

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE MANUAL**

**21-113**

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**Maintenance**



**AIR FORCE METROLOGY AND  
CALIBRATION PROGRAM  
MANAGEMENT**

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This publication implements Air Force Policy Directive 21-1, *Maintenance of Military Materiel*. This Air Force Manual (AFMAN) provides guidance and procedures on the United States Air Force Metrology and Calibration Program management requirements. This manual applies to civilian employees and uniformed members of the Regular Air Force, Air Force Reserve and Air National Guard. This manual may be supplemented at any level, but all supplements that directly implement this publication must be routed to Director of Logistics, Deputy Chief of Staff for Logistics, Engineering and Force Protection (AF/A4L) for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the Office of Primary Responsibility listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management* for a description of the authorities associated with the Tier numbers. Submit requests for waivers using AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval* through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor’s commander for non-tiered compliance items. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) AFMAN 33-363, *Management of Records*, and disposed of IAW the Air Force Records Disposition Schedule located in the Air Force Records Information Management System. The use

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### ***SUMMARY OF CHANGES***

This document has been revised to reflect the following changes: updated from an Air Force Instruction to an AFMAN, updated office symbols, websites and terminology.

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## Chapter 1

### PROGRAM, PHILOSOPHY, POLICY, AND REQUIREMENTS

**1.1. Introduction.** The Air Force Metrology and Calibration (AFMETCAL) Program is a hierarchical system of Precision Measurement Equipment Laboratories (PMELs), other calibration operations, personnel, equipment, and procedures to ensure systems and equipment measurements are safe, accurate, uniform, reliable and traceable to either the National Institute of Standards and Technology (NIST) or AFMETCAL approved sources.

1.1.1. All test, measurement, and diagnostic equipment (TMDE) used to make or verify meaningful (quantifiable) measurements will be calibrated. **(T-1)**.

1.1.2. The AFMETCAL Program's primary mission is to support calibration activities to maintain, calibrate, and certify TMDE for the AF, other services, federal agencies, and countries supported through Foreign Military Sales. The AF calibration activities provide organizational, intermediate, depot-level regional maintenance and calibration supporting aircraft, maintenance back shops, precision-guided munitions, ground systems, communications, civil engineering, medical, and all other direct and indirect aircraft and personnel support functions.

**1.2. Organization.** Air Force Materiel Command (AFMC) is designated as the AF lead agent for establishment, planning, programming, budgeting, oversight, processes, and procedures for the AFMETCAL Program.

1.2.1. The AFMETCAL Program Office, Air Force Life Cycle Management Center (AFLCMC/WNM) is organized under the Agile Combat Support Directorate in AFLCMC.

1.2.1.1. AFMETCAL serves as the AF technical authority on metrology issues and is the AF single point of contact for calibration services and traceability of measurements to NIST.

1.2.1.2. AFMETCAL makes TMDE calibration and repair responsibility determinations. AFMETCAL publishes responsibility determinations in Technical Order (TO) 33K-1-100-1, *Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries*; TO 33K-1-100-2, *TMDE Calibration Notes, Calibration Interval, Technical Order and Work Unit Code Reference Guide*; and Calibration and Measurement Summary (CMS) TOs.

1.2.2. AF Primary Standards Laboratory (AFPSL). The AFPSL shall be operated IAW this AFMAN and TO 00-20-14, *Air Force Metrology/Calibration Program (T-1)*. The AFPSL is the sole AF-level laboratory responsible to maintain AF measurement standards. These unique standards are traceable to NIST or other sources as approved by AFMETCAL. AF measurement standards are used to ensure the accuracy and traceability of base measurement standards. Base measurement standards are TMDE provided to PMELs to support their mission.

1.2.3. Precision Measurement Equipment Laboratory (PMEL). The PMEL is the base-level AFMETCAL Program focal point. It is the activity authorized to possess and use base measurement standards. PMELs are established or closed at selected installations with Deputy Chief of Staff for Logistics, Engineering and Force Protection (AF/A4) approval. PMELs shall

be operated IAW this AFMAN, TO 00-20-14 and AFI 21-101, *Aircraft and Equipment Maintenance Management*, and other prescribed directives. (T-1).

1.2.4. Metrology and Calibration Flight (MCF). MCFs shall be operated IAW this AFMAN, TO 00-20-14, and applicable sections of Air Force Sustainment Center Manual (AFSCMAN) 21-102, *Depot Maintenance Management*. (T-2). MCFs are established at Air Logistics Complexes (ALC) to provide calibration support to depots and other approved customers. MCFs are part of the calibration and repair network and under the scope of the AFMETCAL program. MCFs must maintain core depot calibration and maintenance capabilities established IAW Department of Defense Instruction (DoDI) 4151.20, *Depot Maintenance Core Capabilities Determination Process*. (T-0).

**1.3. Calibration and Support Concept.** The AFMETCAL program has been recognized as a Repair Network under Repair Network Integration (RNI). Under RNI, the AFMETCAL Director serves as the Product Repair Manager.

1.3.1. Repair Network Managers are aligned under the AFMETCAL Plans and Analysis Section. Repair Network requirements and processes are defined in AFI 20-117, *Repair Network Management*.

1.3.2. Major Command (MAJCOM) Functional Managers (MFM) serve as MAJCOM leads, and Flight Chiefs/PMEL Managers serve as node managers.

1.3.3. AF calibration activities consist of the AFPSL, PMELs, and the MCFs.

1.3.3.1. To prevent readiness and support impacts across the AF, these calibration activities shall ensure assigned calibration and measurement area capabilities are operational. (T-1).

1.3.3.2. If a calibration activity requires assistance beyond unit capability, requests are made IAW TO 00-20-14 and TO 00-25-107, *Maintenance Assistance*.

1.3.3.3. Department of Defense (DoD) Services Calibration Laboratories. The use of other DoD Services calibration laboratories is authorized when approved by the applicable MFM and AFMETCAL. The Army, Navy and Marine Corps operate calibration laboratories using similar measurement techniques and management concepts. These laboratories provide measurement traceability to NIST. Units requesting support from another service will follow the guidance in TO 00-20-14, which includes the interservice support agreement guidance. (T-1).

**1.4. TMDE Limitations.** A limited TMDE calibration consists of reduced accuracies, ranges, functions, or overall usability, and is a deviation from original equipment manufacturer or AF specifications.

1.4.1. TMDE limitations may seriously impact mission capability of weapon systems and support agencies. Users approving limitations must take caution to ensure any limitations meet the user requirement defined in a TO, work card, or other technical data used to perform a task.

1.4.2. Non-aircraft, general, or common TMDE, for example, torque wrenches, pressure gauges, multi-meters, generators, may be limited with approval from the user. Limitation approval requirements are defined in TO 00-20-14 and AFI 21-101.

1.4.2.1. Prior to approving limitations, aircraft maintenance customers are required to be trained on TMDE limitations and approved on the Special Certification Roster IAW AFI 21-101. **(T-1)**.

1.4.2.2. Air Force Specialty Code (AFSC) 2P0X1 (PMEL) personnel are considered trained on TMDE limitations and are not required to attend maintenance group TMDE Limitation Training. Flight Chiefs shall recommend and approve AFSC 2P0X1 personnel to be added to the Special Certification Roster. **(T-3)**.

**1.5. Cybersecurity Discipline.** Calibration activities are required to maintain and perform positive maintenance cyber discipline practices defined in AFI 21-101, TO 00-20-14, and other prescribed directives. Calibration activities shall perform cyber maintenance tasks IAW TO 00-20-14. **(T-2)**.

**1.6. Acquisition Requirements.** Acquisition of systems and equipment includes assessment of calibration and measurement requirements. For additional information see Military-Handbook (MIL-HDBK) 1839A, *Department of Defense Handbook Calibration and Measurement Requirements*. Acquisitions requiring a Calibration and Measurement Requirement Summary shall comply with Military-Standard (MIL-STD) 1839, *Calibration and Measurement Requirements*. **(T-0)**. PMEL customers, TMDE owners, and Program Managers (PM) shall obtain AFMETCAL approval prior to obtaining commercial calibration support (including contract logistics support) or when deviating from established calibration determinations or support plans. **(T-1)**. PMs shall comply with this AFMAN and AFI 63-101/20-101, *Integrated Life Cycle Management*. **(T-1)**.

**1.7. Aircraft Maintenance Policy Requirement.** PMELs shall comply with applicable sections of AFI 21-101. **(T-1)**. Maintenance Standardization and Evaluation Program (MSEP), Tools/Equipment Management, and Foreign Object Damage (FOD) requirements for the PMEL are clarified below under Flight Chief, Quality Manager, and Lab Chief responsibilities.

## Chapter 2

### ROLES AND RESPONSIBILITIES

**2.1. General.** This chapter outlines responsibilities for commanders and key leaders involved in the AFMETCAL program. Contractor-operated laboratories shall comply with the applicable performance work statement requirements. PMELs shall comply with this AFMAN and AFI 21-101 as applicable.

2.1.1. The AFSC 2P0X1 (PMEL) Enlisted Development Team has standardized the enlisted duty titles for AFSC 2P Airmen. Specific responsibilities are outlined in [Chapter 3](#).

2.1.2. General or other PMEL requirements (MSEP, consolidated tool kits (CTK)) from AFI 21-101 will be clarified below under PMEL responsibilities. (T-1).

**2.2. Deputy Chief of Staff, Logistics, Engineering, and Force Protection (AF/A4).** AF/A4 shall:

2.2.1. Advocate for AFMETCAL program requirements.

2.2.2. Authorize the establishment or closure of AF calibration laboratories. Prior to authorizing, solicit input from the AFMETCAL Director regarding the impact for establishment or closure would have on AF calibration support capabilities, processes, and/or costs.

**2.3. Commander, Air Force Materiel Command (AFMC/CC).** AFMC/CC shall:

2.3.1. Appoint an AFMETCAL Director who will also function as the Product Group Manager (PGM) for AF calibration standards and systems and the RNI Product Repair Manager.

2.3.2. Operate and maintain certified AFPSL IAW this AFMAN and TO 00-20-14.

2.3.3. Follow guidance in [paragraph 2.7](#) of this manual.

**2.4. AF Program Executive Officer for Agile Combat Support (AFPEO/ACS).** The AFPEO/ACS shall:

2.4.1. Provide AFMETCAL Director with resources and operations support.

2.4.2. Centrally plan, program, and budget for AFMETCAL program requirements.

**2.5. Program Manager (PM)/Product Group Manager (PGM).** PMs/PGMs shall:

2.5.1. Assess, and when deemed appropriate, integrate metrology, calibration and alignment requirements in system and equipment acquisition planning processes, performance work statements, and requests for proposal.

2.5.2. Coordinate with AFMETCAL Director on Calibration and Measurement Requirement Summary development and for metrology, calibration and alignment issues associated with system and equipment sustainment planning, support equipment integrated product development, and technical interchanges. Identify metrology related government furnished equipment or contractor furnished equipment requirements to the AFMETCAL Director.

2.5.3. Coordinate with AFMETCAL Director on system and equipment acquisition data calls and data calls for TMDE centrally funded by the working capital fund.

2.5.4. Coordinate with AFMETCAL Director during system and equipment design reviews.

2.5.5. Coordinate requirements for contracted calibration services through the AFMETCAL Director (including, but not limited to, public-private partnerships, interim contract support, Contract Logistics Support, or when managing support equipment as spares when acting as the Inventory Control Point).

2.5.6. Comply with MIL-STD-1839 for new systems and equipment acquisitions that require a Calibration and Measurement Requirement Summary.

**2.6. AFMETCAL Director (AFLCMC/WNM).** The AFMETCAL Director shall:

2.6.1. Plan, program, and budget for:

2.6.1.1. PMEL and AFPSL calibration standards and/or systems acquisitions.

2.6.1.2. AFMETCAL research and development requirements in coordination with the Calibration Coordination Group to develop new national and AF-level calibration standards and analytical methods.

2.6.1.3. Calibration and maintenance services provided through the AFPSL, or centrally funded as designated in published AF calibration determinations contained in TO 33K-1-100-1, TO 33K-1-100-2, and/or applicable Calibration and Measurement Summaries (CMSs).

2.6.1.4. Development and maintenance of AF Calibration TOs (33K Series).

2.6.1.5. Development and maintenance of AFMETCAL automated calibration procedures used by PMELs/MCFs to calibrate TMDE.

2.6.2. Review MAJCOM (or equivalent) requests to establish or close PMELs and forward a recommendation on the request to the AF/A4L for a decision.

2.6.3. Provide cradle-to-grave management of AF calibration capabilities to include acquisition of calibration standards and systems, comprised of:

2.6.3.1. PMEL Base Measurement Standards and equipment for field-level PMELs cataloged in Allowance Source Code 734, reference AFMAN 23-122, *Material Management Procedures*.

2.6.3.2. AFMETCAL PGM-developed PMEL calibration systems cataloged in various allowance source codes.

2.6.3.3. AF measurement standards and equipment for the AFPSL.

2.6.4. Manage operation and maintenance of the AFPSL.

2.6.4.1. Outline AFPSL operational requirements in TO 00-20-14.

2.6.4.2. Ensure AFPSL contract meets this AFMAN and TO 00-20-14 requirements.

2.6.5. Be the AF technical authority on metrology issues and the single point of contact for calibration services and traceability of measurements to NIST.

2.6.6. Represent the AF to the Joint Technical Coordination Group for Calibration and Measurement Technology and provide support to subgroup activities.



2.6.7. Provide metrology technical and engineering support to MAJCOMs (or equivalent) to resolve metrology problems and/or improve calibration techniques. Coordinate with MFMs to:

2.6.7.1. Establish calibration facility requirements and standards for PMELs.

2.6.7.2. Identify home station and deployed requirements for new and replacement calibration standards, considering equipment for effectiveness and productivity improvement.

2.6.7.3. Identify metrology training requirements.

2.6.7.4. Identify applicable Allowance Source Code entries to the Allowance Source Code Manager.

2.6.7.5. Redistribute excess PMEL calibration standards.

2.6.7.6. Evaluate TMDE calibration software developed by PMELs for potential AF-wide use.

2.6.8. Coordinate annual equipment buys with the support equipment PGM.

2.6.9. Develop and publish an AFMETCAL master plan to program and budget for AFPSL and PMEL calibration standards and systems acquisitions.

2.6.10. Serve as the AF program manager and metrology focal point for countries participating in the Security Assistance Program. Coordinate the use of PMEL services to support security assistance activities. Support AF Security Assistance Programs for metrology and calibration requirements as stipulated in government-to-government agreements.

2.6.11. Develop, publish and maintain TO 00-20-14, in coordination with PMEL MFMs.

2.6.12. Develop, publish and maintain AF Calibration TOs (33K Series) and coordinate the validation and verification.

2.6.13. Develop metrology support concepts, acquire and provide calibration equipment to support Automatic Test Equipment and Systems in coordination with PMs and the support equipment PGM.

2.6.14. Make calibration responsibility determinations, establish initial calibration intervals, and adjust calibration intervals for TMDE and publish in TO 33K-1-100-1/2 or AF CMSs.

2.6.14.1. Be the AF approval authority for requests to deviate from published calibration determinations.

2.6.14.2. Analyze maintenance data collection to align calibration intervals as necessary to achieve a statistically derived, end-of-period reliability of 85 percent or better (TMDE shall be within tolerance). **Note:** Utilizing longer intervals and lower TMDE reliability rates presents unknown risks to AF weapon system performance.

2.6.15. Be the AF approval authority for requests to obtain calibration services from a commercial or other non-AF laboratory (see also AFI 63-101/20-101).

2.6.16. Serve as the AF focal point for the AFMETCAL Assessment and Certification Program.

2.6.16.1. Maintain a method to assess and certify AF calibration activities, including contractor operated AF-owned calibration laboratories, for compliance with this manual, TO 00-20-14 and AFI 21-101.

2.6.16.2. Establish and maintain a laboratory evaluation team of qualified senior non-commissioned officers who hold the AFSC 2P (PMEL).

**2.6.17. The Evaluation Team shall:**

2.6.17.1. Assess the effectiveness and capability of each PMEL to perform measurements that are safe, accurate, reliable, and traceable through the AFPSL to NIST or other AFMETCAL approved sources. The AFPSL, PMELs, and MCFs shall be inspected IAW AFI 90-201, *Air Force Inspection System*, this AFMAN, and TO 00-20-14.

2.6.17.2. The Evaluation Team Chief will approve or disapprove of any inspection augmentees from the field. Determinations will be made considering training, experience, and AFSC 2P Enlisted Development Team vectors.

2.6.17.3. Provide certification recommendation to the AFMETCAL Director for each calibration activity assessed.

2.6.17.4. Administer the Proficiency Testing/Measurement Assurance Program IAW TO 00-20-14.

2.6.17.5. Issue an AFMETCAL Program Certificate of Compliance when a PMEL meets all inspection criteria outlined in this AFMAN and TO 00-20-14.

2.6.17.6. Void or withhold a calibration activity's certification for reasons such as inability to show traceability to NIST, lack of technical capability required to calibrate customer TMDE, failure to provide adequate facilities and controlled environment for those facilities, or failure to satisfy AFMETCAL certification criteria contained in TO 00-20-14.

2.6.17.7. Recommend to AF/A4L and the owning MAJCOM (or equivalent) any actions, including closure, for laboratories unable to achieve certification.

2.6.18. Specify AFPSL and PMEL facility requirements and perform reviews of facility project documentation.

2.6.19. Collaborate with all product centers, sustainment centers, test centers and Air Force Research Laboratory to identify new or increased measurement capabilities.

2.6.20. Collaborate with the Missile Defense Agency to identify metrology needs and manage development of national and DoD measurement standards and calibration services. **(T-0)**.

2.6.21. Interface with PMs, PGMs, AF support contractors, MAJCOMs (or equivalent), and other DoD agencies to:

2.6.21.1. Evaluate and report deficiencies and recommend changes to weapon system and equipment calibration support concepts throughout its life cycle.

2.6.21.2. Provide AFMETCAL data requirements for weapon system and equipment acquisition data calls, and centrally-procured TMDE funded by the working capital fund data calls.

2.6.21.3. Evaluate and make approval recommendations for contractor prepared Calibration and Measurement Requirement Summary data, Support Equipment Requirements Document or equivalent document relative to calibration and measurement traceability requirements.

2.6.21.4. Participate in PM and PGM system and product life cycle planning and technical interchanges.

2.6.21.5. Provide metrology-related government furnished equipment, when available, to AF contractors as required for calibration support development IAW Federal Aviation Regulation **Part 45**, *Government Property*; Defense Acquisition Regulation System Part 245, *Government Property*; and Air Force Federal Acquisition Regulation Supplement Part 5345, *Government Property* the facts and circumstances; the determination of the contracting officer; and the provisions of the contract. **(T-0)**.

2.6.22. Chair AFMETCAL Advisory Group meeting, as required, and be responsible for its charter.

2.6.23. Chair a PMEL Maintenance Information System (MIS) Configuration Control Board and Product Improvement Working Group, as required.

2.6.23.1. Provide guidance, in conjunction with the PMEL MIS Configuration Control Board, to the Maintenance Information Technology Program Management Office for the development and maintenance of a PMEL MIS.

2.6.23.2. Identify PMEL MIS requirements to AF/A4 and MAJCOMs.

2.6.24. Plan, organize and host Calibration Repair Network Management Collaboration biennial meetings. **Note:** PMEL RNI Collaboration Meetings require attendance from PMEL MFMs, calibration node managers, and other participants as deemed necessary.

## **2.7. MAJCOM Commanders (or equivalent).** MAJCOM/CCs shall:

2.7.1. Operate and maintain certified PMELs and MCFs IAW this AFMAN, TO 00-20-14, and AFI 21-101 to provide calibration and maintenance support for TMDE operated by users within their area of responsibility.

2.7.2. Support AFMETCAL Director as requested by providing a PMEL MFM or other representative for the AFMETCAL Advisory Group, PMEL MIS Configuration Control Board, Product Improvement Working Group, and RNI Collaboration meetings.

2.7.3. Appoint a PMEL MFM to coordinate implementation of AFMETCAL requirements.

2.7.4. Coordinate commander requests for PMEL establishment, location change, or closing with AF/A4 for final approval.

## **2.8. PMEL MAJCOM Functional Managers (or equivalent).** Along with MFM responsibilities listed in TO 00-20-14, PMEL MFMs shall:

2.8.1. Coordinate and provide virtual assessment data requested by the AFMETCAL.

2.8.2. Complete AFMETCAL Evaluation Team surveys to assess MAJCOM PMEL/MCF risk.

2.8.3. Solicit root cause data concerning Proficiency Testing/Measurement Assurance Program failures and provide to AFMETCAL Evaluation Team when requested.

2.8.4. Coordinate and approve corrective action plans resulting from AFMETCAL certification assessment failures, which are in pending status.

2.8.4.1. Advocate for mobile training team or subject matter expert assistance as required to resolve proficiency, quality assurance, or management deficiencies.

2.8.4.2. Coordinate Civil Engineering Maintenance, Inspection, and Repair Team Heating and Air Conditioning assistance as required.

2.8.5. Review AFI 21-113 Self-Assessment Communicator quarterly for command PMELs/MCFs using the Management Information Control Toolset (Reference, <https://mict.us.af.mil>)

2.8.5.1. Provide assistance to PMELs/MCFs to resolve open observations and deficiencies.

2.8.5.2. Ensure PMELs/MCFs update Management Information Control Toolset self-assessment checklist to reflect accurate status.

2.8.6. Plan, validate, and forecast command formal and/or enroute training requirements.

2.8.7. Advocate for PMEL operation, facility, and environmental control system funding.

2.8.8. Provide PMEL/MCF data as requested by the AFMETCAL Repair Network Manager. Validate RNI Capability and Capacity data by the 10th of every month.

2.8.9. Prioritize command PMEL support equipment requirements using the AFMETCAL Logistics Summary Report received from AFMETCAL Plans & Analysis Section.

**2.9. Owning PMEL Commanders (or equivalent).** This section is applicable to all unit commanders (or equivalent) who own and operate PMELs/MCFs. Commanders shall:

2.9.1. Ensure PMELs/MCFs are operated and maintain certification IAW this AFMAN and TO 00-20-14 to provide calibration and maintenance support for TMDE operated by users within their area of responsibility. **(T-1)**.

2.9.2. Ensure new and updated PMEL facility designs are coordinated with the local Civil Engineering unit and incorporate the requirements IAW Facilities Criteria 4-218-01F, *Air Force Criteria for Precision Measurement Equipment Laboratory Design and Construction*. **(T-1)**.

2.9.3. Coordinate any PMEL establishment, location change or closing with AFMETCAL and owning MAJCOM. **(T-2)**.

2.9.4. Provide support to AF activities, sister services, other federal agencies, contractors (authorized to receive such support) and security assistance programs under the guidelines of AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*; AFI 99-103, *Capabilities Based Test and Evaluation* and this AFMAN. **(T-2)**.

**2.10. TMDE Flight Chief (or equivalent).** The TMDE Flight Chief/PMEL Manager (referred to as Flight Chief for the remainder of this document) is the senior on-site manager responsible for the overall PMEL, Management System, Quality Program and Production Control functions.

AFPSL management requirements are outlined in TO 00-20-14 and the contract Performance Work Statement. Along with the applicable general Flight Chief responsibilities in AFI 21-101 and responsibilities listed in TO 00-20-14, the Flight Chief shall:

- 2.10.1. Operate and maintain certified PMELs IAW this AFMAN, TO 00-20-14, and AFI 21-101 to provide calibration and maintenance support for TMDE operated by users within the PMEL area of responsibility. **(T-1)**.
- 2.10.2. Ensure the PMEL is maintained in a condition that facilitates effective mission performance. **(T-1)**. This includes ensuring adequate facility environmental system support is provided to meet equipment calibration and verification requirements. **(T-2)**.
- 2.10.3. Organize and operate the PMEL so permanent, temporary and mobile facilities meet the requirements of this AFMAN and TO 00-20-14. **(T-1)**.
- 2.10.4. Ensure TMDE scheduled into the PMEL is calibrated and certified IAW the requirements of this AFMAN, TO 00-20-14, CMS TOs, TO 33K-1-100-1, and TO 33K-1-100-2. **(T-1)**.
- 2.10.5. Ensure the PMEL maintains a TMDE Availability Rate of 94 percent or higher and is tracked in the PMEL Automated Management System (PAMS) or equivalent MIS. **(T-3)**.
- 2.10.6. The Flight Chief shall develop and document an Overdues Rate Goal in the Quality Manual. **(T-3)**. This goal should be based on local requirements, Defense Logistics Agency or Transportation Management Office shipping constraints, or any other factors deemed necessary. Ensure the overdue TMDE percentage shown on the PAMS Daily Workload Report does not have a maximum requirement. This key metric is a major contributing factor to the Equipment Availability Rate.
- 2.10.7. Establish a Management System IAW TO 00-20-14 and command directives. **(T-1)**.
- 2.10.8. Establish a Quality Program IAW TO 00-20-14 and command directives. **(T-1)**. The PMEL Quality Program and AFMETCAL Program evaluate processes used to validate the technical proficiency and capability of the PMEL.
- 2.10.9. Designate a Quality Manager and alternate(s) to administer the Quality Program. The Quality Manager (however named) directly reports to the Flight Chief and shall have direct access to the Flight Chief and Lab Chief. **(T-1)**.
- 2.10.10. Appoint PMEL Quality Assurance (QA) Evaluator(s) with recommendation from Quality Manager and/or Lab Chief. **(T-1)**.
- 2.10.11. Designate a PMEL Section Chief (however named) and alternate(s) to continuously evaluate and manage technical operations. **(T-1)**.
- 2.10.12. Participate in the Proficiency Testing/Measurement Assessment Program IAW TO 00-20-14 and command directives. **(T-1)**.
- 2.10.13. Establish a PMEL logistics operation to provide customer service and support to on-/off-base TMDE customers. **(T-3)**. This section will consist of scheduling, supply, transportation, customer relations, and other support functions as deemed necessary by the Flight Chief. **(T-3)**.

- 2.10.14. Provide data as defined on MetWeb® or as requested by the AFMETCAL Repair Network Manager through the PMEL MFM to support RNI operations. **(T-1)**.
- 2.10.15. Coordinate PMEL facility design and construction proposals of facility project documentation with the local Civil Engineering unit to assure requirements IAW Facilities Criteria 4-218-01F. **(T-1)**. Submit plans to AFMETCAL prior to implementation. **(T-1)**.
- 2.10.16. Use PAMS (or other approved MIS) to control TMDE and document maintenance actions. **(T-2)**.
- 2.10.16.1. For non-PAMS PMELs, submit the PMEL Report, RCS: HAF-ILM (SA) 7808, and the PMEL Inventory Listing, RCS: HAF-ILM (A) 9450, IAW TO 00-20-14, and ensure all data is accurate and submitted on time. **(T-2)**.
- 2.10.16.2. Maintain the security of the information in PAMS/MIS by limiting access and reset access codes when compromise is suspected. **(T-2)**.
- 2.10.17. Initiate and maintain an effective PMEL safety program that includes a fire safety program IAW AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*. **(T-1)**.
- 2.10.18. Ensure classified TMDE is protected IAW AFI 16-1404, *Air Force Information Security Program*. **(T-0)**.
- 2.10.19. Document and coordinate PMEL Activity Summary IAW TO 00-20-14 and this AFMAN. **(T-3)**.
- 2.10.20. Document PMEL tool and equipment management requirements in the Quality Manual. **(T-2)**.
- 2.10.20.1. PMEL CTKs are typically non-dispatchable. At a minimum, PMELs shall define procedures to ensure AFI 21-101 compliance with tool inventory and accountability requirements. **(T-2)**.
- 2.10.20.2. Special attention must be given to dispatchable PMEL CTKs when performing on-site calibrations such as jet engine test stands, hydraulic test stands, or any other TMDE which may pose a FOD hazard to the customer. CTKs (if dispatched), test equipment, connectors, adapters, and other accessories shall be inventoried prior to and departing when performing on-site calibrations. **(T-1)**.
- 2.10.20.3. PMELs are not required to maintain a rag control program. Flight Chiefs may incorporate a rag control program if any repair areas in the PMEL are deemed a FOD-critical area. FOD-critical areas shall be documented in the Quality Manual. **(T-3)**.
- 2.10.20.4. PMELs do not have a tool room or support section. Element CTKs are considered secure if access is limited to the calibration area.
- 2.10.20.5. PMELs shall establish and designate storage locations for waveguides, attenuators, fittings, connectors, adapters, cables and hoses. These are not required to be inventoried in a PMEL. **(T-3)**.
- 2.10.21. Appoint CTK custodians in the PMEL. **(T-3)**.
- 2.10.22. Approve the monthly QA Process Review Plan. **(T-3)**.

**2.11. PMEL Quality Manager.** The PMEL Quality Manager shall:

- 2.11.1. Manage the PMEL Quality Program IAW TO 00-20-14. **(T-1)**.
- 2.11.2. Recommend highly qualified PMEL QA Evaluator(s) to perform quality reviews; process reviews and facilitate root cause analysis sessions to the Flight Chief. **(T-3)**.
- 2.11.3. Develop and maintain a QA Training Plan to train PMEL QA Evaluators and augmentees. **(T-3)**.
- 2.11.4. Ensure PMEL QA Evaluators evaluate PMEL cyber hygiene and discipline practices in conjunction with process reviews and annual reviews. **(T-1)**. **Note:** Refer to TO 00-20-14 Quality Program requirements.
- 2.11.5. Document and facilitate trend analysis IAW TO 00-20-14. **(T-3)**. Flight Chiefs are the final approval for implementing trend analysis corrective actions.
- 2.11.6. Conduct monthly Process Review Plan meeting with Flight Chief and Quality Assurance Evaluators, and consider including other members as necessary to ensure effective Measurement Area Discipline coverage in order to assess laboratory proficiency and capability. **(T-3)**. The Process Review Plan is the PMEL's process for meeting the MSEP's monthly Evaluation and Inspection Plan requirement in AFI 21-101. Process Review Plan documentation shall be incorporated into the PMEL Activity Summary. **(T-3)**.
- 2.11.7. Schedule and perform Evaluator Proficiency Evaluations on assigned QA Evaluators and QA augmentees IAW TO 00-20-14. **(T-1)**.
- 2.11.8. As applicable, manage PMEL Product Improvement Program IAW AFI 21-101. **(T-3)**. Perform monthly review on all Air Force Technical Order (AFTO) Forms 22 and AFTO Forms 45 submitted by the PMEL. **(T-3)**. Ensure additional documentation requested by AFMETCAL is submitted.
- 2.11.9. Manage PMEL Technical Order Distribution Office IAW TO 00-5-1, *Air Force Technical Order System*, 00-5-15, *Air Force Time Compliance Technical Order Process* and AFI 21-101. **(T-1)**. **Note:** This may also be managed by PMEL Logistics.
- 2.11.10. Participate in MSEP as required by local Maintenance Group Commander, or equivalent. **(T-3)**.
- 2.11.11. PMELs will document PMEL QA actions in PAMS IAW TO 00-20-14. **(T-1)**. **Note:** PMELs are not required to use the Logistics Evaluation Assurance Program QA database to document Quality Reviews, Process Reviews, and Evaluator Proficiency Evaluations.
- 2.11.12. PMEL QA Evaluators may be delegated responsibility from Maintenance Group QA to perform PMEL special inspections (CTKs, TOs, hazardous material). PMELs shall use Logistics Evaluation Assurance Program to document Special Inspections considered part of the MSEP. **(T-3)**.

**2.12. PMEL Section Chief (Lab Chief).** The Lab Chief is responsible to manage laboratory production demands to meet 94 percent Equipment Availability Rate Standard. The Lab Chief manages the PMEL training program and ensures maximum task coverage and technician proficiency. Along with the applicable general Section Chief responsibilities listed in AFI 21-101, the Lab Chief shall:

2.12.1. Establish a PMEL turnaround time goal for 30-day turnaround time or workable status turnaround time and document in the quality manual. Contractor-operated PMELs must meet turnaround time requirements mandated in the applicable Performance Work Statement. **(T-3)**.

2.12.2. Ensure TMDE is worked using the input priority system defined in TO 00-20-14 and AFI 21-101. **(T-1)**.

2.12.3. Ensure all TMDE in deferred and in-maintenance status is reviewed once every seven calendar days and PAMS/MIS accurately reflects correct maintenance status for all TMDE applicable to the laboratory. **(T-1)**.

2.12.4. Coordinate with AFMETCAL through the PMEL MFM prior to turn-in or redistribution of AFMETCAL-procured standards (including Rapid Assistance Support for Calibration, Transportable Field Calibration Unit, Jet Engine Test Stand Calibrator, Portable Automatic Test Equipment Calibrator) as well as TMDE from other sources which gives the PMEL a capability identified by a Note Code listed in TO 33K-1-100-2. **(T-1)**.

2.12.5. Ensure Rapid Assistance Support for Calibration, Jet Engine Test Stand Calibrator, Portable Automatic Test Equipment Calibrator and Transportable Field Calibration Unit are maintained as complete sets and available for immediate peacetime or wartime deployment. **(T-1)**.

2.12.6. Ensure technicians who certify TMDE are qualified, trained and proficient to do so. **(T-1)**.

2.12.6.1. Submit annual calls and “out of cycle” requests for technical training course quotas through the MFM, as needed. Request Mobile Training Team, PMEL subject matter expert, or AFMETCAL assistance through the MFM. **(T-2)**.

2.12.6.2. Fulfill applicable supervisor responsibilities IAW AFI 36-2651, *Air Force Training Program*. **(T-1)**.

2.12.7. Ensure good housekeeping practices are established and maintained. No eating, drinking, smoking or use of other tobacco products shall be permitted in the calibration and repair areas. **(T-1)**.

2.12.8. Minimize the location of purely administrative functions within the calibration and repair area of the PMEL. **(T-3)**. **Note:** Completion of the necessary forms used for certification is not considered an administrative function.

2.12.9. Establish a system to control test fixtures IAW TO 00-20-14. **(T-1)**.

2.12.10. Coordinate calibration support with medical equipment personnel IAW AFI 41-201, *Managing Clinical Engineering Programs*; and AFMAN 41-209, *Medical Logistics Support*. **(T-1)**.

2.12.11. Ensure PMEL is operated IAW TO 00-20-14, Section 3, *Operation*. **(T-1)**.

2.12.12. Establish the Physical/Dimensional and Electronics Elements in the PMEL and appoint NCOICs. The PMEL shall be organized with no more than two elements. **(T-3)**.

**2.13. Element Noncommissioned Officer In Charge (NCOIC).** The Physical/Dimensional and Electronics Element NCOICs shall:



- 2.13.1. Ensure TMDE is worked by input priority followed by a first-in, first-out concept. (T-1).
- 2.13.2. Track, plan, and coordinate on-site and/or off-base calibrations with customers. (T-3).
- 2.13.3. Ensure accuracy and completeness of data entered in PAMS/MIS to include the maintenance time. (T-1).
- 2.13.4. Manage element training to ensure optimum task proficiency and Measurement Area Discipline capability. (T-1).
- 2.13.5. Train and/or assign trainers and perform trainer responsibilities IAW AFI 36-2651. (T-1).
- 2.13.6. Process items of TMDE identified as being beyond the PMEL capability to repair or calibrate IAW TO 00-20-14, TO 00-20-3, *Maintenance Processing of Repairable Property and the Repair Cycle Asset Control System*; TO 00-25-107; and AFI 23-101, *Air Force Materiel Management*. (T-1).
- 2.13.7. Participate in and/or lead root cause analysis sessions resulting from PMEL QA Evaluator identified non-conformity. (T-3).

**2.14. NCOIC, PMEL Logistics.** The PMEL Production Control Section has been redesignated as PMEL Logistics. The PMEL Logistics NCOIC shall:

- 2.14.1. Establish a TMDE Coordinator training program. (T-1).
- 2.14.2. Establish procedures for turn-in and pick up of TMDE. (T-1).
- 2.14.3. Assist Owning Workcenter (OWC) personnel in locating TMDE to meet their mission requirements and avoid abuse of the TMDE priority system. (T-2). The OWC should attempt to meet mission requirements prior to requesting emergency or mission essential support.
- 2.14.4. Establish a customer relations program to provide technical assistance and advice and to obtain customer feedback on TMDE matters. (T-3). **Note:** The program should include visits, telephone, email contact or locally-developed customer survey letters sent to all OWC customers annually. Maintain records documenting these visits, contacts, and surveys. (T-3).
- 2.14.5. Oversee PMEL Logistics Specialists as assigned by the Flight Chief. Logistics specialists may consist of TMDE Schedulers, TMDE Shipping/Receiving Specialists, Supply Support Specialists, and/or PMEL Programs Specialists. The Flight Chief shall determine the Logistics Section overhead depending on the PMEL workload, customers supported, or other factors. (T-3).
- 2.14.6. **PMEL Logistics Specialists shall:**
  - 2.14.6.1. Schedule TMDE using the priority system established in TO 00-20-14 and AFI 21-101. (T-1).
  - 2.14.6.2. Use PAMS or alternate MIS to process TMDE for maintenance. (T-1).
  - 2.14.6.3. Ensure the current status of all TMDE processed into the PMEL for repair and calibration is reflected in the PAMS/MIS database. (T-2).
  - 2.14.6.4. Train OWC TMDE monitors and maintain a database or log to track training events (dates, names, organizations). (T-1).

2.14.6.5. Manage shipment of TMDE and maintain a file consisting of all supporting documentation for each type of shipment. (T-2). For TMDE items requiring contract, warranty, depot or lateral calibration, repair and return, the items are processed through local Deployment and Distribution Flight, Traffic Management Element IAW TO 00-20-14 and AFI 24-602V2, *Preparation and Movement of Air Force Cargo*. (T-1).

2.14.6.6. Deliver and return items of TMDE that are fragile or subject to environmental damage and require support from other laboratories by courier. (T-2).

2.14.6.7. Manage the flight's maintenance-supply actions IAW AFI 23-101 and AFMAN 23-122. (T-1). Provide assistance to other flight personnel to resolve supply problems.

2.14.6.8. Maintain accuracy of the locally managed addendum to 33K-1-100-2 IAW TO 00-20-14, Section 3, *Operation*. (T-3).

**2.15. ALC Metrology and Calibration Flight (MCF).** MCFs shall be operated and maintained IAW this AFMAN and TO 00-20-14, Section 13. (T-2)

2.15.1. **Depot Maintenance on-site TMDE Support.** ALC on-site calibration support is provided through a MCF, which is a specialized TMDE calibration activity located at each ALC. The MCF obtains AFMETCAL Program traceability through support from the Type IIA PMEL assigned to the Logistics Readiness Squadron under each Air Base Wing

2.15.2. **MCF Operation.** The MCF maintains, calibrates, and certifies TMDE traceable through the AFPSL to the NIST, or other AFMETCAL approved sources. The MCF performs on-site calibration, sustainment, and repair using laboratory equipment and calibration standards, a Portable Automatic Test Equipment Calibrator, or a Jet Engine Test Stand Calibrator. The MCF provides support to items identified as MCF support in the calibration authority field of the applicable CMS, as well as special capabilities identified by a Note Code listed in T.O. 33K-1-100-2. The MCF provides unique sustainment support of aircraft, avionics, missiles, ground systems, and/or other equipment on base or in a specified geographic region. The MCF coordinates with ALC production partners for all TMDE support including: repair, modification, initial calibration, and additional workload definitions outlined in **Chapter 13** of T.O. 00-20-14. The MCF is assigned to each ALC, but is functionally accountable through the Maintenance Division (AFMC/A4M) to AFMETCAL for certification, engineering and technical support, and operations policy.

2.15.3. **MCF Flight Chief/Director.** The MCF Flight Chief is synonymous with PMEL Manager in TO 00-20-14 and Flight Chief in this AFMAN. The MCF Chief is the single focal point responsible for the AFMETCAL internal quality program and management system effectiveness and will:

2.15.3.1. Ensure all assigned TMDE is calibrated under the guidance of the AFMETCAL program. (T-1). TMDE owned and used by contractors performing under an AF contract on an AF installation to support an AF mission is considered leased or borrowed equipment when determining calibration requirements. Note: Leased equipment as defined in T.O. 00-20-14 is where leased equipment is obtained under contract and payment is made for its use. Borrowed equipment is obtained without financial consideration for its use. There is no difference in its application in support of the mission.

- 2.15.3.2. Ensure technicians are qualified to perform PMEL enterprise-wide training tasks and track all qualification and certification tasks. **(T-1)**.
- 2.15.3.3. Provide data as defined on MetWeb® or as requested by the AFMETCAL Repair Network Manager through the PMEL MFM to support RNI operations. **(T-1)**.
- 2.15.3.4. Use PAMS (or other approved MIS) to control TMDE and document maintenance actions. **(T-2)**.
- 2.15.3.5. Maintain security of the information in PAMS/MIS by limiting system access and resetting access codes when compromise is suspected. **(T-2)**.
- 2.15.3.6. Initiate and maintain an effective safety program that includes a fire safety program IAW AFMAN 91-203. **(T-1)**.
- 2.15.3.7. Ensure classified TMDE is protected IAW AFI 16-1404. **(T-0)**.
- 2.15.3.8. Ensure TMDE scheduled into the MCF is calibrated and certified IAW the requirements of this AFMAN, TO 00-20-14, CMS TOs, TO 33K-1-100-1, and TO 33K-1-100-2. **(T-1)**.
- 2.15.3.9. Ensure TMDE monitors are properly trained, and maintain a database or log to track training events (dates, names, organizations). **(T-1)**.
- 2.15.3.10. Publish a monthly MCF Activity Summary and route it to ALC Maintenance Support Group for inclusion in routine metrics (e.g., Quality Monthly Reports). The activity summary format shall comply with TO 00-20-14 (applicable portions of the PMEL Activity Summary) and meet local and/or AF Sustainment Center requirements (e.g., Art of the Possible). **(T-3)**.
- 2.15.3.11. Designate an MCF Process Evaluation Team (PET) Manager to administer the Quality Program outlined in TO 00-20-14 and this AFMAN. The PET Manager and assigned PET members shall report directly to the MCF Chief. **(T-2)**.
- 2.15.3.11.1. The purpose of the Quality Program in the AFMETCAL Program is to provide an overall picture of capability and to ensure safety, accuracy, reliability, and traceability of TMDE. The Quality Program is intended to focus on overall calibration processes versus individual equipment deficiencies (technicians, supervisors, work leaders, and PET members find and fix individual defects in the course of their daily activities). This is accomplished through the evaluation of quality, process and annual reviews, measurement area discipline risk analysis; and the completion of root cause and trend analysis.
- 2.15.3.11.2. Personnel Evaluations, Quality Verification Inspections and Evaluator Proficiency Evaluations will not be performed on calibration and certification tasks by ALC QA personnel. Process and Quality Reviews are used to determine technician proficiency.
- 2.15.3.11.3. Provide all nonconformity data to allow the PMEL Management System to conduct trend analysis IAW TO 00-20-14. **(T-3)**. Flight Chiefs are the final approval for implementing trend analysis corrective actions.

- 2.15.3.11.4. Conduct a monthly Process Review Plan meeting with the Flight Chief, Lab Chief, and Element Supervisors to ensure effective measurement area discipline coverage in order to assess MCF proficiency and capability. **(T-3)**.
- 2.15.3.11.5. Schedule and perform Evaluator Proficiency Evaluations on assigned PET members and PET augmentees IAW TO 00-20-14. **(T-1)**.
- 2.15.3.11.6. Ensure ALC QA Personnel Evaluations and Quality Verification Inspections will be performed on other logistics and maintenance actions within the MCF to include, but not limited to, production control, maintenance supply actions, and technician functions not associated with calibration and certification tasks. Supply related personnel evaluations and Quality Verification Inspections will be recorded in Logistics Evaluation Assurance Program, IAW AFI 20-112, *Logistics Readiness Quality Assurance Program*.
- 2.15.3.12. Establish an MCF Logistics Section.
- 2.15.4. The MCF Logistics Section shall:**
- 2.15.4.1. Use PAMS or other approved MIS to control TMDE processed for maintenance. **(T-2)**.
- 2.15.4.2. Ensure the current status of all TMDE processed into the MCF for repair and calibration is reflected in the PAMS/MIS database. **(T-1)**.
- 2.15.5. Manage shipment of TMDE. TMDE items needing contract, warranty, depot or lateral calibration, repair and return are processed IAW TO 00-20-14, and AFI 24-602V2. **(T-1)**.
- 2.15.6. Establish a Maintenance Supply Support Function. Maintenance Supply Support shall manage the flight's maintenance-supply actions IAW AFI 23-101 and provide assistance to other flight personnel to resolve supply problems. **(T-1)**.
- 2.15.7. Designate a Technical Management Function (however named) whose purpose is to act as the focal point on matters related to technical engineering applications, reliability, and logistics support for TMDE calibrations and sustainment actions supported by the MCF. Personnel assigned to this function shall report directly to the MCF Chief and coordinate with AFMETCAL/AFPSL to provide metrology guidance and direction to solve operational, maintenance and repair problems for the MCF. **(T-2)**.
- 2.15.7.1. The function's members apply advanced technical knowledge to solve unusually complex problems. They may direct work leaders and technicians to assist with these duties.
- 2.15.7.2. Perform monthly review on all AF Technical Order (AFTO) Forms 22 and 45s submitted by the MCF. **(T-3)**. Ensure additional documentation requested by AFMETCAL is submitted.
- 2.15.8. Designate a Production Superintendent/Director of Operations (however named). The MCF Production Superintendent shall report directly to the MCF Chief and shall:
- 2.15.9. Plan workload, coordinate customer equipment constraints, and provide an interface between OWC personnel and MCF technicians. **(T-2)**.

2.15.10. Ensure all TMDE in deferred and in-maintenance status is reviewed once every seven calendar days and PAMS/MIS accurately reflects correct maintenance status for all TMDE applicable to the MCF. **(T-1)**.

2.15.11. Assign element supervisors to oversee assigned MCF calibration/sustainment areas. They will lead the day-to-day operations of their respective elements. The elements provide calibration and sustainment support for TMDE assigned to the MCF.

2.15.11.1. Assist in technical matters, writing AFTO Forms 22, and providing on-the-job training. **(T-3)**.

2.15.11.2. Monitor training compliance and have responsibility to coordinate on the job training, and ensure training is developed and documented. **(T-3)**.

2.15.11.3. Employ the Flight Maintenance Standardization program and local training program in coordination with the PET Manager, Technical Management, and MCF Chief. **(T-3)**.

2.15.11.4. Ensure technicians who certify TMDE are qualified, trained and proficient to do so. **(T-1)**.

2.15.11.5. Ensure TMDE is calibrated by input priority followed by a first-in, first-out concept. **(T-1)**.

2.15.11.6. Track, plan, and coordinate on-site and/or off-base calibrations with customers. **(T-3)**.

2.15.11.7. Ensure accuracy and completeness of data entered in PAMS/MIS to include maintenance time. **(T-1)**.

2.15.11.8. Manage element training to ensure optimum task proficiency and measurement area discipline capability. **(T-1)**.

2.15.11.9. Train and/or assign trainers and perform trainer responsibilities IAW AFI 36-2651. **(T-1)**.

2.15.11.10. Process items of TMDE identified as being beyond the MCF capability to repair or calibrate IAW TO 00-20-14, TO 00-20-3, TO 00-25-107 and AFI 23-101. **(T-1)**.

**2.16. All TMDE Owners and Users.** As determined by the AFMETCAL Program, TMDE used to make quantitative measurements as directed by applicable AF directives which have an effect on the accuracy and/or reliability of AF systems and subsystems shall be calibrated. **(T-1)**. TMDE user responsibilities are listed in TO 00-20-14, and the TMDE Management Guidelines are provided in AFI 21-101.

## Chapter 3

### OFFICIAL ENLISTED DUTY TITLES FOR AIR FORCE SPECIALTY CODE 2P0X1

**3.1. Introduction.** The purpose of this chapter is to provide the official enlisted duty titles and structure for AFSC 2P0X1 personnel.

**3.2. TMDE Flight Official Duty Titles.** The AFSC 2P0X1 (PMEL) Enlisted Development Team has standardized the enlisted duty titles for AFSC 2P Airmen. Specific responsibilities are defined in [Chapter 2](#) of this AFMAN. The following enlisted duty titles shall be used if assigned to the PMEL (other duty titles are not authorized):

3.2.1. **Flight Chief, TMDE.** Assistant, Superintendent, or any other titles are not authorized. (T-3).

3.2.2. **Quality Manager, PMEL.** (T-3) .

3.2.3. **QA Evaluator, PMEL.** (T-3) .

3.2.4. **Section Chief, PMEL.** Predominantly referred to as Lab Chief in this AFMAN and Technical Manager in TO 00-20-14. (T-3).

3.2.4.1. **NCOIC, Physical/Dimensional Element.** (T-3) .

3.2.4.1.1. **Supervisor, Physical/Dimensional.** Use for AFSC 2P Noncommissioned Officers (NCO) and above who rate on any AFSC 2P Airmen and/or provide training within the Physical/Dimensional Element or PMEL; may also be used for Senior Airman who have graduated Airman Leadership School and supervise Airmen. (T-3).

3.2.4.1.2. **Technician, Physical/Dimensional.** Use for PMEL 5-levels predominantly calibrating or processing TMDE using TO 33K5-33K6 series calibration procedures. (T-3).

3.2.4.2. **NCOIC, Electronics Element.** (T-3) .

3.2.4.2.1. **Supervisor, Electronics.** Use for AFSC 2P NCOs and above who rate on any AFSC 2P Airmen and/or provide training within the Electronics Element or PMEL; may also be used for Senior Airman who have graduated Airman Leadership School and are supervising Airmen. (T-3).

3.2.4.2.2. **Technician, Electronics.** Use for PMEL 5-levels predominantly calibrating TMDE using TO 33K1-33K4 and/or 33K8-33K9 series calibration procedures. (T-3).

3.2.4.3. **PMEL Apprentice.** Use for all PMEL 3-level Airmen until upgraded to 5-level. (T-3).

3.2.5. **NCOIC, PMEL Logistics.** PMEL Logistics is referred to as Production Control by the ALC Type IIA PMELs or MCF and in AFI 21-101.

3.2.5.1. **TMDE Scheduler.** TMDE Schedulers may be assigned to perform other duties to include: shipping and receiving, supply and/or programs management. (T-3).

3.2.5.2. **TMDE Shipping/Receiving Specialist (if assigned).** (T-3).

3.2.5.3. **PMEL Supply Specialist (if assigned).** (T-3).

3.2.5.4. **PMEL Programs Specialist (if assigned). (T-3).**

3.2.5.5. **PMEL Logistics Specialist.** Used for positions incorporating all or some of the above roles. Logistics specialists may be assigned to perform all PMEL logistics responsibilities.

WARREN D. BERRY, Lieutenant General, USAF  
DCS/Logistics, Engineering, & Force Protection

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 21-1, *Maintenance of Military Materiel*, 1 Aug 2018

AFMAN 23-122, *Materiel Management Procedures*, 14 Dec 2016

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFI 20-112, *Logistics Readiness Quality Assurance Program*, 6 Oct 2017

AFI 20-117, *Repair Network Management*, 22 Aug 2018

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 16 Jan 2020

AFI 23-101, *Air Force Materiel Management*, 12 Dec 2016

AFI 24-602V2, *Preparation and Movement of Air Force Cargo*, 17 May 2018

AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*, 18 Oct 2013

AFI 16-1404, *Air Force Information Security Program*, 29 May 2015

AFI 33-360, *Publication and Forms Management*, 1 Dec 2015

AFI 36-2651, *Air Force Training Program*, 3 Jan 2019

AFI 41-201, *Managing Clinical Engineering Programs*, 10 Oct 2017

AFI 63-101/20-101, *Integrated Life Cycle Management*, 9 May 2017

AFI 90-201, *The Air Force Inspection System*, 20 Nov 2018

AFI 99-103, *Capabilities Based Test and Evaluation*, 6 Apr 2017

AFMAN 41-209, *Medical Logistics Support*, 4 Jan 2019

AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 11 Dec 2018

AFSCMAN 21-102, *Depot Maintenance Management*, 11 Mar 2019

Air Force Federal Acquisition Regulation Supplement Part 5345, *Government Property*

Defense Acquisition Regulation System Part 245, *Government Property*, 15 Oct 2009

DoDI 4151.20, *Depot Maintenance Core Capabilities Determination Process*, 4 May 2018

Federal Aviation Regulation **Part 45**, *Government Property*, 2 Apr 2019

Facilities Criteria 4-218-01F, *Air Force Criteria for Precision Measurement Equipment Laboratory Design and Construction*, 28 Oct 2015

MIL-STD-1839, *Calibration and Measurement Requirements*, 31 Dec 1986

MIL-HDBK-1839A, *Department of Defense Handbook Calibration and Measurement Requirements*, 27 November 2000

TO 00-5-1, *AF Technical Order System*, 15 Feb 2019



TO 00-5-15, *Air Force Time Compliance Technical Order Process*, 29 Sep 2017

TO 00-20-3, *Maintenance Processing of Reparable Property and the Repair Cycle Asset Control System*, 10 Jul 2017

TO 00-20-14, *Air Force Metrology and Calibration Program*, 31 Jan 2019

TO 00-25-107, *Maintenance Assistance*, 1 Oct 2015

TO 33K-1-100-1, *Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries*, 1 Dec 2016

TO 33K-1-100-2, *TMDE Calibration Notes, Calibration Interval, Technical Order and Work Unit Code Reference Guide*, 1 May 2019

### ***Prescribed Forms***

None

### ***Adopted Forms***

AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

AF Form 847, *Recommendation for Change of Publication*

### ***Abbreviations and Acronyms***

**AF**—Air Force

**AFI**—Air Force Instruction

**AFLCMC**—Air Force Life Cycle Management Center

**AFMAN**—Air Force Manual

**AFMC**—Air Force Materiel Command

**AFMETCAL**—Air Force Metrology and Calibration

**AFPSL**—Air Force Primary Standards Laboratory

**AFSC**—Air Force Specialty Code

**AFTO**—Air Force Technical Order

**ALC**—Air Logistics Complex

**CMS**—Calibration and Measurement Summary

**CTK**—Consolidated Tool Kit

**DoD**—Department Of Defense

**FOD**—Foreign Object Damage

**IAW**—In Accordance With

**MAJCOM**—Major Command

**MCF**—Metrology and Calibration Flight

**MFM**—MAJCOM Functional Manager  
**MIL-HDBK**—Military-Handbook  
**MIL-STD**—Military-Standard  
**MIS**—Maintenance Information System  
**MSEP**—Maintenance Standardization and Evaluation Program  
**NCO**—Non Commissioned Officer  
**NCOIC**—Non Commissioned Officer In-Charge  
**NIST**—National Institute of Standards and Technology  
**OWC**—Owning Workcenter  
**PAMS**—Precision Measurement Equipment Laboratory Management  
**PET**—Process Evaluation Team  
**PGM**—Product Group Manager  
**PM**—Program Manager  
**PMEL**—Precision Measurement Equipment Laboratory  
**QA**—Quality Assurance  
**RNI**—Repair Network Integration  
**TMDE**—Test, Measurement, and Diagnostic Equipment  
**TO**—Technical Order

### *Terms*

**Air Force Metrology and Calibration (AFMETCAL)**—Refers to measurement standards and TMDE, professional and technical metrologists, performing work centers, a system of worldwide laboratory facilities, TMDE users, calibration data, and integrated planning. The program provides for maintenance and calibration of TMDE to verify the reliability and ensure the accuracy of systems, subsystems, and equipment.

**Air Force Primary Standards Laboratory (AFPSL)**—The highest level calibration standards laboratory in the AFMETCAL Program. It maintains AF measurement standards certified by the NIST or other nationally recognized standards. The AFPSL (located at Heath, Ohio) uses these measurement standards to calibrate base level or PMEL measurement standards and equipment for AF customers.

**Alignment**—The physical, electrical, or software action that enables a calibration technician to adjust TMDE so that performance will be within required operational parameters and accuracies.

**Allowance Source Codes**—Allowance Source Codes indicate the end item application, grouped into specific support categories according to the intended use of the equipment.

**Calibration**—A comparison between equipment items, one of which is a measurement standard of known accuracy, to detect, correlate, adjust and report any variations in the accuracy of the other item.

**Calibration and Measurement Requirement Summary**—A three-category, inline summary of measurement parameters. A Calibration and Measurement Requirement Summary identifies all measurement requirements within a specific system or item of equipment. The Calibration and Measurement Requirement Summary further displays the contractors' proposed solutions for maintaining the system measurement requirements within the stated limits. It is also used to identify the need for new calibration standards.

**Calibration and Measurement Summary (CMS)**—A technical order which identifies calibration support necessary to ensure the operational readiness of a specific weapon system, subsystem or mission. The summary describes the calibration concept and is the calibration authority for the applicable weapon system, weapon subsystem or mission.

**Certification**—The documented designation that standards and TMDE have been calibrated and meet established technical requirements. When used to refer to a calibration laboratory (PMEL or AFPSL), certification means the laboratory fulfills AFMETCAL assessment criteria.

**Cyber Hygiene**—A practice and steps users of computers and other devices take to maintain system health and improve online security.

**Equipment Availability Rate**—is a measure of the percentage of total operational, calibrated TMDE (on a periodic interval) capable of performing its designed function and available for use by the TMDE owner. Equipment Availability Rate is expressed mathematically as the total number of operational, periodically calibrated TMDE available to a customer divided by the total number of periodically calibrated TMDE in the inventory.

**MAJCOM (or equivalent)**—This term refers to all Air Force Major Commands (MAJCOMs) and includes the Air National Guard, Field Operating Agencies, and Direct Reporting Units.

**Metrology**—The science or system of weights and measures used to determine conformance to technical requirements. This includes the development of standards and systems for absolute and relative measurements.

**MetWeb®**—MetWeb® provides dynamic data applications for use by the AF Metrology community. This primarily includes personnel assigned to Precision Measurement Equipment Laboratories (PMEL) and their MAJCOM Functional Managers (MFM).

**Node Manager**—The Node Manager oversees and manages all shop activities pertaining to a specific Repair Node. The objective of the Node Manager is the execution of activities required to produce a quality product on time and at cost.

**Precision Measurement Equipment Laboratory (PMEL)**—A laboratory authorized to own and use AF base measurement standards to maintain working standards. The working standards are used along with PMEL-owned TMDE to maintain (troubleshoot, align, repair, and calibrate) TMDE designated as PMEL responsibility.

**Repair Network Integration (RNI)**—Initiative to develop an enterprise-wide repair capability managed by a single process owner providing integrated support to the warfighter. The end goals of RNI are to enable rational management of the entire repair infrastructure; improve investment decision making; rationally allocate manpower for the repair network; develop standardized and repeatable management processes; and lower total system costs while increasing maintenance's ability to respond to changing AF requirements with greater agility and effectiveness.

**Support Equipment Requirements Document**—A document that list all equipment types: Mission Equipment, TMDE, Non-TMDE, Precision Measurement Equipment and Support Equipment.

**Test, Measurement, and Diagnostic Equipment (TMDE)**—Those devices used to maintain, evaluate, measure, calibrate, test, inspect, diagnose, or otherwise examine materials, supplies, equipment, and systems to identify or isolate actual or potential malfunctions, or decide if they meet operational specifications established in technical documents.

**Traceability**—The ability to relate individual measurement results to national standards or nationally accepted measurement systems through an unbroken chain of comparisons all having stated uncertainties.

**Types of Standards Used in Measurement and Testing**—The term "standard" means equipment or physical constants serving as the basic means by which we derive accurate and traceable precision measurements. These standards include:

- a. National Measurement Standards**—Equipment or physical constants identified by NIST to serve as a basic measurement reference throughout the United States.
- b. Air Force Measurement Standards**—Equipment certified by NIST or AFMETCAL-approved sources, and used by the AFPSL as a basic measurement reference for the AF.
- c. Air Force Base Measurement Standards**—Equipment certified by the AFPSL or AFMETCAL-approved sources for use by an AF PMEL as a measurement reference.
- d. Calibration Systems**—A collection of calibration standards and ancillary equipment uniquely configured to support a specific workload or multiple measurement parameters. (Calibration Systems may be developed for use in either an automated or manual mode. AFMETCAL retains engineering and configuration authority for Calibration Systems identified with an AFMETCAL cage code.)
- e. Working Standards**—PMEL-certified TMDE used to calibrate other TMDE.