BY ORDER OF THE
SECRETARY OF THE AIR FORCE

DEPARTMENT OF THE AIR FORCE
MANUAL 21-113

27 DECEMBER 2023

Maintenance

AIR FORCE METROLOGY AND CALIBRATION PROGRAM MANAGEMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at **www.e-publishing.af.mil**.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: AF/A4LM

Certified by: SAF/AQD (Tymofichuk)

Supersedes: AFMAN 21-113, 29 April 2020

Pages: 29

This publication implements Air Force Policy Directive 21-1, *Maintenance of Military Materiel.* This Department of the Air Force Manual (DAFMAN) provides guidance and procedures on the United States Air Force Metrology and Calibration Program management requirements. This publication applies to all Department of the Air Force (DAF) civilian employees and uniformed members of the Regular Air Force, the Air Force Reserve, the Air National Guard, the United States Space Force, the Civil Air Patrol when conducting missions as the official Air Force Auxiliary, and those with a contractual obligation to abide by the terms of DAF publications. This manual may be supplemented at any level, but 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 DAF Form 847, *Recommendation for Change of Publication*; route DAF 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 DAFMAN 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers using DAF Form 679, *Department of the 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. All approved waivers must be sent to AF/A4LM Maintenance Policy org box: **AF.A4LM.Maintenance.Policy@us.af.mil**, within 30 days of approval, for situational

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SUMMARY OF CHANGES

This document has been substantially revised and requires complete review. Significant changes include converting to DAFMAN for applicability for both USAF and USSF. Established AFLCMC/WNM Senior Enlisted Advisor responsibilities and updated Air Force Metrology and Calibration (AFMETCAL) Evaluation Team Superintendent's. In addition, added requirements for sustainment of organic capability; Test, Measurement, and Diagnostic Equipment (TMDE) availability rate, TMDE in deferred and in-maintenance status, advocacy for Civil Engineer Maintenance Inspection and Repair Team for heating, shipping funds in accordance with annual AF Second Destination Transportation/Centrally Managed Allotment Transportation Account Code, and Product Quality Deficiency Reports for warranted centrally procured items. Finally, waiver authority has been lowered to the lowest acceptable level to support the Secretary of the Air Force and Chief of Staff of the Air Force direction in accordance with the DAFMAN 90-161.

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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, other calibration operations, personnel, equipment, and procedures to ensure systems and equipment measurements are safe, accurate, uniform, reliable, and traceable to the International System of Units through the National Institute of Standards and Technology (NIST) or AFMETCAL approved sources.

1.1.1. Test, measurement, and diagnostic equipment (TMDE) used to make or verify meaningful (quantifiable) measurements will be calibrated Technical Order (TO) 33K-1-100-1, *Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries*; TO 33K-1-100-2-1, PMEL Only - *TMDE Calibration Notes, Calibration Interval, Technical Order and Work Unit Code Reference Guide*.

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 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 establishing, planning, programming, budgeting, oversight, processes, and procedures for the AFMETCAL Program.

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

1.2.1.1. AFLCMC/WNM 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. AFLCMC/WNM makes TMDE calibration and repair responsibility determinations. AFMETCAL publishes responsibility determinations in TO 33K-1-100-1, TO 33K-1-100-2, *Work Unit Code Reference Guide,* and Calibration and Measurement Summary (CMS) TOs.

1.2.2. AF Primary Standards Laboratory (AFPSL). The AFPSL will be operated in accordance with this DAFMAN and TO 00-20-14, *Air Force Metrology/Calibration Program*. The AFPSL is the sole AF-level laboratory responsible to maintain AF measurement standards. These unique standards are traceable to the International System of Units through 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 will be operated in accordance with this DAFMAN, TO 00-20-14 and Department of the Air Force Instruction (DAFI) 21-101, *Aircraft and Equipment Maintenance Management,* and other prescribed directives.

1.2.4. Metrology and Calibration Flight (MCF). MCFs will be operated in accordance with this DAFMAN, TO 00-20-14, and applicable sections of Air Force Sustainment Center Manual (AFSCMAN) 21-102, *Depot Maintenance Management*. MCFs are established at Air Logistics Complexes (ALC) to provide calibration support to depots and other approved customers. MCFs are under the scope of the AFMETCAL program and utilized within the Calibration Repair Network in a limited scope to support specific regional workloads as defined in applicable Note Codes. MCFs must maintain core depot calibration and maintenance capabilities established in accordance with Department of Defense Instruction (DoDI) 4151.20, *Depot Maintenance Core Capabilities Determination Process*. **(T-0)**

1.3. Calibration and Support Concept. The AFMETCAL program is recognized as a Repair Network under Repair Network Management. Under RNM, 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 DAFI 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 will ensure that assigned calibration and measurement area capabilities are operational.

1.3.3.2. If a calibration activity requires assistance beyond unit capability, requests are made in accordance with 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 the International System of Units through NIST. Units requesting support from another service will follow the guidance in TO 00-20-14, which includes the interservice support agreement guidance.

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

1.4.1. TMDE limitations may seriously impact the 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 (i.e., 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 DAFI 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 in accordance with DAFI 21-101.

1.4.2.2. PMEL personnel are considered trained on TMDE limitations and are not required to attend maintenance group calibration limitation approval certification program per DAFI 21-101. Flight Chiefs will recommend and approve PMEL 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 TO 33-1-38, *Cybersecurity for Automatic Test Systems and Automatic Test Equipment an FSC,* TO 00-20-14, TO 33K-1-1, *General Instructions Cybersecurity for Test, Measurement and Diagnostic Equipment in the AF Metrology Program*, and other prescribed directives. Calibration activities will perform cyber maintenance tasks in accordance with TO 00-20-14.

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 will comply with Military-Standard (MIL-STD) 1839, *Calibration and Measurement Requirements*. **(T-0)** PMELs, MCFs, PMEL customers, TMDE owners, and Program Managers (PM) will obtain AFMETCAL approval prior to obtaining commercial calibration support (including contract logistics support) or when deviating from established calibration determinations or support plans. PMs will comply with this DAFMAN and AFI 63-101/20-101, *Integrated Life Cycle Management*.

1.7. Aircraft Maintenance Policy Requirement. PMELs will comply with applicable sections of DAFI 21-101. Maintenance Standardization and Evaluation Program (MSEP), Tools/Equipment Management, and foreign object damage (FOD) requirements for the PMEL are clarified below under TMDE Flight Chief, PMEL Quality Manager, and PMEL Section Chief responsibilities.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. General. This chapter outlines the responsibilities of commanders and key leaders involved in the AFMETCAL program. Contractor-operated laboratories will comply with the applicable performance work statement requirements. PMELs will comply with this DAFMAN and DAFI 21-101 as applicable.

2.1.1. The Air Force Specialty Code (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 from DAF 21-101 will be clarified under PMEL responsibilities.

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

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 AFLCMC/WNM Director regarding the impact the 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 will:

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 Repair Network Integration (RNI) Product Repair Manager.

2.3.2. Operate and maintain certified AFPSL in accordance with this DAFMAN 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 will:

2.4.1. Provide AFLCMC/WNM 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). The PMs/PGMs will:

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 proposals.

2.5.2. Coordinate with AFLCMC/WNM 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 AFLCMC/WNM 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 AFLCMC/WNM Director during system and equipment design reviews.

2.5.5. Coordinate requirements for contracted calibration services through the AFLCMC/WNM 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. AFLCMC/WNM Director (AFMETCAL). The AFLCMC/WNML Director will:

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-1-100-2-1, and/or applicable 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. These will be maintained with the correct Authorization ID (Auth ID), reference DAFMAN 23-122, *Materiel Management Procedures.*

2.6.3.2. AFMETCAL PGM-developed PMEL calibration systems maintained in correct Auth ID. The authorization managers through HQ AFMC 735 SCOG for current and valid Auth ID.

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 DAFMAN 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 the International System of Units through 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.

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 Computer Identification Program Numbers (CPINs) and coordinate the validation and verification.

2.6.13. Develop metrology support concepts. Acquire and provide calibration equipment to support Automatic Test Equipment and support equipment in coordination with PMs.

2.6.14. Execute duties as Product Repair Manager per this DAFMAN and DAFI 20-117. Make calibration responsibility determinations, establish initial calibration intervals, and adjust calibration intervals for TMDE and publish in TO 33K-1-100-1 and TO 33K-1-100-2-1 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 will 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 DAFI 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. Specify AFPSL and PMEL facility requirements and perform reviews of facility project documentation.

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

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

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

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

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

2.6.20.3. 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.

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

2.6.20.5. Provide metrology-related government-furnished equipment, when available, to AF contractors as required for calibration support development in accordance with Federal Aviation Regulation Part 45, *Government Property*; Defense Acquisition Regulation System Part 245, *Government Property*; and Department of the 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)**

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

2.6.22. Chair a PMEL maintenance information system (MIS) Configuration Control Board and Product Improvement Working Group, as required.

2.6.23. 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.

2.6.23.1. 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.

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

2.6.26. Void or withhold a calibration activity's certification for reasons such as inability to show traceability to the International System of Units through 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.

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

2.6.28. Administer the Proficiency Testing/Measurement Assurance Program in accordance with TO 00-20-14.

2.7. AFLCMC/WNM Senior Enlisted Advisor. The AFLCMC/WNM Senior Enlisted Advisor will:

2.7.1. Report directly to the Director, organizationally aligned laterally to the Deputy Director, AFMETCAL, and provide advice for AFMETCAL program matters.

2.7.2. Serve as the AFMETCAL Evaluation Branch Chief and oversee AFMETCAL Evaluation Team operations to include applicable enlisted personnel matters.

2.7.3. Appoint and supervise the AFMETCAL Evaluation Team Superintendent.

2.7.4. Manage AFMETCAL Evaluation Team recruitment, assignments, training, and development.

2.7.5. Manage the AFMETCAL Evaluation Team operating instruction.

2.7.6. Serve as the PMEL Automated Management System (PAMS) Functional Management Office.

2.7.7. Execute, lead, and manage the AFMETCAL Assessment Program and ensure the program executes its mission in accordance with this DAFMAN, DAFI 90-302, *The Inspection System of the Department of the Air Force*, TO 00-20-14, and the AFMETCAL Director priorities.

2.7.8. Approve or disapprove of inspection augmentees from the field. Determinations will be made considering training, experience, and AFSC 2P Enlisted Development Team vectors.

2.8. AFMETCAL Evaluation Team Superintendent. The AFMETCAL Evaluation Team Superintendent will:

2.8.1. Be appointed by the AFMETCAL Evaluation Branch Chief with the approval of the Director.

2.8.2. Lead and manage daily operations of the Evaluation Team.

2.8.3. Execute and lead Evaluation Team training and development. Ensure team members maintain the highest level of AFMETCAL Program understanding, knowledge, and technical proficiency. Address team member shortfalls and escalate performance concerns to the AFMETCAL Evaluation Chief as appropriate.

2.8.4. Manage the AFMETCAL Assessment schedule and routes proposed schedule to the Director & Evaluation Chief for approval.

2.8.5. Ensure the evaluation team complies with applicable regulations or policies related to the AFMETCAL Assessment Program.

2.9. AFMETCAL Evaluation Team. The AFMETCAL Evaluation Team will:

2.9.1. Assess the effectiveness and capability of each PMEL to perform measurements that are safe, accurate, reliable, and traceable through the AFPSL to the International System of Units through NIST or other AFMETCAL approved sources. The AFPSL, PMELs, and MCFs will be inspected in accordance with DAFI 90-302, *The Inspection System of the Department of the Air Force*, this DAFMAN, and TO 00-20-14.

2.9.2. Provide certification recommendations to the AFMETCAL Director for each calibration activity assessed.

2.9.3. Assess the Proficiency Testing/Measurement Assurance Program in accordance with TO 00-20-14.

2.10. MAJCOM Commanders (or equivalent). The MAJCOM Commanders will:

2.10.1. Operate and maintain certified PMELs and MCFs in accordance with this DAFMAN, TO 00-20-14, and DAFI 21-101 to provide calibration and maintenance support for TMDE operated by users within their area of responsibility.

2.10.2. Support AFLCMC/WNM 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.

2.10.3. Appoint a PMEL MFM to coordinate the implementation of AFMETCAL requirements.

2.10.4. Coordinate commander requests for PMEL establishment, location change, or closing with AFMETCAL prior to requesting final approval from AF/A4.

2.11. PMEL MAJCOM Functional Managers (or equivalent). Along with MFM responsibilities listed in TO 00-20-14, PMEL MFMs will:

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

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

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

2.11.4. Coordinate and approve corrective action plans resulting from AFMETCAL certification assessment reports that state a corrective action plan is required.

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

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

2.11.5. Review DAFMAN 21-113 Self-Assessment Communicator quarterly for command PMELs/MCFs using the Management Information Control Toolset (reference, **https://mict.us.af.mil**) and aid PMELs/MCFs to resolve open observations and deficiencies.

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

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

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

2.11.9. Prioritize command PMEL support equipment requirements using the AFMETCAL Logistics Support Requirement Plan received from AFMETCAL Plans & Analysis Section.

2.12. ALC Metrology and Calibration Flight (MCF). The ALC MCFs will be operated and maintained in accordance with this DAFMAN and TO 00-20-14, Section 13, *Metrology & Calibration Flight (MCF),* and DAFI 20-117.

2.12.1. Depot Maintenance on-site TMDE Support. ALC on-site calibration support is provided through an 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

2.12.2. MCF Operation. The MCF maintains, calibrates, and certifies TMDE traceable through the AFPSL to the International System of Units through 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 TO 33K-1-100-2-1. 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 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 HQ AFMC, Maintenance Division (AFMC/A4M) to AFMETCAL for certification, engineering and technical support, and operations policy.

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

2.12.3.1. Ensure assigned TMDE is calibrated under the guidance of the AFMETCAL program. **(T-2)** 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 TO 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.

2.12.3.2. Ensure technicians are qualified to perform PMEL enterprise-wide training tasks and track qualification and certification tasks. **(T-2)**

2.12.3.3. Provide data as defined on MetWeb® or as requested by the AFMETCAL Repair Network Manager through the PMEL MFM to support Repair Network operations. **(T-2)**

2.12.3.4. Use PAMS (or other approved MIS) to control TMDE and document maintenance actions. **(T-2)**

2.12.3.5. Maintain security of the information in PAMS/MIS by limiting system access and resetting access codes when compromise is suspected. **(T-2)**

2.12.3.6. Initiate and maintain an effective safety program that includes a fire safety program in accordance with DAFMAN 91-203.

2.12.3.7. Ensure classified TMDE is protected in accordance with DoDM5200.01V1_DAFMAN16-1404V1.

2.12.3.8. Ensure TMDE scheduled into the MCF is calibrated and certified in accordance with the requirements of this DAFMAN, TO 00-20-14, CMS TOs, TO 33K-1-100-1, and TO 33K-1-100-2-1.

2.12.3.9. Ensure TMDE monitors are properly trained and maintain a database or log to track training events (dates, names, organizations). **(T-2)**

2.12.3.10. 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 will 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)**

2.12.3.11. Designate an MCF Process Evaluation Team (PET) Manager to administer the Quality Program outlined in TO 00-20-14 and this DAFMAN. The PET Manager and assigned PET members will report directly to the MCF Chief. **(T-2)**

2.12.3.11.1. 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 during 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 analysis.

2.12.3.11.2. Personnel Evaluations, Quality Verification Inspections and Evaluator Proficiency Evaluations will not be performed on calibration and certification tasks by ALC Quality Assurance (QA) personnel. Process and Quality Reviews are used to determine technician proficiency.

2.12.3.11.3. Complete the Process Review Plan in accordance with TO 00-20-14.

2.12.3.11.4. Schedule and perform Evaluator Proficiency Evaluations on assigned PET members and PET augmentees in accordance with TO 00-20-14.

2.12.3.11.5. Ensure ALC QA Personnel Evaluations and Quality Verification Inspections will be performed on other logistics and maintenance actions within the MCF, including 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, in accordance with DAFI 20-112, *Logistics Readiness Quality Assurance Program.*

2.12.3.12. Establish an MCF Logistics Section.

2.12.3.13. Ensure accuracy and completeness of PAMS/MIS maintenance data to include the maintenance time taken throughout applicable maintenance activities for each individual item. **(T-2)**

2.12.4. The MCF Logistics Section will:

2.12.4.1. Use PAMS or other approved MIS to control TMDE processed for maintenance. **(T-2)**

2.12.4.2. Ensure the currency of TMDE processed into the MCF for repair and calibration is reflected in the PAMS/MIS database. **(T-2)**

2.12.5. Manage shipment of TMDE. TMDE items needing contract, warranty, depot or lateral support calibration, repair, and return are processed in accordance with TO 00-20-14, and DAFI 24-602V2.

2.12.6. Establish a Maintenance Supply Support Function. Maintenance Supply Support will manage the flight's maintenance-supply actions in accordance with DAFI 23-101 and aid other flight personnel in resolving supply problems. **(T-2)**

2.12.7. 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 will 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)**

2.12.7.1. 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.

2.12.7.2. Perform monthly review on recommended changes within ETIMS and Air Force Technical Order (AFTO) Form 45 submitted by the MCF. **(T-3)** Ensure additional documentation requested by AFMETCAL is submitted.

2.12.8. Designate a Production Superintendent. The MCF Production Superintendent will report directly to the MCF Chief and will:

2.12.9. Plan workload, coordinate customer equipment constraints, and provide an interface between owning workcenter (OWC) personnel and MCF technicians. **(T-2)**

2.12.10. Ensure TMDE in deferred and in-maintenance status is reviewed once every fourteen calendar days and PAMS/MIS accurately reflects the correct maintenance status for TMDE applicable to the MCF. **(T-2)**

2.12.11. 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.

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

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

2.12.11.3. Employ the Flight Maintenance Standardization program and local training program in coordination with the PET manager, technical management, and MCF Chief. **(T-3)**

2.12.11.4. Ensure technicians who certify TMDE are qualified, trained, and proficient to do so. **(T-2)**

2.12.11.5. Ensure TMDE is calibrated by input priority followed by a first-in, first-out concept, or as mission dictates. **(T-2)**

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

2.12.11.7. Manage element training to ensure optimum task proficiency and measurement area discipline capability. **(T-2)**

2.12.11.8. Train and/or assign trainers and perform trainer responsibilities in accordance with DAFI 36-2670.

2.12.11.9. Process items of TMDE identified as being beyond the MCF capability to repair or calibrate in accordance with TO 00-20-14, TO 00-20-3, TO 00-25-107, and DAFI 23-101.

2.13. Squadron Commander Owning PMEL (or equivalent). This section is applicable to squadron commanders (or equivalent) who own and operate PMELs/MCFs. Each ALC is assigned an MCF which is functionally accountable through the AFMC/A4M to AFMETCAL for certification, engineering and technical support, and operations policy. Commanders will:

2.13.1. Ensure PMELs/MCFs are operated and maintain certification in accordance with this DAFMAN and TO 00-20-14 to provide calibration and maintenance support for TMDE operated by users within their area of responsibility. **(T-2)**

2.13.2. Ensure new and updated PMEL facility designs are coordinated with the local Civil Engineering unit and incorporate the requirements in accordance with Facilities Criteria (FC) 4-218-01F, *Air Force Criteria for Precision Measurement Equipment Laboratory Design and Construction,* DAFMAN 32-1084, *Standard Facility Requirements* and TO 00-20-14. Advocate for local Civil Engineering to consult with the Civil Engineering Maintenance Inspection Repair Team for Heating, Ventilation, and Air Conditioning systems during the design phase. **(T-2)**

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

2.13.4. 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*; DoDI 5000.89_DAFI 99-103, *Capabilities-Based Test and Evaluation,* DAFI 20-117 *Repair Network Management* and this DAFMAN.

2.14. 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 DAFI 21-101 and responsibilities listed in TO 00-20-14, the Flight Chief will:

2.14.1. Operate and maintain certified PMELs in accordance with this DAFMAN, TO 00-20-14, DAFI 20-117, and DAFI 21-101 to provide calibration and maintenance support for TMDE operated by users within the PMEL area of responsibility.

2.14.2. Ensure the PMEL is maintained in a condition that facilitates effective mission performance. **(T-2)** This includes ensuring adequate facility environmental system support is provided to meet equipment calibration and verification requirements. **(T-2)**

2.14.3. Organize and operate the PMEL so permanent, temporary, and mobile facilities meet the requirements of this DAFMAN and TO 00-20-14. **(T-2)**

2.14.4. Ensure TMDE scheduled into the PMEL is calibrated and certified in accordance with the requirements of this DAFMAN, TO 00-20-14, CMS TOS, TO 33K-1-100-1, and TO 33K-1-100-2-1. Aggressively pursue sustainment of organic (i.e., local) capability for the assigned workload as designated in TO 33K-1-100-2-1. Changes to or deviations from self-sufficiency are not authorized without explicit coordination through the responsible MAJCOM Functional Manager and AFMETCAL Plans & Analysis. Deviations from organic calibration responsibility, approved in accordance with TO 00-20-14, should be minimized as it increases shipping costs and negatively impact turn-around time and risk due to lost assets. **(T-2)**

2.14.5. Establish the PMEL availability rate to maintain support for their specified local mission and the PMEL Repair Network. The three indicators of a healthy network are an Availability Rate of 92%, Turnaround Time of less than 15 days, and Throughput Time of less than 30 days. The Repair Network Manager will monitor these metrics. PMELs will support the healthy network indicators and its local mission with their established goals and operations. **(T-3)**

2.14.6. The Flight Chief will develop and document a local policy in the QM defining how overdue TMDE will be managed, the notification process to customers, and the documentation process of those notifications. **(T-3)**

2.14.7. Establish a Management System in accordance with TO 00-20-14 and command directives. Risk Management within the Management System must be completed in accordance with TO 00-20-14.

2.14.8. Establish a Quality Program in accordance with TO 00-20-14 and command directives. The PMEL Quality Program and AFMETCAL Program evaluate processes used to validate the technical proficiency and capability of the PMEL. Risk Management within the Management System must be completed in accordance with TO 00-20-14.

2.14.9. Designate a Quality Manager and alternate(s) to administer the Quality Program. The Quality Manager directly reports to the Flight Chief and will have direct access to the Flight Chief and Section Chief. **(T-2)**

2.14.10. Appoint PMEL QA Evaluator(s). **(T-2)**

2.14.11. Designate a PMEL Section Chief or equivalent and alternate(s) to continuously evaluate and manage technical operations. **(T-2)**

2.14.12. Participate in the Proficiency Testing/Measurement Assessment Program in accordance with TO 00-20-14 and command directives.

2.14.13. Establish a PMEL logistics operation to provide customer service and support to on-/off-base TMDE customers. This section will consist of scheduling, supply, transportation, customer relations, and other support functions as deemed necessary by the Flight Chief. **(T-3)**

2.14.14. Provide data as defined on MetWeb® or as requested by the AFMETCAL Repair Network Manager through the PMEL MFM to support Repair Network operations. **(T-2)**

2.14.15. Coordinate PMEL facility design and construction proposals of facility project documentation with the local Civil Engineering unit to ensure requirements in accordance with FC 4-218-01F, DAFMAN 32-1084, and TO 00-20-14. Submit plans to MFM and AFMETCAL prior to implementation. **(T-2)**

2.14.16. Use PAMS (or other approved MIS) to control TMDE and document maintenance actions. Maintain the security of the information in PAMS/MIS by limiting access and resetting access codes when compromise is suspected. **(T-2)**

2.14.17. Initiate and maintain an effective PMEL safety program that includes a fire safety program in accordance with DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*.

2.14.18. Ensure classified TMDE is protected in accordance with DoDM5200.01V1_AFMAN16-1404V1, *Information Security Program: Overview, Classification and Declassification.*

2.14.19. Coordinate PMEL Activity Summary in accordance with TO 00-20-14 and this DAFMAN.

2.14.20. Document PMEL tool and equipment management requirements in the Quality Manual. **(T-2)** Appoint consolidated tool kit (CTK) custodians and equipment managers in the PMEL. **(T-3)**

2.14.20.1. PMEL CTKs are typically non-dispatchable. At a minimum, PMELs will define procedures to ensure DAFI 21-101 compliance with tool inventory and accountability requirements. **(T-2)**

2.14.20.2. 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 will be inventoried prior to and departing when performing on-site calibrations. **(T-2)**

2.14.20.3. 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 will be documented in the Quality Manual. **(T-3)**

2.14.20.4. PMELs do not have a tool room or support section. Element CTKs are considered secure if access is limited to the calibration area.

2.14.20.5. PMELs will establish and designate storage locations for waveguides, attenuators, fittings, connectors, adapters, cables, and hoses. These are not required to be inventoried as part of a CTK in a PMEL. **(T-3)**

2.14.21. Approve the monthly QA Process Review Plan. **(T-3)**

2.14.22. Ensure accuracy and completeness of PAMS/MIS maintenance data to include the maintenance time taken throughout applicable maintenance activities for each individual item. **(T-2)**

2.14.23. Establish the Physical/Dimensional and Electronics Elements in the PMEL and appoint a Noncommissioned Officer in Charge (NCOIC) for each. The PMEL will be organized with no more than two elements. **(T-3)**

2.15. PMEL Quality Manager (or equivalent). The PMEL Quality Manager will:

2.15.1. Manage the PMEL Quality Program in accordance with TO 00-20-14.

2.15.2. Recommend qualified PMEL QA Evaluator(s) to perform quality reviews, process reviews, and facilitate root cause analysis sessions to the Flight Chief. **(T-3)**

2.15.3. Develop and maintain a QA Training Plan to train PMEL QA Evaluators and augmentees. **(T-2)**

2.15.4. Ensure PMEL QA Evaluators evaluate PMEL cyber hygiene and discipline practices in conjunction with process reviews and annual reviews in accordance with TO 00-20-14. **(T-2)**

2.15.5. Complete the Process Review Plan in accordance with TO 00-20-14. **(T-3)** The Process Review Plan is the PMEL's process for meeting the MSEP's monthly Evaluation and Inspection Plan requirement in DAFI 21-101.

2.15.6. Schedule and perform Evaluator Proficiency Evaluations on assigned QA Evaluators and QA augmentees in accordance with TO 00-20-14. **(T-2)**

2.15.7. As applicable, manage PMEL Product Improvement Program in accordance with DAFI 21-101. Perform monthly review on TO Change Requests and AF Technical Order (AFTO) Forms 45, *Request for Calibration Responsibility Determination*, submitted by the PMEL. **(T-3)** Ensure additional documentation requested by AFMETCAL is submitted.

2.15.8. Manage PMEL Technical Order Distribution Office in accordance with TO 00-5-1, *Air Force Technical Order System*, 00-5-15, *Air Force Time Compliance Technical Order Process,* and DAFI 21-101. **Note:** This may also be managed by PMEL Logistics.

2.15.9. Participate in MSEP as required by the local Maintenance Group Commander or equivalent. **(T-3)**

2.15.10. PMELs will document PMEL QA actions in PAMS or other approved MIS in accordance with TO 00-20-14. **Note:** PMELs are not required to use the Logistics Evaluation Assurance Program QA database to document Quality Reviews, Process Reviews, and Evaluator Proficiency Evaluations.

2.15.11. PMEL QA Evaluators may be delegated responsibility from Maintenance Group QA to perform PMEL special inspections (CTKs, TOs, hazardous material). PMELs will document Special Inspections considered part of the MXG MSEP in accordance with local guidance. **(T-3)**

2.16. PMEL Section Chief (Lab Chief) (or equivalent). The Section Chief is responsible for managing laboratory production demands to support the local mission and the PMEL Repair Network requirements. The Section Chief manages the PMEL training program and ensures maximum task coverage and technician proficiency. Along with the applicable general Section Chief responsibilities listed in DAFI 21-101, the Section Chief will:

2.16.1. Ensure TMDE is worked using the input priority system defined in TO 00-20-14 and DAFI 21-101.

2.16.2. Ensure TMDE in deferred and in-maintenance status is reviewed once every fourteen calendar days and PAMS/MIS accurately reflects the correct maintenance status for TMDE applicable to the laboratory. **(T-2)**

2.16.3. Coordinate with AFMETCAL Plans and Analysis Section through the PMEL MFM prior to turn-in, redistribution or repair 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-1-100-2-1. **(T-2)**

2.16.4. 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-2)**

2.16.5. Ensure technicians who certify TMDE are qualified, trained, and proficient to do so. **(T-2)**

2.16.5.1. 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)**

2.16.5.2. Fulfill applicable supervisor responsibilities in accordance with DAFI 36-2670, *Total Force Development.*

2.16.6. Establish and maintain good housekeeping practices that include a minimum of no eating, drinking, smoking, or use of other tobacco products to include vaping being permitted in the calibration and repair areas. **(T-2)**

2.16.7. 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.

2.16.8. Coordinate calibration support with medical equipment personnel in accordance with AFI 41-201, *Managing Clinical Engineering Programs,* and DAFMAN 41-209, *Medical Logistics Support*.

2.16.9. Ensure PMEL is operated in accordance with TO 00-20-14, Section 3, *Operation*.

2.17. Element NCOIC (or equivalent). The Physical/Dimensional and Electronics Element NCOICs will:

2.17.1. Ensure TMDE is worked by input priority followed by a first-in, first-out concept, or as mission dictates. **(T-2)**

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

2.17.3. Manage element training to ensure optimum task proficiency and Measurement Area Discipline capability. **(T-2)**

2.17.4. Train and/or assign trainers and perform trainer responsibilities in accordance with DAFI 36-2670.

2.17.5. Process items of TMDE identified as being beyond the PMEL capability to repair or calibrate in accordance with TO 00-20-14, TO 00-20-3, *Maintenance Processing of Reparable Property and the Repair Cycle Asset Control System*; TO 00-25-107; and DAFI 23-101, *Materiel Management*.

2.17.6. Participate in and/or lead root cause analysis sessions resulting from PMEL QA Evaluator identified non-conformity. **(T-3)**

2.17.7. Ensure Product or Quality Deficiency Reports are submitted in accordance with TO 00-35D-54 for centrally procured items with warranties that fail calibration. This includes AFMETCAL-procured standards.

2.18. NCOIC, PMEL Logistics, (or equivalent). The PMEL Logistics NCOIC will:

2.18.1. Establish a TMDE Coordinator training program. **(T-2)**

2.18.2. Establish procedures for turn-in and pick-up of TMDE. **(T-2)**

2.18.3. Assist 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.

2.18.4. Establish and execute 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 OWC customers annually. Maintain records documenting these visits, contacts, and surveys. **(T-3)**

2.18.5. 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 will determine the

Logistics Section overhead depending on the PMEL workload, customers supported, or other factors. **(T-3)**

2.19. PMEL Logistics Specialists, (or equivalent). The PMEL Logistics Specialists (or equivalent) will:

2.19.1. Schedule TMDE using the priority system established in TO 00-20-14 and DAFI 21-101.

2.19.2. Use PAMS or alternate MIS to process TMDE for maintenance. **(T-2)**

2.19.3. Ensure the currency of TMDE processed into the PMEL for repair and calibration is reflected in the PAMS/MIS database. **(T-2)**

2.19.4. Train OWC TMDE monitors and maintain a database or log to track training events (dates, names, organizations). **(T-2)**

2.19.5. Manage shipment of TMDE and maintain a file consisting of supporting documentation for each type of shipment. **(T-2)**

2.19.5.1. 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 in accordance with TO 00-20-14 and DAFI 24-602V2, *Cargo Movement*.

2.19.5.2. Ensure proper shipping funds are used in accordance with annual AF Second Destination Transportation (SDT)/Centrally Managed Allotment (CMA) Transportation Account Code (TAC) Quick Reference Table available on the Logistics Tool Suite website: **https://lts.cce.af.mil/**.

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

2.19.7. Manage the flight's maintenance-supply actions in accordance with DAFI 23-101 and DAFMAN 23-122. All accountable government property will be managed IAW DoDI 5000.64_DAFI 23-111, Accountability and Management of DOD Equipment and Other Accountable Property.

2.19.8. Maintain accuracy of the locally managed addendum to TO 33K-1-100-2-1 in accordance with TO 00-20-14, Section 3, *Operation*.

2.20. Commanders of Units Owning TMDE. The Commanders of units owning TMDE will ensure TMDE, as determined by the AFMETCAL Program, used to make quantitative measurements as directed by applicable AF directives, which affect the accuracy and/or reliability of AF systems and subsystems will be calibrated. **(T-2)** Commanders of activities owning and using TMDE requiring calibration are responsible for ensuring this TMDE is not used unless it has been calibrated and that it is removed from service once the calibration due date has expired. TMDE user responsibilities are listed in TO 00-20-14, and the TMDE Management Guidelines are provided in DAFI 21-101.

Chapter 3

OFFICIAL ENLISTED DUTY TITLES FOR AIR FORCE SPECIALTY CODE 2P0X1 (PMEL)

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 Enlisted Development Team has standardized the enlisted duty titles for AFSC 2P Airmen. Specific responsibilities are defined in Chapter 2 of this DAFMAN. The following enlisted duty titles will 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. **(T-3)**

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

3.2.4.1.1. Supervisor, PMEL 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, PMEL 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, PMEL Electronics Element. **(T-3)**

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

3.2.4.3. PMEL Apprentice. Use for 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.

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 or some of the above roles. Logistics specialists may be assigned to perform PMEL logistics responsibilities. **(T-3)**

3.2.5.6. AFMETCAL Evaluation Team, Superintendent. **(T-3)**

3.2.5.7. AFMETCAL Evaluation Team, Lead Evaluator. **(T-3)**

3.2.5.8. AFMETCAL Evaluation Team, Evaluator. **(T-3)**

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GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

FAR Part 45, *Government Property*, 4 Dec 2023
DFARS Part 245, *Government Property*, 30 Oct 2023
DoDI 4151.20, *Depot Maintenance Core Capabilities Determination Process*, 4 May 2018
AFPD 21-1, *Maintenance of Military Materiel*, 1 Aug 2018
DAFI 20-112, *Logistics Readiness Quality Assurance Program (LR QA)*, 21 Mar 2022
DAFI 20-117, *Repair Network Management*, 19 Jan 2021
DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 16 Jan 2020
DoDI 5000.64_DAFI 23-111, *Accountability and Management of DOD Equipment and Other Accountable Property*, 6 Dec 2021
DAFI 24-602V2 *Cargo Movement*, 12 Jun 2019
DAFI 36-2670, *Total Force Development*, 25 Jun 2020
DAFI 90-302, *The Inspection System of the Department of the Air Force*, 15 Mar 2023
DoDI 5000.89_DAFI 99-103, *Capabilities Based Test and Evaluation*, 9 Dec 2021
DoDM 5200.01V1_DAFMAN16-1404V1, *Information Security Program: Overview, Classification and Declassification*, 6 Apr 2022
DAFMAN 23-122, *Materiel Management Procedures*, 27 Oct 2020
DAFMAN 32-1084, *Standard Facility Requirements*, 15 Jan 2020
DAFMAN 90-161, *Publishing Processes and Procedures*, 18 Oct 2023
DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 25 Mar 2022
AFI 23-101, *Materiel Management Policy*, 22 Oct 2020
AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*, 18 Oct 2013
AFI 33-322, *Records Management and Information Governance Program*, 28 Jul 2021
AFI 41-201, *Managing Clinical Engineering Programs*, 10 Oct 2017
AFI 63-101/20-101, *Integrated Life Cycle Management*, 30 Jun 2020
AFMAN 41-209, *Medical Logistics Support*, 4 Jan 2019
AFSCMAN 21-102, *Depot Maintenance Management*, 5 Apr 2021
Department of the Air Force Federal Acquisition Regulation Supplement Part 5345, *Government Property*, 7 Jul 2023
FC 4-218-01F, *Air Force Criteria for Precision Measurement Equipment Laboratory Design and Construction*, 28 Oct 2015
MIL-STD-1839, *Calibration and Measurement Requirements*, 19 Dec 2016
MIL-HDBK-1839A, *Calibration and Measurement* Requirements, 27 Nov 2000
TO 00-5-1, *AF Technical Order System*, 11 Sep 2023
TO 00-5-15, *Air Force Time Compliance Technical Order Process*, 28 Jul 2023
TO 00-20-3, *Maintenance Processing of Reparable Property and the Repair Cycle Asset Control System*, 17 Dec 2021
TO 00-20-14, *Air Force Metrology and Calibration Program*, 30 Nov 2023
TO 00-25-107, *Maintenance Assistance*, 15 Aug 2022
TO 33K-1-1, *General Instructions Cybersecurity for Test, Measurement and Diagnostic Equipment in the AF Metrology Program*, 30 Nov 2021
TO 33K-1-100-1, *Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries*, 30 Nov 2023

TO 33K-1-100-2-1, PMEL Only - *TMDE Calibration Notes, Calibration Interval, Technical Order and Work Unit Code Reference Guide*, 18 Dec 2023

Prescribed Forms

None

Adopted Forms

AFTO 45, *Request for Calibration Responsibility Determination*
DAF Form 679, *Department of the Air Force Publication Compliance Item Waiver Request/Approval*
DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AF—Air Force
DAFI—Department of the Air Force Instruction
DAFMAN—Department of the Air Force Manual
AFMC—Air Force Materiel Command
AFMC/CC—Air Force Materiel Command, Commander
AFMETCAL—Air Force Metrology and Calibration
AFPEO/ACS—AF Program Executive Officer for Agile Combat Support
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
DAF—Department of the Air Force
DoD—Department of Defense
FOD—Foreign Object Damage
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—PMEL Automated Management System
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

Office Symbols

AF/A4L—Air Force Deputy Chief of Staff, Directorate of Logistics
AFLCMC/WNM—Air Force Life Cycle Management Center, AFMETCAL Division

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.

Authorization Identification (Auth ID) -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 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 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 MFM.

Node Manager—The Node Manager oversees and manages 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 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 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.