traceability.



**Figure 6-1. Hierarchy of Calibration Traceability**

NOTE: TMDE levels of support are designated in TB 43-180.

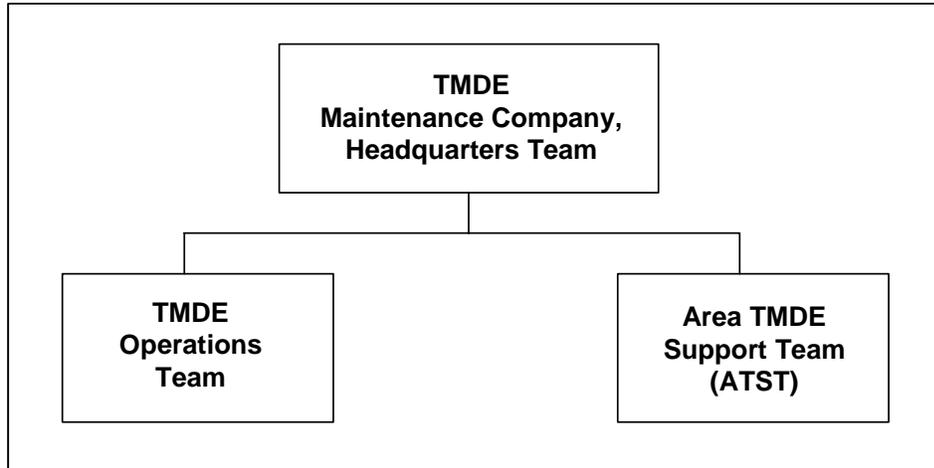
## **TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT MAINTENANCE COMPANY**

### **MISSION**

6-3. To provide calibration and repair for all GP and selected SP TMDE in support of division and corps units. In addition to the TMDE Maintenance Company's corps and divisional CSS mission, the overall theater support mission includes civilian support elements at EAC that provide TMDE calibration and repair for EAC units. A designated civilian ACL provides support for all theater calibration standards, to include "S"-level TMDE. The EAC mission also includes technical supply support for all theater TMDE calibration standards. Chapter 2 addresses the TMDE calibration and repair support operations at EAC.

### **ORGANIZATIONAL STRUCTURE**

6-4. The typical TMDE Maintenance Company is structured from a number of TOE teams. The size of the company and the expanse of its mission capabilities are dependent on the number of teams assigned. Figure 6-2 displays the organizational structure of a TMDE Maintenance Company.



**Figure 6-2. TMDE Maintenance Company Organizational Structure**

6-5. The TMDE Maintenance Company's organizational structure is designed for flexibility relative to the theater mission requirements. The capabilities to perform the core mission of the TMDE Maintenance Company are contained in a single ATST. The number of ATSTs required to support the overall TMDE Maintenance Company mission is based on the category and densities of supported TMDE and the geographic dispersion of supported units. Operational control for all technical aspects of the mission falls under one of the company's operations teams. Typically, the company would have an operations team for each corps supported, a dedicated ATST for each division, and a number of ATSTs assigned area support missions at EAD for corps units and units passing through the corps area.

6-6. All elements of a deployed TMDE Maintenance Company are dependent on a host unit for support functions. Through memorandums of agreement (MOAs), the Operations Team establishes the attachment relationship with the host unit. Support is required in the areas of logistics, soldier support services, maintenance support for organizational equipment (less TMDE), and supply support (less Classes II and VII).

**TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT  
CALIBRATION AND REPAIR SUPPORT TACTICAL OPERATIONS  
COMMAND AND CONTROL**

6-7. During wartime and MOOTW, the AMC exercises theater C2 over all TMDE CSS assets in the theater of operations through the in-theater LSE. These assets include TMDE C&RS mission functions provided by civilian elements at EAC and all TMDE Maintenance Company organizational elements within the theater of war, to include National Guard C&RS elements. Where ATST elements are attached to a unit within a designated force, the unit of attachment exercises operational control of the ATST. When deployed, the TMDE Maintenance Company HQ Team will locate with the theater LSE operations element. During wartime, MOOTW, and peacetime operations, the AMC's activity responsible for execution of the Army TMDE Program (the U.S. Army

TMDE Activity) provides logistical, technical, and materiel sustainment support to all TMDE support elements worldwide.

### **Operational Concept – Corps**

6-8. Located within the corps, the TMDE Operations Team (either Active or National Guard) provides planning, programming, coordination, and overall quality assurance for all ATSTs within the corps, including divisional ATSTs. The TMDE Operations Team is the central point within the corps for coordinating internal and external TMDE C&RS technical and operational requirements. When deployed in support of a corps mission, the attached ATSTs will support the corps on an assigned area basis. The ATST will set up operations in the designated area and provide one-stop TMDE C&RS to all units within or passing through their area of support. One-stop C&RS service is characterized by delivery and pickup by the TMDE owner/user at the ATST location. The corps ATST maintains the capability to respond to selected TMDE calibration requirements in a backup support role for divisional needs as established through the TMDE Maintenance Company Corps Operations Team and operational elements of the LSE. The ATST has the organic mobile capability to relocate as their assigned area of support may dictate. The Corps ATST can also employ a two-man mobile capability in response to divisional backup support requirements in forward areas based on METT-TC and overall corps C&RS requirements. The Corps ATSTs are dependent on the Corps TMDE Operations Team for planning, programming, coordination, and external technical support. The ATSTs are also dependent on ACL support for secondary transfer standards and customer TMDE requiring “S”-level laboratory support.

### **Operational Concept – Division**

6-9. When deployed with a division, the ATST is attached to the DSB Maintenance Company. The ATST will set up operations within the designated division support area and provide one-stop TMDE C&RS to all units within the division. One-stop C&RS service is characterized by delivery and pickup by the TMDE owner/user at the ATST location. The ATST also maintains a split-based, mobile capability to respond to selected TMDE calibration requirements within the divisional area for a limited timeframe and as determined by the elements of the Division G4 (SPO), in coordination with the ATST and Corps TMDE Operations Team. The divisional ATST is dependent on the Corps TMDE Operations Team for planning, programming, and coordination of external technical support. The ATST is also dependent on ACL support for secondary transfer standards and customer TMDE requiring “S”-level laboratory support.

### **MISSION EQUIPMENT**

6-10. The ATST consists of two major equipment sets. The principal set is the fully mobile and environmentally-controlled calibration and repair facility. A dedicated tactical vehicle with power generation equipment provides for the facility’s mobility and electrical power requirements. The facility houses calibration standards, ancillary TMDE, communications equipment, production control facilities, and workspace for repair functions. The ATST mission can be supported from this single facility. In addition to the principal equipment set is a secondary equipment set

consisting of a HMMWV-mounted shelter with on-board power and environmental control systems. The shelter houses a limited calibration capability (RADIAC, torque, meter, and oscilloscope standards) for use in a split-based mode of operations, where high densities of TMDE are located. When used in a split-based mode of operations, the two-man mobile facility is dependent on the parent ATST's principal equipment set for repair functions and production control operations.

## **MODES OF OPERATION**

6-11. The ATST's equipment configuration allows the team to operate in a fully uploaded mobile mode, or in a dismounted fixed facility mode of operations. Within the fixed facility mode of operations, the team may retain limited mobile calibration capability with the HMMWV set of equipment for special or split-base requirements. METT-TC considerations, as determined by the appropriate SPO, determine the mode of operations.

