

**BY ORDER OF THE COMMANDER  
AIR FORCE RESEARCH LABORATORY  
(AFRL)**

**AIR FORCE RESEARCH LABORATORY  
INSTRUCTION 21-101**

**15 DECEMBER 2016**



**Maintenance**

**LOGISTICS MAINTENANCE  
MANAGEMENT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements Air Force Instruction (AFI) 21-101, *Aircraft and Equipment Maintenance Management*, AFMC Sup, Addendum C, *AFRL Logistics Maintenance Management*, Technical Order (TO) 00-5-1, *AF Technical Order System*, TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, TO 34-1-3, *Inspection and Maintenance Machinery and Shop Equipment*, TO 00-20-14, *Air Force Metrology and Calibration Program*, TO 00-25-234, *General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment*, Section 7, *Electrostatic Discharge Control and American National Standards Institute/Electrostatic Discharge (ANSI/ESD) S20.20, Protection of Electrical and Electronic Parts, Assemblies and Electronic Parts, Assemblies and Equipment (excluding electrically initiated explosive device)*. AFRL does NOT follow AFI 21-101 per Air Force Materiel Command (AFMC) deviation guidance found in Addendum C. This instruction is the basic AF directive for maintenance management in AFRL and it provides the minimum basic maintenance-related concepts and programs for all levels within AFRL. It applies to all AFRL personnel working in research, manufacturing, test, development, and integration laboratories including work centers used by Research, Development, Test, and Evaluation (RDT&E)-funded portions of AFRL organizations and their contractors on AF property and by RDT&E-funded AFRL personnel off AF property. Any person or function that does not perform work in research, manufacturing, test, development, and integration laboratories and work centers is not bound by this instruction. This publication may be supplemented at any level, but all direct supplements must be routed to the Office of Primary Responsibility (OPR) of this publication for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the OPR using AF Form

847, *Recommendation for Change of Publication*; route AF Form 847 from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

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

This document includes recent changes to AFI 21-101, AFMC Supplement, Addendum C, Logistics Maintenance Management. Lost tool for red X and condition tags were removed as Special Certification Roster (SCR) requirements. Tool inventory requirements are defined clearly. Contractor information was added. Tool accountability changed in non-Foreign Object Damage (FOD) critical areas.

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**1. Management Philosophy and Policies:** This instruction prescribes the basic programs and responsibilities to be used in AFRL and provides government employees on/off AF property and contract employees on AF property with direction for accomplishment of logistics/maintenance management. It applies to all laboratories and work centers involved in manufacturing, maintenance, integration and RDT&E.

**2. Compliance Terminology.** For the purposes of this instruction, the following definitions apply:

2.1. **Shall, Must, Will.** Indicate mandatory requirements (“will” is also used to express a declaration of purpose for a future event.).

2.2. **Should.** Indicates a preferred method of accomplishment.

2.3. **May.** Indicates an acceptable or suggested means of accomplishment.

**3. Waiver Request.** Any waivers to this or higher headquarters’ (HHQs) directives shall be processed IAW the specific policy directive. If no specific form or format is specified, submit waiver requests through the 711th Human Performance Wing Commander (711 HPW/CC) or Technology Director for staffing to the Quality Assurance Superintendent (QA SUPT) using the template in [Attachment 2](#). The QA SUPT will submit the waiver request to AFRL Center Logistics Manager (CLM), AFRL Integration and Operations Division (AFRL/DSO) for staffing to the AFRL Director of Staff (AFRL/DS) and staffing to HHQs, as applicable.

**4. Policy Development.** At a minimum, AFRL will publish specific policy guidance (e.g. Supplement/Operating Instruction(s) (OI(s)) in the appropriate publication series as required for the programs outlined in this instruction. These publications may be supplemented at any level, but all direct Supplements and OI(s) must be routed to the OPR of this publication for coordination prior to certification, approval and implementation.

**5. Logistics Program General Responsibilities.** This chapter outlines responsibilities for key leaders and personnel involved in maintenance activities. Establish written policy if responsibilities differ from a standard organizational structure. Indicate the responsibilities for key leaders involved in their logistics/maintenance activities. At a minimum, establish responsibilities for the following positions:

5.1. **AFRL/DS.** The AFRL/DS is responsible to ensure policy and procedures are established for AFRL. The AFRL/DS will:

5.1.1. Approve the annual Logistics Standardization and Evaluation Program (LSEP).

5.1.2. **AFRL CLM (AFRL/DSO).** The AFRL/DSO CLM will:

5.1.2.1. Make recommendations to AFRL/DS to enhance the effectiveness of logistics operations.

5.1.2.2. Update the LSEP annually in conjunction with the Quality Assurance (QA) offices. Ensure the LSEP is posted in the AFRL Enterprise Business System (EBS).

5.1.2.3. Consolidate all inputs from the AFRL Technology Directorates (TD)/Wings on any changes to Logistics function policy and send to AFRL/DS for adjudication.

5.1.2.4. Act as the Center FOD monitor. All TD/Wing reports will be coordinated through AFRL/DSO.

5.1.3. **Detachment Commander (DET CC).** The DET CC is responsible to ensure policy and procedures are established for the site. The DET CC will appoint the site QA SUPT in writing.

5.1.3.1. **EXCEPTION:** Directors will determine QA requirements at their Geographically Separated Unit (GSU) and use QA at their discretion. Standing down GSU QA will be coordinated with CLM.

5.1.3.2. The QA SUPT will not serve as a TD Logistics Manager (LOG MGR).

5.1.4. **711HPW/CC/Director.** The 711 HPW/CC/Director may delegate responsibilities involving day-to-day functioning of work centers or laboratories. When a 711 HPW/CC/Director is not located on site, these responsibilities will be delegated to the site leadership. The 711 HPW/CC/Director will:

5.1.4.1. Establish a close working relationship with division chiefs to ensure an understanding of the requirements and capabilities of logistics actions.

5.1.4.2. Provide the necessary resources to support the logistics programs within their TD/711 HPW.

5.1.4.3. Appoint a LOG MGR in writing.

5.1.4.3.1. The LOG MGR will not also serve as a QA SUPT or QA Inspector. **EXCEPTION:** At Ft Sam and Maui, the Integration and Operations Chief may appoint someone to perform the duties of QA SUPT and report their LSEP findings to the parent unit for inclusion in monthly metrics. They will be appointed as required.

5.1.4.4. Appoint a FOD monitor in writing, which should be the LOG MGR.

5.1.4.5. Request TD/711 HPW System Safety Engineer (SSE) and the FOD monitor assess all work centers to identify potential FOD critical areas. There are two categories of Foreign Object (FO) areas: critical and non-critical.

5.1.4.5.1. FO critical areas are areas where aircraft maintenance, testing, and operations are performed (e.g., jet engine maintenance, fuel cell maintenance, major sub-assembly maintenance, and support equipment).

5.1.4.5.2. Ensure Division Chiefs perform FO Risk Management (RM) assessments on any work center identified as a potential FOD critical area.

5.1.4.5.2.1. The 711 HPW/CC/Director is not restricted by FO RM assessments from designating a work center as an FOD-critical area at their discretion.

5.1.4.5.2.2. The 711 HPW/CC/Director signs the FO RM assessments and provides copies to the FOD monitor.

5.1.4.6. Ensure Test, Measurement and Diagnostic Equipment (TMDE) is maintained and managed IAW TO 00-20-14, *Air Force Metrology and Calibration Program*.

5.1.4.7. Ensure a tool control program is established IAW this instruction.

5.1.4.8. Ensure Composite Tool Kits (CTK) management processes are followed.

- 5.1.4.9. Determine the TD's CTK open/close interval for non-FOD critical areas. If annual is selected, each CTK receives an annual inventory/inspection using the AF Form 2411. If weekly is selected, each CTK is signed open/closed on a weekly interval using the AFMC Form 62. Note: all in-use CTKs supporting FOD critical areas will signed open and closed be on a daily interval using the AFMC Form 62.
- 5.1.4.10. Ensure an Electrostatic Discharge (ESD) program is established IAW TO 00-25-234 and this instruction.
- 5.1.4.10.1. Ensure ESD points of contact (POCs) are appointed writing.
  - 5.1.4.11. Ensure necessary technical data is available to TD/711 HPW personnel.
  - 5.1.4.12. Ensure site QA Inspectors have as much unrestricted access as possible to all TD/711 HPW areas.
  - 5.1.4.13. Ensure support equipment (SE) is maintained and managed IAW TO 00-20-1 and TO-34-1-3.
  - 5.1.4.14. Ensure the Sort, Straighten, Shine, Standardized, Sustain and Safety (6S) process is implemented within their TD/711 HPW; ensure personnel implement and support the 6S process ([Attachment 3](#)).
  - 5.1.4.15. Ensure general housekeeping, safety, security, equipment accountability, vehicle management, environmental control and AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, is followed.
  - 5.1.4.16. For Wright-Patterson Air Force Base (WPAFB), the RQW Division Chief will appoint the WPAFB QA SUPT in writing. For Kirtland AFB only, the RVO Division Chiefs will appoint the QA SUPT in writing.
    - 5.1.4.16.1. The WPAFB QA SUPT will support the 711 HPW and WPAFB TDs.
    - 5.1.4.16.2. The WPAFB and Kirtland QA SUPT will NOT serve as a TD LOG MGR.
- 5.1.5. **TD/711 HPW LOG MGR.** The LOG MGR is the primary logistics advisor to the 711 HPW/CC/Director, Division Chiefs, Branch Chiefs and TD/711 HPW personnel. Due to this role in policy implementation, the LOG MGR will not serve as a QA SUPT or QA Inspector. The LOG MGR will:
- 5.1.5.1. Be responsible for parent TD and GSU location logistics policy and procedures.
  - 5.1.5.2. Work closely with the QA SUPT to develop site policies and identify issues to resolve.
  - 5.1.5.3. Manage the TD/711 HPW logistics programs and provide guidance to Logistics Operations (LOG OPS) personnel. Involve COR if contracted.
  - 5.1.5.4. Coordinate with the applicable Division Chiefs to ensure logistics processes and procedures are supportable within the TD/711 HPW.
  - 5.1.5.5. Develop TD/711 HPW-specific policies and procedures to support AFRL/site policies, as needed.

- 5.1.5.6. Determine initial/recurring TD/711 HPW logistics training requirements.
  - 5.1.5.7. Perform the following responsibilities at the TD/711 HPW level. These responsibilities may be delegated to the directorate or division-level Tool Control Manager (TCM), when assigned.
    - 5.1.5.7.1. Oversee design of all CTKs.
    - 5.1.5.7.2. Develop procedures to assign the complete equipment identification designator (EID) to the CTKs in the TD/711 HPW/Division.
    - 5.1.5.7.3. Maintain copies of the following records (hard copy or electronic):
      - 5.1.5.7.3.1. A current list of all CTK Custodians with appointment letters (see Attachment 17).
      - 5.1.5.7.3.2. A current list of all TD/711 HPW CTK numbers.
      - 5.1.5.7.3.3. A documented branch process for control of individually issued tools (if applicable).
  - 5.1.5.8. Ensure an effective technical data management process is established.
    - 5.1.5.8.1. Assist users to determine if equipment items will require either TOs or commercial-off-the-shelf (COTS) manuals as tech data.
    - 5.1.5.8.2. Develop specific procedures for personnel to notify the Technical Order Distribution Office (TODO) when new RDT&E/support equipment is brought into the laboratory or research areas.
  - 5.1.5.9. Work with ESD POCs to interpret ESD policies and procedures. The Air Force ESD Control Technology Center, Materials and Manufacturing Directorate, Materials Integrity Branch (AFRL/RXSA) will be the final arbiter on questions relating to interpreting TO 00-25-234.
  - 5.1.5.10. Monitor and report status of logistics programs, as required.
  - 5.1.5.11. Review QA and other management reports and assist TD/Wing leadership in determining the appropriate management actions to meet new workloads, target deficiencies and identify and correct root causes.
  - 5.1.5.12. Provide Logistics input to Directorate Acquisition Development Plans. Provide recommendations to improve logistics efficiencies, as needed.
- 5.1.6. **Division Chief.** The Division Chief is responsible for the logistics programs within their division. Division Chiefs may delegate responsibilities involving day-to-day functioning of work centers or laboratories. The Division Chief will:
- 5.1.6.1. Appoint LOG OPS personnel, in writing, to implement logistics programs within their areas. A copy of this appointment letter will be forwarded to the LOG MGR (See Attachment 17).
  - 5.1.6.2. Manage SCR as outlined in this instruction.
  - 5.1.6.3. Ensure an initial FOD awareness training and responsibilities briefing is given to all newly assigned personnel that work in or regularly traverse work centers conducting research, test, development, integration, or manufacturing.

5.1.6.4. Perform an FO RM risk assessment in conjunction with the SSE, FOD Monitor and Branch Chief on any work center identified as a potential FOD critical area/process. The assessment will be written, with supporting rationale, and submitted to the 711 HPW/CC/ Director.

5.1.6.4.1. The risk assessment tools from safety and engineering instructions will be used for the FO RM assessment.

5.1.6.4.2. Assess the FOD hazard probability category to the appropriate level.

5.1.6.4.3. A risk number of nine or lower requires the area/process to be classified as FOD critical and to implement FOD prevention controls.

5.1.6.4.4. The opinion of the TD Safety representative will be the deciding factor when the assessment team members are divided on the risk number.

5.1.6.5. Ensure all FOD critical areas are identified during the safety review process at the beginning of a new program, research, experiment, etc.

5.1.6.5.1. At any time, a process or area can be declared FOD critical by the program's senior researcher while the proper paperwork is processed.

5.1.6.5.2. Work centers shall not switch between FOD critical and non-FOD critical unless the mission changes and only with the written approval of the 711 HPW/CC/Director and program's senior researcher.

5.1.6.6. Ensure FOD critical areas are clearly marked with prominent signs.

5.1.6.7. Manage tool control program; ensure required CTKs, special tools and SE are available.

5.1.6.7.1. May appoint a division TCM in writing; forward a copy to the LOG MGR.

5.1.6.7.2. Appoint CTK Custodians in writing and forward a copy to the LOG MGR.

5.1.6.8. Implement the division's ESD program IAW TO 00-25-234 and this instruction.

5.1.6.8.1. Appoint ESD POCs at the division, branch, work center, and laboratory area level where required to effectively manage the ESD program.

5.1.6.9. Enforce adherence to the use of current technical data and management procedures.

5.1.6.9.1. Ensure personnel have access to the Technical Data System (TDS) and the Enhanced Technical Information Management System (ETIMS) as required.

5.1.6.9.2. Designate in writing government supervisors/managers authorized to grant access to restricted-access technical documents in TDS/ETIMS. Forward a copy of the approval letter to the LOG MGR and TODO. To add or delete government supervisors/managers, a new letter will be published.

5.1.6.9.2.1. Designations will be reviewed every 24 months to ensure accuracy/currency of appointments.

5.1.6.9.3. Approve and sign the title page of locally developed procedures (LDPs) and calibration work instructions (CWIs). Prior to signing, ensure the LDP/CWI has been routed through any relevant offices for their coordination/approval: Safety, QA, Security, Scientific and Technical Information (STINFO), etc.

5.1.6.9.4. Establish procedures for notifying the TODO to change TDS permissions and ETIMS library access when personnel in-process, out-process or change positions within the organization.

5.1.6.10. Ensure personnel implement and support the 6S Process as implemented within their division.

5.1.6.11. Ensure general housekeeping, safety, security equipment accountability, vehicle management, environmental control and AFI 91-203 are followed.

5.1.6.12. For TD/711 HPW that possess Training Aid Aircraft (TAA), appoint a TAA Manager in writing.

5.1.7. **Branch Chief.** The Branch Chief is responsible to the Division Chief for all logistics matters. Branch Chiefs may delegate responsibilities involving day to day functioning of work centers or laboratories to an appointed government POC. The Branch Chief will:

5.1.7.1. Enforce adherence to using current technical data and management procedures.

5.1.7.2. Ensure SE is maintained/managed IAW TO 00-20-1.

5.1.7.3. Review QA and other management reports to determine appropriate management actions to meet new workloads, target deficiencies and identify and correct root causes.

5.1.7.3.1. QA findings impacting a contracted service, will be briefed to the applicable Contracting Office Representative (COR).

5.1.7.3.2. Review LSEP results and trends to target areas for improvement.

5.1.7.4. Establish and review requirements for vehicles and ensure regulatory compliance concerning vehicle operation, scheduled and/or user level maintenance and services, as applicable.

5.1.7.5. Oversee the branch's responsibilities in the FOD Prevention Program.

5.1.7.5.1. Ensure FOD preventative measures are considered during the AFRL Safety Permit process.

5.1.7.5.2. Participate in FO RM assessments.

5.1.7.5.3. Ensure FOD prevention measures are implemented in all applicable branch work centers.

5.1.7.6. Ensure positive control and accountability is enforced for all assigned CTKs/tools.

5.1.7.6.1. Determine the type, size, and numbers of CTKs for each work center.

5.1.7.6.2. Ensure personnel using CTKs receive initial tool control training. Verify that one-time training is documented.

5.1.7.6.3. Ensure CTKs are secured when not in use.

5.1.7.6.4. Ensure CTKs/equipment is stored in their assigned location.

5.1.7.6.5. Notify the LOG MGR/TCM when new/additional CTKs are required.

5.1.7.6.6. Ensure a tool procurement process is established.

5.1.7.6.7. Ensure that appropriate personal protective equipment (PPE) is available and ready for use.

5.1.7.6.8. Approve all individually-issued tools within the branch. Coordinate with the LOG MGR and logistics operations personnel to develop a process to number, approve, and control individually-issued tools.

5.1.7.7. If applicable, ensure the branch's ESD program is implemented per TO 00-25-234.

5.1.7.7.1. Ensure any area used to work on electrostatic discharge sensitive (ESDS) electrical items receives an ESD control survey and appropriate ESD measures are implemented.

5.1.7.7.2. Provide team members to assist the TD/711 HPW/Division ESD POC with ESD control surveys as required.

5.1.7.7.3. Notify TD/711 HPW/Division ESD POC when additional work areas are required or changes are made to existing areas.

5.1.7.7.4. Ensure all personnel involved with handling, repair, or storage of ESDS items receive initial and annual ESD awareness training.

5.1.8. **LOG OPS Personnel.** LOG OPS personnel are located throughout the TD/711 HPW at the discretion of the Division Chiefs and/or Branch Chiefs. LOG OPS personnel will:

5.1.8.1. Be assigned to implement one or more logistics programs.

5.1.8.2. Manage assigned programs as specified by policy directives.

5.1.8.3. Function as the logistics focal point for their assigned area.

5.1.8.4. Assist personnel with logistics processes and procedures.

5.1.8.5. Work closely with the LOG MGR to ensure logistics requirements are met.

5.1.8.6. Assist TD/Wing leadership in implementing management actions to meet new workloads, target deficiencies and identify and correct root causes.

5.1.8.7. Coordinate equipment purchases with the proper personnel (TMDE Coordinator, Equipment Custodian, LOG MGR, Safety, Logistics Material Control Activity (LMCA), etc.) prior to making any purchases.

5.1.9. **Operator or User.** An operator or user is anyone that uses RDT&E equipment and logistics processes. Operators or users will:

- 5.1.9.1. Work with LOG MGR/Log Ops Personnel to identify logistics requirements for their work area/lab.
  - 5.1.9.2. Coordinate equipment purchases with the proper personnel (TMDE Coordinator, Equipment Custodian, Log Manager, Safety, LMCA, etc.) prior to making any purchases.
  - 5.1.9.3. Use only TMDE calibrated by Air Force Metrology and Calibration (AFMETCAL) or approved source to collect quantitative measurements.
  - 5.1.9.4. Prior to use, ensure the status of the TMDE item is appropriate for the application.
  - 5.1.9.5. Notify the TMDE coordinator if the TMDE item is overdue for calibration or is labeled No Periodic Calibration (NPC) and requires calibration.
  - 5.1.9.6. Follow logistics programs IAW this instruction and TD/711 HPW direction.
  - 5.1.10. **TAA Manager** . The TAA manager will follow Ground Instructional Training Aircraft (GITA)/TAA guidance per AFI 21-101, AFMC SUP, Addendum C.
- 5.2. **SCR Memo for Record (MFR)**. Special certifications are used to identify personnel authorized to clear Red X conditions on SE in laboratory and industrial areas and to perform the additional activities in **Table 5.1**. Ensure individuals assigned to the SCR are trained on forms documentation at time of appointment (See Attachment 17).
- 5.2.1. The Division Chief, with the Branch Chief's recommendation, will designate, in writing, personnel to perform the special certification items in **Table 5.1**.
    - 5.2.1.1. For Red X certification, individuals shall be identified either by equipment type (i.e., compressors, generators), by facility location (e.g., Building 45) or by branch.
    - 5.2.1.2. To add or delete individuals or make changes to the SCR, a new letter will be published.
  - 5.2.2. The Branch Chief will ensure a copy of all special certification designation letters are available in the applicable work/lab areas.
    - 5.2.2.1. These memorandums may be stored electronically as long as the memorandums are readily accessible in the work/lab area.

**Table 1. Mandatory Special Certification Requirements and Prerequisites.**

Item	Mandatory Special Certification Title	Prerequisites
1.	“Red-X” by primary duties	Mil: SSgt or higher, minimum 7-skill level. Civ: DR-I, DO-I, GS-6, WS-3, WL-6, WG-10, or higher. Contr: The COR or Government technical personnel providing contract oversight provide a letter to the Division Chief identifying qualified personnel.
2.	Calibration Limitation Approval (refer to TO 00-20-14)	Mil: SSgt or higher, minimum 7-skill level. Civ: DR-I, DO-I, GS-6, WS-3, WL-6, WG-10, or higher. Contr: The COR or Government technical personnel providing contract oversight provide a letter to the Division Chief identifying qualified personnel.
3.	Lost tool not found in FOD critical area.	Minimum Division Chief level to approve release. The Division Chief is not required to be on the SCR/SC by virtue of their position as the SC approval authority.  The Division Chief may delegate to the Branch Chief. See AFI 21-101 AFMCSUP Addendum C.

5.3. **Equipment Maintenance:** TDs/Wing will follow guidance in AFI 21-101, AFMC SUP Addendum C.

#### 5.4. ESD Control Program

5.4.1. The following paragraphs defines the ESD control program and processes applicable in all research and laboratory areas; to prevent damage to ESDS items, equipment, and operational assets. AFRL ESD programs will follow all aspects of TO 00-25-234.

5.4.2. **ESD POC.** The ESD POC will:

5.4.2.1. Serve as the focal point for all ESD issues.

5.4.2.2. Work with LOG MGR to interpret ESD policies and procedures.

5.4.2.3. Ensure an ESD control survey is conducted on all areas handling or storing ESDS discrete electronic parts, circuit boards, modules, or assemblies.

5.4.2.4. Ensure required ESD controls, procedures, and equipment are implemented.

5.4.2.4.1. Ensure only ESD products and test equipment listed in TO 00-25-234, **Table 7.3** are used.

5.4.2.4.2. Use of a substitute item may only be authorized by the Air Force ESD Control Technology Center.

5.4.2.5. Perform periodic ESD testing.

5.4.2.6. Create an ESD program file that contains:

5.4.2.6.1. A completed copy of the AFRL Form 30, *ESD Control Survey/Certification* (see **Attachment 15**).

5.4.2.6.2. ESD training documentation.

5.4.2.6.3. References to this publication and TO 00-25-234, Section 7.

5.4.2.6.4. A list of all ESD control work areas within the TD/711 HPW/Div.

5.4.2.6.5. Any other pertinent instruction such as a local operating instruction.

5.4.3. **ESD User.** ESD users will follow all requirements defined in TO 00-25-234.

5.4.3.1. ESD users will take an annual ESD training test.

5.4.4. **ESD Training .** AFRL will request updated training and tests developed by AFRL/RXSA and the training will be posted prior to the start of each calendar year. This training is located at the following location: [https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/ESD\\_Training](https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/ESD_Training)

5.4.4.1. All personnel that handle, repair, or store ESDS items will receive initial training and annual awareness training.

5.4.4.2. Trainees shall be tested for comprehension and understanding of ESD causes and control procedures.

5.4.4.3. Training and test results ( $\geq 80\%$  to pass) will be documented in the employee's training and personnel folder or electronic system by their supervisor.

5.4.5. **ESD Control Surveys.** Conduct an ESD control survey on any area that handles or stores discrete electronic parts, circuit boards, modules, or assemblies. The ESD POC will determine the need for surveys in new work areas or when changes are made to an existing area. ESD control surveys will meet all requirements in TO 00-25-234.

5.4.5.1. Be performed by the ESD POC and the work center lead as a minimum.

5.4.5.2. Identify and define ESD control work areas.

5.4.5.3. Treat all electronic components, integrated circuits, and discrete parts as ESDS unless verified as non-sensitive.

5.4.5.4. List control measures and minimum equipment requirements with quantities if available for the ESD control area. When identifying work surfaces (stations), include portable stations/mats.

5.4.5.5. Certify the area meets all ESD control requirements by signing the AFRL Form 30.

5.4.5.5.1. The signed AFRL Form 30 shall be posted at the entrance to the ESD control area. Where this is not feasible, the ESD program file containing the certification must be readily accessible.

5.4.5.5.2. The ESD POC will certify work areas annually through a certification evaluation.

5.4.6. **Periodic ESD Testing.** The ESD POC will perform periodic ESD testing IAW TO 00-25-234, Section 7.

5.5. **Explosive Safety and Security of Explosives.** TDs/Wings working with, handling or storing explosive items must comply with AFI 31-101, *Integrated Defense*, DoD 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*, AFMAN 91-201, *Explosives Safety Standards*, AFI 21-200 *Munitions and Missile Maintenance Management*, AFI 21-201 and applicable host unit instructions.

5.6. **Safety** . TDs/Wings will comply with AFI 91-202, all applicable 48- and 91-series Air Force Occupational Safety & Health (AFOSH) Standards, and applicable host unit instructions. TDs/Wings will establish and manage all applicable safety programs IAW AF, command, state and local guidance.

5.7. **Tool and Equipment Management:** Tool control procedures prevent the duplication and proliferation of tools, ensure accountability, increase efficiency, and increase safety for personnel and equipment. Additional tool and equipment rules for FOD critical areas are contained in paragraph 5.8.

5.7.1. **CTK/Tool Users in a FOD Critical Area:**

5.7.1.1. Open a CTK. Inventory its contents and document on AFMC Form 62, *CTK Inventory and Control Log* (see [Attachment 6](#)).

5.7.1.1.1. A CTK without an individual lock in a secure work center must be signed open when the work center is in use by work center personnel.

5.7.1.1.2. Tool Room CTK. User will inventory and sign open when issued.

5.7.1.1.3. A CTK Individual Item Tracking Log may be used to track tools used by more than one individual.

5.7.1.1.4. Close a CTK. Will inventory contents and document on AFMC Form 62, *CTK Inventory and Control Log* (see [Attachment 6](#)).

5.7.1.1.5. Ensure CTK is kept free from foreign objects and debris when closed and not in use.

5.7.1.2. Tool Room CTK. Tool Room POC will inventory and sign closed on return.

5.7.1.2.1. CTKs supporting a FOD critical area will be signed opened/closed on a daily interval.

5.7.1.3. Notify the CTK Custodian when any CTK discrepancies are discovered, a tool requires replacement or an additional tool is required. Users may replace consumed/expended items in CTKs up to the maximum quantity identified on the Master Inventory List (MIL).

5.7.1.4. Annotate on AFMC Form 61, *Missing, Removed Tools and Equipment*, if CTK items are lost/broken/damaged/temporarily removed. (See [Attachment 5](#))

5.7.1.4.1. Briefly describe the reason the item was removed.

5.7.1.4.2. When full, create a new form and transfer open entries to the new form.

5.7.1.5. Document the on-site loan of tools as follows:

5.7.1.5.1. On the losing CTK, annotate on AFMC Form 61 with who borrowed it, an estimated return date and the location where the tool is loaned in the "Reason" column.

5.7.1.5.2. Personnel borrowing the tool will add the item to AF Form 3126, *Supplemental Listing* (see [Attachment 7](#)) and secure the item in the CTK when the CTK is closed.

5.7.1.5.3. Borrowing user must perform all inventory and user maintenance actions.

5.7.1.5.4. The loan duration will not exceed 90 days.

5.7.1.6. For the off-site loan of tools, contact the CTK Custodian.

5.7.1.7. Prior to introducing any tools into a work area, the CTK Custodian must be notified to ensure the requirements of the tool control and management program are met.

5.7.1.8. For CTKs supporting FOD critical areas, track the exact number of consumable/ expendable items in the CTK, not the maximum quantity.

5.7.1.9. Ensure torque wrench procedures are followed IAW the manufacturer's instructions or applicable TO.

5.7.1.10. An effective rag control program will be established if they are used.

#### 5.7.2. CTK/Tool Users in Non-FOD Critical Area:

5.7.2.1. **CTK/Tool User.** CTK contents should be returned to CTK when no longer needed to maintain 6S and accountability of assets (see [Attachment 3](#)).

5.7.2.2. Open a CTK. Inventory its contents and document on AFMC Form 62, *CTK Inventory and Control Log* (see [Attachment 6](#)). Borrowing user will perform all inventory and user maintenance actions. Exception: Kirkland TDs (RD and RV) are authorized annual open/close interval.

5.7.2.2.1. Ensure CTK is kept free of foreign objects and debris.

5.7.2.3. Notify the CTK Custodian when any CTK discrepancies are discovered, a tool requires replacement or an additional tool is required. Users may replace consumed/expended items in CTKs up to the maximum quantity identified on the MIL.

5.7.2.4. Annotate AFMC Form 61 if CTK items are lost/broken/damaged/temporarily removed.

5.7.2.4.1. Briefly describe the reason the item was removed.

5.7.2.4.2. When full, create a new form and transfer open entries to the new form.

5.7.2.4.3. AFMC Form 61 will not be used to track expendables in non-FOD critical areas.

5.7.2.5. Document the on-site loan of tools as follows:

5.7.2.5.1. On the losing CTK, annotate on AFMC Form 61 with who borrowed it, an estimated return date and the location where the tool is loaned in the "Reason" column.

5.7.2.5.2. Personnel borrowing the tool will add the item to AF Form 3126.

5.7.2.5.3. The loan duration will not exceed 90 days.

5.7.2.6. For the off-site loan of tools, contact the CTK Custodian.

5.7.2.7. Prior to introducing any tools into a work area, the CTK Custodian must be notified to ensure the requirements of the tool control and management program are met.

5.7.2.8. If a tool/item is lost/missing in a non-FOD critical area, conduct a thorough search for the missing tool/item. If not found, notify the CTK Custodian, work center lead and Branch Chief. See paragraph 5.8. for lost tool procedures for items in FOD critical area.

5.7.2.9. Ensure torque wrench procedures are followed IAW the manufacturer's specifications or the applicable technical order.

5.7.2.10. Open a CTK. Inventory its contents and document on AFMC Form 62, *CTK Inventory and Control Log* (see [Attachment 6](#)). Not required when annual is open/close interval.

**5.7.3. CTK Custodian** . The CTK Custodian is the focal point for tool control and accountability for their respective areas/CTKs. CTK Custodians will:

5.7.3.1. Ensure procedures are in place to secure CTKs when not in use.

5.7.3.2. Manage the loan of tools from CTKs.

5.7.3.3. Develop a MIL for each CTK assigned and document CTK changes on the MIL ensuring accuracy.

5.7.3.4. Annotate missing/removed/broken/damaged CTK items on AFMC Form 61 (see [Attachment 5](#)).

5.7.3.5. Ensure all CTKs/tools are properly marked with EIDs.

5.7.3.6. Inspect CTKs when initially established and annually thereafter. Review and sign AF Form 2411, *Inspection Document*, for each CTK during the annual inspection.

5.7.3.7. Manage the warranty replacement of tools.

5.7.3.8. Ensure tool rooms have process to allow access to only authorized personnel.

5.7.3.9. Implement a method to readily identify tools in CTK such as shadowing, outlines, cutouts etc.

#### 5.7.4. General Program Requirements.

5.7.4.1. CTK program templates can be found at the following location: <https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/15999551>

5.7.4.2. Personally procured tools are not authorized in any laboratory or industrial area.

5.7.4.3. Individually Issued Tools. Tools owned by the work center but issued to individual personnel for the duration of their employment. Individually issued tools can be authorized by branch chief in non-FOD critical work centers and will not be managed through the CTK program. Individually issued tools are limited to Leatherman type multi-tools and mini- flashlights and will be permanently marked with an office symbol and number (i.e. AFRL/DSO-007) for tracking purposes.

5.7.4.4. Work center tools and all equipment physically located within a CTK or tool room/crib will be incorporated into the CTK program.

5.7.4.5. Equipment items used outside of the contiguous TD/711 HPW complex or off site will be signed out.

5.7.4.6. Procedures to procure tools using the Blanket Purchasing Agreement (BPA) wherever applicable. (T-2) See AFMC Hand Tools Strategic Sourcing Ordering Guide at: [https://org.eis.afmc.af.mil/sites/HQAFMCA4/A4M/Hand\\_Tools/](https://org.eis.afmc.af.mil/sites/HQAFMCA4/A4M/Hand_Tools/)

**5.7.5. CTK Construction, Organization and Contents.** The CTK Custodian will ensure:

5.7.5.1. All rollaway CTKs with attached or stack-on tool kits that have the same EID will be secured to each other to prevent separation.

5.7.5.2. CTKs will use a system of inlays, outlines, silhouettes, labels, or shadows in the shape of the tools for quick and easy visual inventories. No more than one item is stored in a cutout, outline, shadow, label, or silhouette except for tools issued in a set such as drill bits, Allen wrenches, apexes, or paired items (i.e., gloves and booties).

5.7.5.3. Hardware (screws, nuts, bolts, etc.) will not be stored in CTKs unless they are part of a tool in the CTK (i.e., rivets with a rivet gun) or required as tools.

5.7.5.4. If consumable/expendable items are added to a CTK, assign to a specific location, and identify them by nomenclature, size (if applicable), an asterisk (\*) and maximum quantity on the MIL. When inventoried, the number of consumable/expendable items physically located in the CTK will not exceed the maximum quantity identified on the MIL.

5.7.5.5. Discard removable pocket clips from tools when possible (e.g., flashlights, continuity testers, small screwdrivers, etc.) prior to placing in tool kits. Do not disassemble/damage tools for sole purpose of removing clips, rubber switch guards, etc.

5.7.6. **CTK Security.** CTKs will be secured (locked) when signed closed.

5.7.6.1. A CTK without an individual lock in a secure work center must be signed open at the approved interval (daily or weekly) when the work center is entered. Exception is when annual inventory is used.

5.7.6.2. Keys for CTK locks will be stored in a container (e.g., lock box, cabinet, cipher lock on the side of the CTK, etc.) in the work center.

5.7.6.3. Combination locks may be used to secure CTKs. CTK Custodians may use the same combination on multiple CTKs in a work center.

5.7.7. **CTK Documentation.**

5.7.7.1. The CTK Custodian will create a MIL for each CTK/shadow board/tool cabinet.

5.7.7.1.1. Use the standard MIL format ([Attachment 8](#)) for a CTK/shadow board/tool cabinet where the tools have the same EID.

5.7.7.2. Use the indexed MIL format ([Attachment 9](#)) for an indexed CTK/shadow board/tool cabinet.

5.7.7.3. Contents are identified by drawer/section indicating the total number and type of items in each drawer/section of the CTK.

5.7.7.4. Tools will be described on the MIL to accurately depict the actual size or type to ensure positive tool control (e.g., screwdriver, common, six inches; socket, 3/8 drive x 5/8).

5.7.7.5. Devices used to secure and open the CTK (e.g., CTK key, removable portion of cipher lock, combination lock, etc.) must be included on the MIL.

5.7.7.6. The total number of items in the CTK will be documented on the last page of the MIL.

5.7.7.7. The MIL will be signed and dated by the CTK Custodian.

5.7.7.8. Changes to the CTK will be documented by the CTK Custodian on the MIL.

5.7.7.8.1. Major changes (e.g., new CTK line items, etc.) require a new MIL.

5.7.7.8.2. Minor changes (e.g., correcting spelling errors, updating quantities, deleting line items, etc.) will be made in ink and initialed by the CTK Custodian.

5.7.7.9. Each CTK/shadow board/tool cabinet will have a folder established; six-part folders are recommended. The folder will contain at a minimum the following items.

5.7.7.9.1. Signed copy of the MIL.

5.7.7.9.2. AF Form 3126, if applicable.

5.7.7.9.3. AFMC Form 62.

5.7.7.9.4. AFMC Form 61.

5.7.7.9.5. CTK Custodian contact information.

5.7.7.9.6. Lost tool/item procedures.

5.7.7.9.7. AF Form 2411 if applicable.

5.7.7.9.8. AFMC 310, LOST/FOUND ITEM REPORT. (FOD Critical Area only)

#### **5.7.8. Laboratory/Shop Equipment and Accessories.**

5.7.8.1. Equipment and accessories not physically stored in a CTK or tool room/crib are considered laboratory/shop equipment and must have designated storage locations (i.e. labeled location where the item is stored when not in use - labeled room/shelf/bin/floor space/etc.).

5.7.8.2. Establish designated storage locations for test equipment common accessories (e.g., waveguides, attenuators, fittings, cables, adapters, etc.) that are not part of a CTK. Designated storage locations must be specific work areas or stations and the contents will be identified by some means such as labels or a cabinet listing.

5.7.8.3. Industrial shop machinery accessories/attachments (e.g., blades, arbors, chucks, gears, etc.) need not be controlled as tools; however, these items will be maintained in designated storage locations for accountability.

5.7.8.3.1. At a minimum, storage cabinets/drawers will be labeled to identify contents.

5.7.8.4. Battery/corded powered hand tools (e.g., drills, sanders, saws, sawz-alls, flashlights, etc.) will be stored in designated storage locations or incorporated into a CTK.

5.7.8.4.1. Chargers and removable batteries for powered hand tools may be stored in designated recharging locations.

5.7.8.4.2. Extra batteries (not in a charger) must be stored in a designated storage location.

5.7.8.4.3. These items will be marked, at a minimum, with the owning branch office symbol if not included in a CTK.

5.7.8.5. Tools typically used in a fabrication environment (e.g., taps and dies, drill bits, reamers, files, etc.) will be stored in designated storage locations or incorporated into the CTK program. The expendable/consumable portions of the fabrication related tools sets that are incorporated into the CTK need not be etched; however, any handles or non-expendable/consumable items must be etched.

5.7.8.6. Common hand tools designated as accessories to floor/table mounted fabrication machines will be tethered to the machine. If tethering is not possible due to safety concerns, color-code the item and store it with the machine accessories.

5.7.8.7. Equipment Accessories. Small numbers of tools (20 items or less) used only as true accessories to equipment in a laboratory/work center may be treated as an accessory to the item.

5.7.8.7.1. Must be stored in a designated storage location on or near the equipment.

5.7.8.7.2. Must be complete set or have an attached inventory list.

5.7.8.7.3. Tool sets stored on optical tables will be coded to the optical table.

5.7.8.7.3.1. Label the optical table with an alphabetic character to sufficiently associate the tool set to the table.

5.7.8.7.3.2. Label the tool set/caddy with the same alphabetic character to sufficiently associate the tool set/caddy to the optical table.

5.7.8.7.3.3. Multiple tool sets/caddies will use an alpha-numeric combination.

5.7.8.7.4. Laboratory/shop equipment and accessories taken off site will be signed out on an AF Form 3132, *Non-CTK Equipment Sign Out Sheet* (see [Attachment 10](#)), an AF Form 1297, *Temporary Issue Receipt*, or electronically.

**5.7.9. Marking of Tools and Equipment.** Tools will be marked with an EID (see [Attachment 11](#)) in a method that is legible to the naked eye, not easily changed, duplicated, or removed.

5.7.9.1. Tools that cannot be marked with an EID will be identified on the MIL with an asterisk (\*). These items include:

5.7.9.1.1. Tools too small to mark (drill bits, Allen wrenches, apexes, etc.)

5.7.9.1.2. Tools made of hardened material (hardened steel punch, files, etc.)

5.7.9.2. Stand-alone tool kits and tool room equipment: Use the full nine-digit EID.

5.7.9.3. Tools/Containers within a CTK: The leading zeros after the World Wide Identification (WWID) (first four characters) may be deleted. Example: WR0V00101 might be on the MIL and CTK, while each tool could be etched WR0V101 — leading zeros (0) removed.

5.7.9.4. Devices used to secure and open the CTK (CTK key, removable portion of cipher lock, combination lock, etc.) must be marked/etched with the CTK EID.

5.7.9.5. Fiberglass Handled Hammers: Only etch on the metal head in a non-impact area.

5.7.9.6. TMDE: Use the CTK EID, AFTO Form 65, *TMDE Bar Code Label, Aluminum Stock*, or AFTO Form 66, *TMDE Bar Code Label, Polyester Stock*. If using AFTO Form 65/66, list the label number on the MIL.

5.7.9.7. CTK Padlock and Primary Key(s). Etch/mark with the parent CTK EID and list on the MIL. Tagging the key with the EID is acceptable if etching/marketing is not feasible.

5.7.9.8. Tools that may be disassembled during Use. Mark all parts with the EID. Items that are not normally disassembled during use require only one etching and one entry in the MIL (e.g., a scribe, grease gun, flashlight, etc.).

5.7.9.9. Tool Sets/Containers. Tools that are too small to mark (apex bits, etc.) can be placed in a container (**Note:** container means case, handle, etc.).

5.7.9.9.1. The tool set/container will count as one item on the CTK MIL. Identify the total number of items in the tool set/container on the MIL. For example “10 apexes plus container” identifies 11 total pieces - 10 apexes and a

container.

5.7.9.9.2. Tool sets/containers are shadowed and items counted during each inventory.

5.7.9.9.3. All tool sets/containers must have a contents list. This will be either paper/handwritten with indelible ink on the tool container itself or listed on the CTK MIL.

5.7.9.10. Titanium Engine Blade Tools. In addition to the EID, these kits will be marked "CONTROLLED ITEMS FOR TITANIUM ENGINE BLADE BLENDING ONLY."

5.7.9.10.1. Tools/expendable items used for blending will be kept in a special purpose kit separate from other tools.

5.7.9.10.2. Blue blade blending dye will also be controlled, but must be kept in a flammable locker.

5.7.9.11. Oxygen Equipment Tools. In addition to the EID, mark these kits "FOR OXYGEN EQUIPMENT ONLY." Keep tools used for working on oxygen equipment in a special purpose kit separate from other CTK tools and free of grease and oils.

5.7.9.12. PPE issued to personnel on a permanent basis and not part of a CTK (e.g., ear defenders, safety goggles) will be marked permanently with the individual's last name and office symbol.

5.7.9.13. PPE stored in a laboratory or work area and not part of a CTK (e.g., ear defenders, safety goggles) will be stored in a designated storage location and marked permanently with the office symbol.

5.7.9.14. Individually Issued Tools. Branch Chiefs may individually issue tools to personnel while assigned to the branch. These tools are not part of a CTK and will be permanently marked with an office symbol and number (i.e. AFRL/DSO-007) for tracking purposes.

5.7.9.15. If chits/dog tags/identification tags or similar metal tags or metal dust caps are attached to tools/equipment, they will be secured in a manner that will preclude any possibility of FOD and listed on the MIL with quantity.

5.7.9.16. Fluid Dispensers. Permanently mark grease guns, dispensing cans, spray bottles, pump oilers, and similar containers with the type of grease, fluid, or other liquids and military specification (MILSPEC) of the contents.

5.7.9.16.1. If no MILSPEC exists, mark the item with the manufacturer's name, part number/National Stock Number from the applicable Material Safety Data Sheet (MSDS). Keep hoses and fittings separate for each type of grease.

5.7.9.16.2. If containers hold/dispense hazardous materials, ensure labeling requirements of AFI 90-821, *Hazard Communication*, are accomplished. Contact your Unit Environment Coordinator (UEC) for further guidance.

5.7.10. **Tool Accountability and Control.** The CTK Custodians will ensure:

5.7.10.1. Tools will not be issued individually from tool room/crib CTKs when the same EID is assigned to all of the tools in the CTK.

5.7.10.1.1. Exception. Specialty (one-of-a-kind, high dollar) tools from distributed CTK needed in another location in the TD will be tracked/managed using procedures in 5.7.1.5.

5.7.10.2. Each shadow board or cabinet containing tools will have an AFMC Form 62. Tools that have separate EIDs will be signed out individually on an AFMC Form 62.

5.7.10.3. Tools and equipment used by facility maintenance personnel may be stored in the facility project area as long as the items can be secured.

5.7.10.4. Permanently removed tools will be removed from the MIL and have the location clearly identified as removed (inlay filled in, shadow removed, label pulled, etc.). If the item was identified on AFMC Form 61, close out the line item.

5.7.10.5. When CTKs/tools are required off site, the following procedures apply:

5.7.10.5.1. The items removed from the CTK will be annotated on an AF Form 3126 (see [Attachment 12](#)).5.1.4

5.7.10.5.1.1. The log will constitute the MIL for the deployed items and will accompany the deployed items to the offsite location.

5.7.10.5.1.2. The log will be signed by the CTK Custodian to verify accuracy.

5.7.10.5.1.3. A copy will be kept in the CTK folder.

5.7.10.5.2. If the tools will augment a CTK, the individual tool items will be secured in the CTK and the CTK Individual Item Tracking Log will be added to the CTK folder.

5.7.10.5.3. If the tools will be stand alone, the individual tool items will be stored in a tool bag from the CTK or container if no tool bag is available and secured when not in use at the offsite location. The log, AFMC Form 61 and AFMC Form 62 will go in the tool bag when applicable.

5.7.10.5.4. Upon return, all items will be returned to the CTK, and the CTK will be inventoried by the CTK Custodian to ensure all items are accounted for.

5.7.11. **Annual Tool Inventories.** The CTK Custodians will:

5.7.11.1. Inspect tools under their control when the tool box is initially established and annually thereafter.

5.7.11.2. Change Cipher/combo lock combinations when personnel who know the combination transfer out of the work center.

5.7.11.3. Ensure all tools are properly shadowed, labeled, inlaid, silhouetted, and/or outlined.

5.7.11.4. Ensure all appropriate CTK control procedures apply for consumables/expendables included in the CTK.

5.7.11.5. Ensure all tools are properly marked/etched.

- 5.7.11.6. Ensure CTK contents match (by drawer and section) the CTK MIL, to include lost/broken/missing/removed item documentation.
- 5.7.11.7. Ensure all forms are available and properly filled out.
- 5.7.11.8. Ensure CTK is free of foreign objects/debris.
- 5.7.11.9. Ensure tools are serviceable and proper documentation/replacement action is taken for unserviceable tools.
- 5.7.11.10. Ensure TMDE calibration is not overdue and that limited calibration labels have been initialed. Only personnel identified on the special certification roster may initial these labels.
- 5.7.11.11. Document and retain this inspection electronically or on AF Form 2411. If used, maintain a copy of AF Form 2411 in the CTK Folder.
- 5.7.12. **Tool Replacement Procedures.** The CTK Custodian will:
  - 5.7.12.1. Not issue a replacement tool until receipt of the unserviceable tool or completed lost tool report.
  - 5.7.12.2. De-etch the unserviceable tool and determine if it is a warranted tool. Warranted tools will be replaced by using manufacturer's instructions.
  - 5.7.12.3. Mark replacement tools with the EID prior to placing it in the CTK.
- 5.7.13. **Spare Tool Management.** The following procedures apply if spare (replacement) tools are maintained. The CTK Custodian will:
  - 5.7.13.1. De-etch or remove old CTK markings (WWID may be retained).
  - 5.7.13.2. Create an inventory for the spare tool location by bin and quantity.
    - 5.7.13.2.1. Spare tool inventories will be developed utilizing the standard MIL format and will be signed by the CTK Custodian.
    - 5.7.13.2.2. Consolidate spare tools where possible; bin like spare tools together.
  - 5.7.13.3. Store all spare tools in a lockable cabinet, tool box, or room/cage. Only CTK Custodians or designated representatives identified by the Branch Chief on an appointment letter, are authorized access to the storage location. Designated representatives are identified by the applicable Branch Chief and receive the same training as CTK Custodians (See Attachment 17).
  - 5.7.13.4. Conduct and annotate spare tool storage locations inspections annually. Document/maintain the inspection electronically or on AF Form 2411. At a minimum, verify the inventory against the actual contents.
- 5.7.14. **Lost/Missing Tool/Item Procedures.** When notified a tool/item has been lost, the CTK Custodian will notify the Branch Chief who determines if an additional search is required and when a replacement tool should be ordered.
- 5.7.15. **Training.**
  - 5.7.15.1. All TCMs, CTK Custodians, and users will receive one-time tool control training. The LOG MGR will identify qualified trainers.

5.7.15.2. Training will be documented in the appropriate system.

**5.7.16. Locally Manufactured, Developed, or Modified Tools and Equipment** . If in a laboratory environment, these rules do not apply. If the locally manufactured tool or equipment has use on other than research and development activities, then follow guidance below.

5.7.16.1. Locally Manufactured/Modified Tools (LMT) Procedures. If an existing tool must be modified to suit a particular research or test need, approval must be obtained from the Work Center Lead (senior project researcher or engineer, team lead, etc.) to ensure the LMT is still functional and safe to use for the new purpose. To document this approval for the modification required, use the memorandum format (see [Attachment 13](#)) and forward a copy to the applicable branch chief and CTK Custodian.

5.7.16.1.1. The owning CTK Custodian will maintain records of all approved LMTs for as long as the LMT is in use. The CTK Custodian will ensure proper procedures are followed when the item must be added to a CTK.

5.7.16.1.2. If the LMT is for a one-time use, the CTK Custodian will ensure the LMT is disposed of properly and retain the approval memorandum for 90 days.

5.7.16.1.3. If a TO contains the option of a LMT, users do not need to approve or maintain records on that LMT as long as the LMT remains approved by the TO.

5.7.16.2. Equipment Manufactured/Modified by AFRL. Research equipment or SE manufactured/created for AFRL for which no TO or COTS manual exists, will be evaluated by the cognizant design engineer/scientist to determine periodic maintenance inspection (PMI) requirements. The results of this determination will be forwarded to LOG OPS personnel.

5.7.16.2.1. Any equipment with PMI requirements identified within a research/test plan will follow the performance and PMI documentation requirements contained within the research/test plan.

5.7.16.2.2. Any equipment with PMI requirements identified within a research/test plan, but without PMI documentation requirements, will document the preventative maintenance requirements on AFTO Form 244, *Industrial/Support Equipment Record*, and LDPs will be developed to perform the PMI requirements.

5.7.16.2.3. For any equipment with PMI requirements, but the requirements are not identified within a research/test plan the operator/user and cognizant engineer/scientist will determine the PMI requirements on the equipment needed to support the research.

5.7.16.2.3.1. The operator/user will document the determination on an MFR, retain this MFR in equipment/research files, and develop LDPs to perform the PMI requirements.

5.7.16.2.3.2. The operator/user documents the identified system PMI requirements on the AFTO Form 244, as required.

**5.8. FOD Prevention Program.** FOD is any damage to an aircraft, engine, aircraft system, component, tire, munitions, or SE caused by FO which may or may not degrade the required safety and/or operational characteristics of the aforementioned items.

5.8.1. There are two categories of FO areas: critical and non-critical. FO critical areas are areas where aircraft maintenance, testing, and operations are performed (e.g., jet engine maintenance, fuel cell maintenance, major sub-assembly maintenance, and support equipment). Non-critical FO areas are all other areas not defined previously. TDs/Wing shall identify and document critical/non-critical FO areas. Objective is to prevent FO to research/test articles/equipment.

5.8.2. HQ AFMC/A4M is the OPR for the AFMC FOD Prevention Program.

5.8.3. TD/Wing will assign a FOD Prevention Manager (FOD Monitor) and post their name in a prominent place within each applicable unit on a locally developed visual aid. The FOD Prevention Program Manager will:

5.8.3.1. Manage the TD/711 HPW FOD program.

5.8.3.2. Maintain a copy of the FOD monitor appointment letter.

5.8.3.3. Maintain a list of approved FOD critical areas and signed FO RM assessments.

5.8.3.4. Post FOD critical visual aids to mark FOD critical areas. Visual aid template: <https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/16703953>.

5.8.3.5. Participate in FO investigations and ensure sound corrective actions.

5.8.3.6. Develop specific FOD awareness training.

5.8.3.6.1. Supervisors shall ensure personnel who work in or transit through FOD critical areas receive initial FOD Awareness and Prevention training. Personnel who work in a FOD Critical Area will also receive an initial and annual site-specific FOD training. Training will address the following:

5.8.3.6.1.1. Standardized training documentation requirements.

5.8.3.6.1.2. FOD awareness and prevention practices.

5.8.3.6.1.3. Initial FOD training. Supervisors shall ensure newcomers who work in or transit FOD critical areas (other than designed walk areas) are trained on work center specific FOD awareness and prevention practices prior to starting work in their assigned work area. Ensure individuals who are assigned temporary duty (TDY), transferred, or loaned from other units receive a work center FOD training prior to beginning work in their area.

5.8.3.6.1.4. Annual FOD training. Supervisors shall ensure personnel work in or transit through FOD critical areas receive annual site or work center specific FOD awareness and prevention training.

5.8.3.7. Perform initial and final FOD incident reporting to the Maintenance Division (HQ AFMC/A4M) through AFRL/DSO.

5.8.3.8. Perform an initial within 24 hours and send to AFRL/DSO CLM. Provide final report via e-mail to AFMC/A4M workflow through AFRL/DSO within two duty days of completing the FOD investigation and collecting all data. Reports shall be maintained for a minimum of 24 months (may be electronic). The FOD report format listed in [Attachment 14](#) shall be followed.

**5.8.4. Personnel in FOD-Critical Areas.** All personnel in FOD-critical areas will:

5.8.4.1. Remove personal items such as wigs, hair fasteners, rings, necklaces, chains and other jewelry while working in these areas. Unless they place themselves in the immediate path of work-in-progress or are assisting in some way, personnel who are not performing research or support services are not required to remove personal items.

5.8.4.2. Dispose of any FO collected in the work center trash receptacles. Small FO collection cans/bags may be used instead of trash receptacles.

5.8.4.3. Conduct a thorough FOD walk and inventory open CTKs supporting the FOD critical area to account for all tools prior to operating research or test articles and equipment.

5.8.4.4. Preclude FO entrapment during assembly, configuration, and installation of research systems, subsystems, components, and support articles.

5.8.4.4.1. Bag, tag with the number of items removed, and accurately identify all hardware removed.

5.8.4.4.2. Unless research assembly, configuration, or installation is ongoing, cap, plug, or cover all open ports, lines, hoses, electrical connections, ducts, tubes, and cavities on the research system and support articles to prevent FO from migrating/entering the openings. Caps and plugs must not be of the type that can be inadvertently left in place when connecting mating components.

5.8.4.4.3. Upon completion, conduct an inspection for FOs and for general cleanliness of the research system and facility.

**5.8.5. Lost/Missing Tool/Item Procedures for FOD-Critical Areas.** When notified a tool/item has been lost in a FOD critical area, the CTK Custodian will:

5.8.5.1. If the tool/item was lost on an aircraft, notify the aircraft commander or aircraft crew chief and follow the procedures of the organization owning the aircraft.

5.8.5.2. Conduct another search, not to exceed two hours. The Division Chief will determine when it is safe to resume normal operations.

5.8.5.2.1. All activities in the FOD-critical area will be halted until the tool/item is found and start the lost/missing tool/item procedures.

5.8.5.3. The user will initiate a lost tool report using AFMC Form 310, *Lost/Found Item Report* (see [Attachment 14](#)), for each lost item and annotate AFMC Form 61. Forward AFMC Form 310 to all responsible parties and to the CTK Custodian.

5.8.5.4. No replacement tool will be ordered until AFMC Form 310 has been completed and on file with the CTK Custodian.

- 5.8.5.5. CTK Custodians forward a copy of all lost tool reports to the LOG MGR for review and filing.
- 5.8.5.6. Replace tool at direction of the Branch Chief.
- 5.8.6. **FOD-Related Incident Reporting Procedures.** Investigate each FOD incident to determine the precise cause and ensure positive corrective action is accomplished. FOD incidents are classified as preventable and non-preventable.
- 5.8.6.1. FODs are considered preventable except when:
- 5.8.6.1.1. Caused by natural environment or wildlife. This includes hail, ice, animals, insects, sand, and birds. Report this type of damage IAW AFI 91-204.
  - 5.8.6.1.2. Caused by internal engine materiel failure, as long as damage is confined to the engine.
  - 5.8.6.1.3. Caused by materiel failure of an aircraft/equipment component if the component failure is reported as a Deficiency Report (DR) using the combined mishap DR reporting procedures of AFI 91-204 and TO 00-35D-54, USAF Deficiency Reporting, Investigation, and Resolution.
- 5.8.6.2. All mishaps will be reported using the existing detachment mishap reporting process. **NOTE:** Do not report damage designed to be inflicted during the research/test process.
- 5.8.6.3. If the mishap is FO related, the Detachment Safety Manager will notify the FOD Prevention Program Manager. The FOD Prevention Program Manager will:
- 5.8.6.3.1. Perform an initial within 24 hours, send to AFRL/DSO CLM. Provide final report to AFRL/DSO who will email it to AFMC/A4 workflow within two duty days of completing the FOD investigation and collecting all data. Reports shall be maintained for a minimum of 24 months (may be electronic). The FOD report format listed in [Attachment 16, Figure A16.1](#) shall be followed.
- 5.9. **Safety and Mishap Prevention Procedures:** See AFI 21-101 AFMCSUP, Addendum C.
- 5.10. **Forms.** TDs/Wing will use TO 34-1-3 and TO 00-20-1 to determine required forms along with form documentation requirements. Additional requirements, above and beyond the TO, will be addressed in unit policy directives. Forms documentation training requirements will be determined at unit level. Each unit will develop a method to ensure changes to requirements are briefed. Ensure individuals assigned to the SCR are trained on forms documentation at time of appointment.
- 5.11. **GITA or Training Aid Aircraft (TAA):** TD/Wings with assigned GITA or TAA will follow guidance published in AFI 21-101, AFMCSUP, Addendum C.

## 6. Quality Assurance (QA)

- 6.1. **General** . The QA office evaluates the quality of the TD/711 HPW logistics activities, and manages the Evaluation and Inspection (E&I) Plan. The E&I plan provides an objective sampling of the logistics activities. QA personnel are not an extension of the logistics work force but serve primarily as technical advisors. Due to their policy and inspection

responsibilities, QA personnel will not be responsible for the implementation of any logistics programs other than the QA program. RQ Det 7 and RW QA can act as the FOD Monitor.

6.1.1. The site QA will inspect the common logistics programs and processes used by munitions (MUNS) personnel: Tool Control, FOD, ESD, TMDE, etc. These results will be tracked and incorporated into the monthly QA summary like any other QA inspection.

6.1.2. MUNS QA: Due to the unique nature of RDT&E operations and that all munitions are required to be managed on a custody account, no formal MUNS QA is required and no Program Evaluations (PEs) or Quality Verification Inspections (QVIs) will be performed. The weapons safety program requirements in AFI 91-202 provide adequate oversight of AFRL munitions related aspects. AFRL will follow the LSEP.

**6.2. QA SUPT Responsibilities.** The QA SUPT uses QA inspection results to ensure consistent logistics practices according to technical data and management procedures. The QA SUPT ensures QA and logistics programs meet the customer's needs and the intent of higher headquarters instructions. The QA SUPT shall:

6.2.1. Serve as a Logistics technical advisor to detachment leadership and LOG MGRs. Make recommendations to the AFRL/DSO CLM to enhance the effectiveness of logistics operations.

6.2.2. Determine the duties and responsibilities of the QA Inspector.

6.2.3. Train QA Inspectors IAW practices specified in this chapter.

6.2.4. Develop site logistics policy and assist in developing any logistics training material as required.

6.2.4.1. Training will include information on contracting issues and QA's role while inspecting logistics processes per the LSEP and the role of the COR in contracted logistics management.

6.2.5. Coordinate and provide oversight on all initiatives to change published logistics instructions or processes.

6.2.6. Implement and administer the LSEP.

6.2.6.1. Assist AFRL/DSO CLM in developing the LSEP.

6.2.6.2. Review inspection report summary inputs for accuracy and content.

6.2.6.3. Initiate actions when additional attention is required to resolve adverse logistics activity trends.

6.2.6.4. Establish procedures for inspectors to document completed inspections.

6.2.6.5. Ensure a monthly LSEP summary is published. Forward a copy of the monthly LSEP summary to leadership and to AFRL/DSO CLM for distribution to the AFRL/DS.

6.2.7. Conduct other management assessments and program evaluations of logistics and related programs as assigned.

6.2.8. Evaluate logistics management procedures, of logistics activities, including locally developed forms, publications, OIs, checklists, etc., for accuracy, intent, and necessity.

6.2.9. Coordinate with TD/711 HPW to ensure inspectors have unrestricted access to research labs and work centers.

6.2.10. Perform the responsibilities of the QA Inspector.

**6.3. QA Inspector Responsibilities.** QA inspectors will:

6.3.1. Evaluate the TD/711 HPW logistics activities.

6.3.2. Include explanatory comments in reports to allow supervisors to assess the health of logistics programs.

6.3.3. Assist the TD/711 HPW logistics manager in performing logistics technical research, preparing accident/incident reports, and other tasks as necessary to ensure continuous process improvement.

6.3.4. Enter inspection and evaluation reports into the Quality Assurance Tracking and Trend Analysis System (QANTTAS), the QA database.

6.3.5. Evaluate pertinent forms documentation.

**6.4. LSEP.** The AFRL/DSO CLM will update/revise, publish and distribute an AFRL/DS approved annual LSEP plan which will include:

6.4.1. Methods for inspecting, evaluating, and rating technician proficiency, equipment condition, etc.

6.4.2. Establish acceptable quality levels (AQL) for tasks. An AQL denotes the maximum allowable number of minor findings that a task, process or product may be charged for the evaluation to be rated "Pass." Failure to meet an AQL/standard results in the task being rated as "Fail."

6.4.3. Key task listing.

6.4.4. Routine inspection listing.

**6.5. E&I Plan.** Each QA office will develop an E&I plan showing areas, types and numbers of inspections and evaluations that must be conducted based on the instructions in [Attachment 4](#). QA will inspect all special inspection areas listed in the LSEP if present. The QA E&I plan will be coordinated with the TD/711 HPW LOG MGRs. The E&I plan will be posted in EBS. When developing the plan, the QA SUPT will:

6.5.1. Address areas of concern identified by leadership or HHQs inspections.

6.5.2. Tailor the plan for each TD/711 HPW.

6.5.3. Review, update, formalize and distribute the E&I plan at least quarterly.

**6.6. QA Training.** The QA SUPT will develop a training plan to train all QA personnel to ensure uniformity in application of E&I techniques and philosophy. QA SUPT will develop a training plan to train all QA and QA augmentee personnel as required, identify the site QA inspector training, and Evaluator Personnel Evaluation (EPE) requirements. If no QA Superintendent is assigned, the QA inspector's supervisor will perform the EPE.

6.6.1. The following are minimum QA training requirements:

- 6.6.1.1. Complete an EPE prior to performing QA evaluations, not to exceed 60 days of job assignment.
  - 6.6.2. Training must cover E&I techniques, documenting inspection worksheets and actions to prevent personnel injury or equipment damage.
  - 6.6.3. Personnel must be familiar with all tasks they evaluate/inspect.
  - 6.6.4. Inspectors must be trained in procedures for evaluating work centers that may include contractor employees.
  - 6.6.5. Upon completion of training, the QA SUPT and trainee will sign and date the last page of the training plan indicating that training has been completed. The training plan will be retained as long as the inspector is assigned to QA.
- 6.7. Conducting Evaluations.** QA inspectors must have access to all TD/711 HPW areas. TD/Wing LOG MGR/Log Ops Personnel will facilitate no/short notice access to all areas, subject to active testing restrictions. When performing evaluations, the QA Inspector will:
- 6.7.1. Upon entering an area to perform an inspection, identify themselves to TD/711 HPW personnel and explain what will be inspected.
  - 6.7.2. Perform the evaluation.
  - 6.7.3. Brief the results to the TD/711 HPW QA Supt or LOG MGR, who will brief the Branch Chief.
  - 6.7.4. Route the completed evaluation to the TD/711 HPW LOG MGR or designated representative.
  - 6.7.5. Conventional Munitions Program Workload Surveillance.** The following steps were developed in coordination with HQ AFMC A4MW and A4US and are being implemented in lieu of standing up a formal munitions QA program.
    - 6.7.5.1. Site QA will inspect the common logistics programs and processes (tool control, FOD, ESD, TMDE, etc.) used by munitions personnel. The results will be tracked and incorporated into the monthly QA summary like any other QA inspections.
    - 6.7.5.2. SIs will be performed on items listed in table 6.1. per the LSEP. Incorporate the results into the monthly QA summary.

**Table 2. Unit/Org and Base.**

Unit/Org and Base			
AFMC Conventional MUNS QA Program Applicability Matrix	Applicable? Y/N		
	Edwards	Eglin	Kirtland
Munitions Quality Specific Areas			
10. Accountability	Y	N (custody only)	N (host duty)
11. Storage practices, security, and safety	Y	Y	N (host duty)
12. Inspection	Y	N (host duty)	N (host duty)
13. Materiel handling and test equipment	Y	Y	N (host duty)
14. Stockpile management	Y	Y (custody only)	N (host duty)
15. Training programs	Y	Y	N
16. Infrastructure (LPS, grounds, and bonds)	Y	Y	N (host duty)
17. TAS, CTKs, tools, and support equipment	Y	Y	N
18. Munitions assembly	N	N	N
19. Tactical Munitions Reporting System (TMRS)	N	N	N

6.8. **AFRL-Approved QA Database.** Each QA office will use QANTTAS as the QA database to capture assessment and trend data.

6.9. **Failed Evaluations.** All failed evaluations will be closed within 14 calendar days, unless the TD/711 HPW LOG MGR requests a date extension from the QA SUPT.

6.9.1. If the failed evaluation is not closed within 14 calendar days, the QA SUPT will notify the TD/711 HPW LOG MGR and work area Branch Chief for resolution.

6.9.2. If the failed evaluation is not closed within 21 calendar days, the QA SUPT will notify the TD/711 HPW LOG MGR and work area Division Chief for resolution.

6.9.3. If the failed evaluation is not closed within 30 calendar days, the QA SUPT will send a workflow request to the TD/711 HPW leadership requesting assistance in resolving the open evaluation.

6.9.4. All evaluations meeting the requirements in 6.9.3. will be included in the monthly QA LSEP summary.

6.10. **QA Monthly Summary.** The QA office will publish and distribute electronically a monthly LSEP summary of QA inspection data to the AFRL/DSO CLM, TD/711 HPW LOG MGRs, AFRL/DSO, Division Chiefs and TD/711 HPW leadership. The summary will include the following, when applicable:

- 6.10.1. Trend analysis.
- 6.10.2. Compliance with and currency of TOs, technical data, and directives.
- 6.10.3. Equipment forms documentation.
- 6.10.4. Compliance and management of housekeeping programs.
- 6.10.5. Compliance with unit directed programs.

6.11. **QA Product Improvement Program (PIP).** Establish a PIP, if applicable (i.e. DR and AFTO Form 22, *Technical Manual Change Recommendation and Reply*). This is at the TODO level.

## 7. Technical Data Management

7.1. **General.** Technical data will be managed as required per TO 00-5-1. When a TO is not available, COTS manuals, LDPs or CWIs will be used to support and maintain AFRL equipment. The AFRL equipment owner will ensure required COTS manuals are available and scanned into TDS.

7.1.1. Electronic Technical Orders (eTOs) viewed via ETIMS will be centrally managed by WPAFB on one "AFRL TODO" account for all AFRL units. The AFRL TODOs will also create and manage a TODO account for each site in case they require physical media.

7.1.2. Organizations that require classified TOs must establish a TODO account IAW TO 00-5-1 and will order and manage the classified TOs themselves.

7.1.3. Organizations that require hard copy versions of TOs must contact the TODO to establish a (paper) sub-account. These TOs must be located in an operational library.

7.1.4. TDS training is available online for TODOs, supervisors and users at: [https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/fetch/2000/210703/210704/12357229/37809116/10970363/16600933/16616482/16465167/TDS\\_Help.htm?nodeid=16468381&vernum=-2](https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/fetch/2000/210703/210704/12357229/37809116/10970363/16600933/16616482/16465167/TDS_Help.htm?nodeid=16468381&vernum=-2)

7.2. **Center TODO (CTODO).** Responsible for AFRL technical data policy and management of TDS. Functions as Center contact for TO issues IAW AFMCI 21-301, *Technical Order System Implementation Policies*. The CTODO will:

7.2.1. Represent AFRL at AF and AFMC Centralized Technical Order Management (CTOM) committees.

7.2.2. Program Manager for TDS; test, validate and approve TDS system change requests.

7.3. **TODO.** A TODO and an alternate will be established in writing and be the main focal point to manage the technical data effort. TODOs will:

7.3.1. Use the ETIMS to establish an initial distribution (ID) and to maintain the currency of all TOs in-use.

7.3.2. Load and maintain technical data documents in TDS.

7.3.3. Grant access to specific personnel for required documents when approved by a government supervisor/manager. Verify approval authority using the TD/711 HPW/Detachment/Division (consolidated if possible) approval list, as applicable.

7.3.4. Assist in locating applicable technical data.

7.3.5. Assist in the development of LDPs and CWIs.

7.4. **TDS Users.** Users will:

7.4.1. Ensure all equipment has a TO or COTS manual available for it in ETIMS or TDS. When purchasing new equipment, verify there is technical data for it in ETIMS or TDS. If not, the purchaser will obtain the technical data, scan it and submit it to the TODO for upload into TDS.

7.4.2. **TOs** . Access TOs via ETIMS or TDS.

7.4.2.1. Access eTOs (TOs ending in WA-1) in ETIMS via the following AF Portal link <https://www.my.af.mil/etims/ETIMS/index.jsp>.

7.4.2.2. Access other TOs (paper, WA-2, etc.) via the following TDS link: <https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/2091845>, or applicable website link provided by the TODO.

7.4.2.3. Submit TO addition requests to the TODO via TDS.

7.4.3. **COTS Manuals.** If no TO is available, ensure a COTS manual is available for all equipment. If incomplete or out of date, the user will obtain a current version, scan it and submit it to the TODO for update in TDS.

7.4.3.1. If research needs require the use of older versions of COTS manuals, end-users may use the required older version(s). Users are responsible for obtaining the current or proper version to match equipment configuration.

7.4.3.2. Search TDS to ensure technical data is available for equipment being used.

7.4.3.2.1. If unable to open the document, request access via the automated TDS access/permission process.

7.4.3.2.2. If unavailable, submit addition requests to the TODO via TDS.

7.4.3.3. Scan the paper COTS manual or obtain an electronic COTS manual in pdf format. Send the electronic copy of the COTS manual to the TODO.

7.4.3.3.1. Attach any operational notes developed during setup or modification of equipment for tests at the end of the appropriate COTS manual as an addendum or working notes. Scan the notes and attach to the end of the document.

7.4.3.3.2. Scanned COTS manuals may be maintained in a COTS library at the discretion of the owning organization. The hard copy version of a COTS manual will be identical to the scanned version in TDS. Annotate on the COTS manual front cover that it has been entered into TDS.

7.4.4. **LDPs and CWIs.** Write LDPs for the use or maintenance of, and CWIs for the calibration of, research or test assets when a procedure does not exist.

7.4.4.1. Contact the TODO for assistance in formatting the LDP/CWI.

7.4.4.2. Route completed LDP/CWI for Division Chief approval and signature.

7.4.4.3. Forward signed LDP/CWI to TODO for upload into TDS.

**7.4.5. Printing Technical Data Extracts.** The user must ensure their technical data extracts are the most current available from the source document prior to use. Print TO extracts from TDS or ETIMS if the following requirements are met.

7.4.5.1. When color is critical to understanding the TO data, local printing or reproduction must be in color.

7.4.5.2. The distribution markings and controls of the complete TO apply to any extracts. Print the TO title page whenever printing or reproducing TO extracts. The TO title page must accompany the TO extracts at all times.

7.4.5.3. Users who print out the TO extract must include the following documentation on it: initials, date printed, and date verified current.

7.4.5.4. TOs or portions of TOs printed or reproduced from superseded versions or reproduced for non-operations & maintenance (O&M) use will be marked "FOR REFERENCE ONLY," and will not be used with operational equipment.

7.4.5.5. Destroy all TO extracts after use when no longer needed; not to exceed 30 days.

**7.5. TDS.** The TODO loads and maintains unclassified technical data documents in TDS using the following procedures:

7.5.1. Order paper TOs if the user requires a paper TO or an eTO is unavailable.

7.5.1.1. Upon receipt, scan and upload an electronic, text-searchable copy of the document to TDS.

7.5.1.2. Post changes and supplements IAW TO 00-5-1 to scanned TOs and update the metadata fields in TDS to reflect currency.

7.5.2. Load COTS manuals (electronic copy from manufacturer or scanned, text-searchable copy of hard copy manual) into TDS.

7.5.2.1. Use the COTS manual naming convention located at: <https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/17746980>.

7.5.2.2. Enter a distribution code of "P" for proprietary data and "N" for non-proprietary data. The TDS *TODO Reference Guide* contains detailed information on this process/procedure and is located at: <https://livelink.ebs.afrl.af.mil/livelink/lisapi.dll/open/17742694>.

7.5.2.3. For proprietary data, TODOs will obtain a "permission-to-host" document from the owner of the proprietary data prior to posting the document in TDS.

7.5.2.3.1. Upon receipt, upload the document in the applicable TDS Manufacturers Consent to Host folder.

7.5.2.3.2. When contact cannot be established with the owner of proprietary data (i.e. - no longer in business, etc.), the TODO will post a document within TDS that records the efforts to establish contact.

7.5.3. Assist in the development of LDPs and CWIs.

7.5.3.1. The LDP naming convention can be found at: <https://explorer.ebs.afrl.af.mil/livelink/lisapi.dll/open/17746980>.

7.5.3.2. The LDP templates can be found at: [https://explorer.ebs.afrl.af.mil/livelink/lisapi.dll/open/LDP\\_Templates](https://explorer.ebs.afrl.af.mil/livelink/lisapi.dll/open/LDP_Templates).

**7.6. Time Compliance Technical Order (TCTO) Process.** A TCTO is an AF mandated modification or improvement of an equipment item or system. Although TCTOs rarely apply to AFRL work centers, TODOs and Work Center Leads will implement the following procedures when applicable.

7.6.1. TODOs will:

7.6.1.1. Establish a subscription to the applicable TCTO header in ETIMS.

7.6.1.2. When a TCTO is received, communicate with the QA office and the affected work center for a review of applicability.

7.6.1.2.1. If the TCTO does not apply, record non-applicability in the corresponding ETIMS note block.

7.6.1.2.2. If the TCTO applies, record receipt on AFTO Form 95, *Significant Historical Data*, IAW TO 00-20-2, *Maintenance Data Documentation*, in lieu of Reliability & Maintainability Information System (REMIS). To furnish a means of flagging the type of TCTO, the following codes will be entered at the end of the TCTO title in the Remarks block: immediate action "I," urgent action "U," routine action "R" and safety "S."

7.6.1.2.3. Update AFTO Form 95 upon completion of the TCTO.

7.6.2. Work Center Leads will:

7.6.2.1. Order any parts/kits per the TCTO instructions and notify TODO when parts are received.

7.6.2.2. Notify the TODO upon completion of the TCTO.

7.6.2.3. Obtain AFTO Form 95 from the TODO and attach it to the item upon return to the product center or supply system.

**8. Supply Support:** AFRL will follow AFRLI 23-101 and AFI 21-101 AFMCSUP, Addendum C.

**9. Contract Surveillance:**

9.1. The QA Inspector will evaluate government logistics activities, The COR will surveil contracted logistics activities and the QA will observe/oversee contracted logistics activities. When observing/overseeing contracted activities, the QA Supt will communicate discrepancies to Branch Chief/Logistics Manager or government equivalent who will then communicate discrepancies to the COR for final resolution with the contractor. The COR can use QA surveillance information as a part of his/her surveillance methods but cannot rely solely on QA inspection of logistics activities in place of COR logistics surveillance.

**10. Additional Requirements and Programs:**

10.1. **6S Process.** The 6S process is a continuous improvement standard industry practice that supports Air Force Smart Ops for the 21st Century (AFSO21) ([Attachment 3](#)), the lean approach of reducing waste in a work environment, and organizing the work place to be as efficient and value-added as possible. The 6S process facilitates the creation and maintenance of organized, clean, safe, and efficient workplaces that enable the highest level of value-added performance. This means eliminating search, travel, transporting materials, inventory, and hazards. It achieves its ends by introducing organization and orderliness, eliminating unneeded materials, and establishing self-discipline. For further information, see AFMCI 90-104, *Implementing AFSO21 Initiatives*.

ROBERT D. McMURRY, Major General, USAF  
Commander

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

- DoD 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*, 17 April 2012
- AFI 21-101, *Aircraft and Equipment Maintenance Management*, 21 May 2015
- AFI 21-200, *Munitions and Missile Maintenance Management*, 2 January 2014
- AFI 21-201, *Conventional Munitions Maintenance Management*, 3 June 2015
- AFI 31-101, *Integrated Defense*, 8 October 2009
- AFI 90-821, *Hazard Communication*, 27 January 2014
- AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, 15 June 2015
- AFMAN 91-201, *Explosives Safety Standards*, 12 January 2011
- AFMCI 21-301, *Technical Order System Implementation Policies*, 20 November 2013
- AFMCI 90-104, *Implementing AFSO21 Initiatives*, 29 September 2008
- AFRLI 23-101, *Material Management, Logistics Materiel Control Activity*, 5 May 2016
- AFRLI 61-103, *AFRL Research Test Management*, 27 June 2013
- ANSI/ASQ Z1.4-2008, *Sampling Procedures and Tables for Inspection by Attributes*, 1 January 2008
- ANSI/ESD S20.20, *Protection of Electrical and Electronic Parts, Assemblies and Electronic Parts, Assemblies and Equipment*, 11 February 2007
- TO 00-5-1, *AF Technical Order System*, 14 June 2016
- TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, 1 April 2016
- TO 00-20-2, *Maintenance Data Documentation*, 15 March 2016
- TO 00-20-14, *Air Force Metrology and Calibration Program*, 30 June 2016
- TO 00-25-234, *General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment*, 22 September 2013
- TO 34-1-3, *Inspection and Maintenance Machinery and Shop Equipment*
- TO 00-35D, *USAF Deficiency Reporting, Investigation and Resolution*, 1 September 2015

***Prescribed Forms***

- AFRL Form 30, *ESD Control Survey/Certification*, 1 January 2016

***Adopted Forms***

- AF Form 847, *Recommendation for Change of Publication*, 22 September 2009

AF Form 1297, *Temporary Issue Receipt*, 01 July 1987

AF Form 2411, *Inspection Document*, 01 April 2003

AF Form 3126, *General Purpose (Supplemental Listing and Distributed CTK Individual Item Tracking Log)*

AF Form 3132, *General Purpose (Non-CTK Equipment Sign Out Sheet)*

AF Form 3136, *General Purpose*

AFTO Form 65, *TMDE Bar Code Label, Aluminum Stock*, 1 October 1989

AFTO Form 66, *TMDE Bar Code Label, Polyester Stock*, 1 October 1989

AFTO Form 95, *Significant Historical Data*, 17 June 2002

AFTO Form 244, *Industrial/Support Equipment Record*, 13 January 2011

AFMC Form 61, *Missing/Removed Tools and Equipment*, 19 January 2006

AFMC Form 62, *CTK Inventory and Control Log*, 8 November 2005

AFMC Form 310, *Lost/Found Item Report*, 12 April 2011

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

**6S**—Sort, Straighten, Shine, Standardize, Sustain and Safety

**AFMAN**—Air Force Manual

**AFMC**—Air Force Material Command

**AFMETCAL**— Air Force Metrology and Calibration

**AFOSH**— Air Force Occupational Safety and Health

**AFRIMS**— Air Force Records Information Management System

**AFSO21**— Air Force Smart Ops for the 21st Century

**ANSI**— American National Standards Institute

**AQL**— Acceptable Quality Levels

**CaC**— Common Access Card

**CDDAR**—Crash Damaged or Disabled Aircraft Recovery

**CLM**— Center Logistics Manager

**COR**—Contracting Office Representative

**COTS - Commercial-off-the**—Shelf

**CTK**— Composite Tool Kits

**CTODO**— Center Technical Order Distribution Office

**CTOM**— Centralized Technical Order Management Committee

**CWI**— Calibration Work Instruction

**DET CC**— Detachment Commander  
**DOP**—Dropped Object Prevention  
**DR**—Deficiency Report  
**EBS**— Enterprise Business System  
**E&I**— Evaluation and Inspection  
**EID**— Equipment Identification Designator  
**EPE**— Evaluator Proficiency Evaluation  
**ESD**— Electrostatic Discharge  
**ESDS**— Electrostatic Discharge Sensitive  
**ETIMS**— Enhanced Technical Information Management System  
**eTOs**—Electronic Technical Orders  
**FO**— Foreign Object  
**FOD**— Foreign Object Damage  
**GITA**—Ground Instructional Training Aircraft  
**GSU**— Geographically Separated Unit  
**HHQ**— Higher Headquarters  
**I&O**— Integration & Operations  
**IAW**— In Accordance With  
**ID**— Initial Distribution  
**IPI**—In Process Inspection  
**LDP**— Locally Developed Procedure  
**LMCA**—Logistics Material Control Activity  
**LMT**— Locally Manufactured/Modified Tool  
**LOG MGR**— Logistics Manager  
**LOG OPS**— Logistics Operations  
**LRU**— Line Replaceable Unit  
**LSEP**— Logistics Standardization and Evaluation Program  
**MIL**— Master Inventory List  
**MILSPEC**— Military Specification  
**MIS**— Maintenance Information Systems  
**MFR**— Memorandum for Record  
**MSDS**— Material Safety Data Sheet

**MUNS**— Munitions  
**NPC**— No Periodic Calibration  
**O&M**— Operations and Maintenance  
**OI**— Operating Instruction  
**OPR**—Office of Primary Responsibility  
**RM**— Risk Management  
**PE**—Program Evaluation  
**PMEL**— Precision Measurement Equipment Laboratory  
**PMI**— Periodic Maintenance Inspection  
**POC**—Point of Contact  
**PPE**— Personal Protective Equipment  
**QA**— Quality Assurance  
**QANTTAS**— Quality Assurance Tracking and Trend Analysis System  
**QA SUPT**— Quality Assurance Superintendent  
**QVI**—Quality Verification Inspection  
**R&D**— Research and Development  
**RDS**— Records Disposal Schedule  
**RDT&E**— Research, Development, Test, and Evaluation  
**REMIS**— Reliability & Maintainability Information System  
**RS**— Research Site  
**SCR**— Special Certification Roster  
**SE**— Support Equipment  
**SRU**— Shop Replaceable Unit  
**SSE**— Systems Safety Engineer  
**STINFO**— Scientific and Technical Information  
**TA**—Transient Aircraft  
**TAA**—Training Aid Aircraft  
**TCM**— Tool Control Manager  
**TCTO**—Time Compliance Technical Order  
**TD**—Technology Directorate  
**TDS**— Technical Data System  
**TDY** —Temporary Duty Assignment

**TMDE**— Test Measurement and Diagnostic Equipment

**TMRS**—Tactical Munitions Reporting System

**TO**— Technical Order

**TODO**— Technical Order Distribution Office

**UEC**— Unit Environment Coordinator

**WPAFB**— Wright Patterson Air Force Base

**WWID**— World Wide Identification

### *Terms*

**Air, Space, and Aerospace Equipment**— Defined as equipment used and maintained to meet the Air Force research, development, test, and evaluation mission. It may include aircraft, missiles, space equipment, communications-electronic equipment, RDT&E equipment, avionics, engines, training equipment, SE, aircraft and space ground equipment, sound suppressor systems, TMDE, and major end-items or systems of equipment.

**Common Tools**— These items include, but are not limited to, wrenches, sockets, hammers, screwdrivers, pliers, torque wrenches, etc.

**CTK**— CTKs are any controlled area or container used to store tools or equipment to maintain order, positive control and ease of inventory. CTKs may be in the form of a toolbox, a shadow board, shelves, system of drawers (Stanley Vidmar, Lista, etc.), cabinets, or other similar areas or containers. CTKs contain tools necessary to accomplish RDT&E operations/activities.

**CTK Equipment**— Equipment physically included in a CTK and treated the same as a CTK.

**Consumable Item**— Items used in conjunction with tooling/equipment, yet after limited usage do not maintain their original configuration and are considered used up. Examples are safety wire, solder, tape, sanding disk, string, chalk, etc.

**Designated Storage Location**— Identifies the labeled storage location of an item when not in use. Common items requiring a designated storage location include equipment, accessories, attachments, battery chargers, rechargeable batteries, etc.

**ESD - The rapid, spontaneous transfer of electrostatic charge induced by a high electrostatic field. Note:**—Usually, the charge flows through a spark between two bodies at different electrostatic potentials as they approach one another.

**ESD Controls**— Procedures, policies, equipment, and practices that, when utilized, lessen the potential for ESD damage.

**ESD Control Survey**— An inspection performed and documented by the Wing/TD/division ESD POC identifying work areas requiring ESD controls and the quantities and types of controls needed to prevent damage to ESDS items.

**ESD Control Area**— An area defined by an ESD control survey in which ESD controls must be utilized. An ESD control area may be a work center, lab, room, workstation, or other area established by the survey. The control area shall encompass all locations where ESDS items are handled.

**ESDS**— Any equipment, circuit, electronic component, or device susceptible to damage from electrostatic discharge.

**Expendable Item**— Items that become unfit for use and must be periodically replaced. Examples include items such as blades, apexes, drill bits, reamers, etc.

**External Contractor**— Contractor that does not permanently reside within AFRL facilities/organizations or a contract that is not managed by AFRL.

**FO**— A substance alien to aircraft; engines; space systems; support equipment; research, development, test and evaluation equipment, systems; or components thereof that has been allowed to invade the product.

**FOD**— Any damage to an aircraft; engine; space system; support equipment; RDT&E equipment, systems, or components thereof caused by an external FO that may degrade the required safety or operational characteristic of the item.

**FOD-Critical Area/Process**— Any work center conducting research, test, development, integration, or manufacturing where a misplaced/dropped tool/item could reasonably be expected to cause serious damage to personnel/equipment or adversely affect RDT&E mission accomplishment.

**Housekeeping**— Maintain the work center in a clean, orderly condition. This includes cleaning up after yourself, putting trash in trash containers, using drip pans as applicable, sweeping floors to keep them free of debris, cleaning up fluid spills immediately, and returning items back to their designated locations when not in use.

**Individually Issued Tools**— Tools owned by the work center but issued to individual personnel for the duration of their employment. Individually issued tools can be authorized by Branch Chief in non-FOD critical work centers and will not be managed through the CTK program. Individually issued tools are limited to Leatherman-type multi-tools and mini-flashlights.

**Internal Contractor**— Contractors that permanently reside within AFRL facilities/organizations and are issued a Common Access Card (CaC); are integrated into day-to-day operations, or the contract is managed by AFRL.

**Laboratory/Shop Equipment**— Equipment assigned for use in laboratory/work center. This equipment is not physically part of the CTK, but must have an identified storage location.

**Like Items**— Items that perform the same function and are similar in nature.

**Line Replaceable Unit (LRU)**— An item normally removed and replaced as a single unit to correct a deficiency or malfunction on an end item of equipment.

**Master Inventory List (MIL)**— Primary source document for inventory of CTKs. The MIL indicates the total number of items in each drawer or section of the tool kit.

**Non-FOD Critical**— Work areas determined not to meet the criteria required for FOD critical areas.

**Personal Tools**— Tools procured and/or owned by individual personnel, not the work center. Personally procured tools are not authorized in any laboratory or industrial area.

**Shop Replaceable Unit**— A component of a LRU normally removed and replaced to repair or reconfigure an LRU.

**Site**— A geographic location and surrounding local area where AFRL has an operation.

**Special Tools**— Items or tools designed and developed to perform a peculiar maintenance operation on a specific end item of equipment or component.

**Supplemental Listing**— The supplemental list is a listing of all items kept in CTKs that are not listed on the MIL. A supplemental listing will be used when specialty (one-of-a-kind, high dollar) tools are needed in another location in the wing/TD.

**Tools**— Those items issued to a work center or to an individual in the performance of maintenance, inspection, creating, or working on RDT&E operations, activities, research equipment or research rigs.

**Tool Storage Facility/Tool Room/Tool Crib**— A controlled area within a work center designated for storage and issue of tools and equipment.

**Attachment 2****WAIVER/CHANGE REQUEST FORMAT**

**A2.1.** The following format will be used in submitting waiver requests or recommended changes to any logistics publication without a defined process. These requests will be submitted in a memorandum format and shall include the following information.

A2.1.1. Submitting Organization.

A2.1.2. Date.

A2.1.3. Subject: (Waiver or Change Request).

A2.1.4. Priority of Request: (Urgent or Routine).

A2.1.5. Reference: Include chapter, paragraph, and line number or Table or Figure number.

A2.1.6. Proposed waiver or change requested.

A2.1.7. Background and Discussion: (Unique circumstances or history leading up to request; rationale for waiver or change and any workarounds).

A2.1.8. Recommendation: Desired outcome and identify any alternative processes that will be used.

A2.1.9. Applicability and Duration: (Unit(s) to which waiver and change applies and duration of waiver).

A2.1.10. POC (name, office symbol, DSN, and e-mail).

## Attachment 3

## AFSO 21 6S PRIMER

Figure A3.1. AFSO 21 6S Primer.

A Review of How AFSO21 Works

AFSO21 has the purpose of “Lean improvements through involvement.”

- You know your processes the best;
- Your people know their workplaces the best;
- The AFSO21 approach facilitates improvement to your processes and workplaces with:
  - Methodologies that work;
  - Your people’s involvement;
  - Your people’s expertise.

Formal Events Have Begun

AFMC has moved ahead on three *quick-win* initiatives, involving some of your people: 1) Certification & Accreditation; 2) Vehicle Registration; 3) HQ AFMC Tasking process.

AFMC has determined the first priority improvement initiatives, involving more of your people: 1) T&E Enterprise; 2) Core Unit Type Code Basing; 3) Integrated Training; 4) Source Selection.

**But Lean Thinking Can Begin Without Formal Events**

One of the tools of AFSO21 is “6S.” While it can be used as a tool in an event, it can also be used by each of us to make our jobs leaner and more productive. First, let’s see what 6S means; then, let’s see how it can be used outside of formal events.

6S is about eliminating waste and maximizing value-added work (the work process, not the workplace).

To this end, 6S uses its steps to create and maintain an organized, clean, safe, and efficient setting that enables the highest level of value-added performance. This means eliminating search, travel, transporting materials, inventory, asking others for help and hazards.

6S achieves its ends by introducing organization and orderliness, eliminating unneeded materials, and establishing self-discipline. In a sense, it applies some principles of “time management” to your physical work space and to your virtual work space (computer). 6S includes:

- **Sorting:** sorting all materials, tools, equipment, supplies and information into two categories – needed and not needed -- then, discarding or disposing of what is not needed. *“When in doubt, throw it out!”*
- **Straighten/Systematize:** systematically arrange needed items for the most efficient and effective retrieval and use. Everything, including furniture, is located convenient to the point of use. *“A place for everything and everything in its place!”*

- **Shine or Sweep:** establish a regular cleaning and preventative maintenance schedule; prevent contamination; remove reasons for dirt, debris and damage. *“While polish is a product of pride, polish produces pride!”*
- **Standardize:** standardize work practices with easy-to-follow procedures. Standards make any abnormality obvious and help prevent inefficiencies and quality variations. Standards include visual measures for maintaining themselves. *“Recognize what needs to be done and see at-a-glance how it should be done!”*
- **Self-discipline/Sustaining:** prevent returning to the old way; develop the new way into habits; ensure there is continuous review of changes and application of standards. *“Sustaining 6S is second nature.”*
- **Safety** (added to the original 5S): create and maintain a safe workplace. We should already have formal programs for the physical part of safety; we must also prevent people from becoming emotionally wounded to where they cannot be effective in their work processes. *“Injuries hinder production, but hurt people hurt people.”*

**6S Evaluation Form For Your E-mail and Data Files**

<b>Sort</b> (Organization)	<b>Distinguish between what is needed &amp; not needed</b>
	Have all unnecessary e-mail items, old files been removed?
	Does a procedure exist for removing or archiving unneeded items?
<b>Straighten</b> (Orderliness)	<b>A place for everything and everything in its place</b>
	Is there a file system for everything in e-mail, in archives, in paper files?
	Is everything in its place? Are places obvious and easy to identify?
<b>Shine</b> (Cleanliness)	<b>Cleaning and looking for ways to keep it clean</b>
	Are file structures clean and mutually exclusive? Same for e-mail, data?
	Are there procedures for cleaning out files routinely? Are they followed?
<b>Standardize</b> (Adherence)	<b>Standardizing your work practices</b>
	Is all your file structure visible? Do you drag-and-drop upon first viewing?
	Do you follow set times for archiving, deleting? Are they on calendar?
<b>Sustain</b> (Self-Discipline)	<b>Following the rules to sustain</b>
	Are you faithfully following these procedures, regularly?
	Do you have a way of holding yourself accountable built in?
<b>Safety</b> (Self-Preservation)	<b>Maintaining a safe work place (stress-wise)</b>
	Have you given yourself time to learn how to 6S? Can you get help?
	Do you prioritize time to keep yourself 6S'd? What makes it priority?

## Attachment 4

## QA SAMPLING PLAN

**A4.1. Introduction.** The sampling plan illustrated in [Table A4.1](#) is derived from American National Standard Institute (ANSI)/ASQ Z1.4-2008, *Sampling Procedures and Tables for Inspection by Attributes*.

**A4.2. Sampling Plan.**

A4.2.1. TD Population. The number of end items in a category will be used as the TD population. For example: total number of CTKs, TMDE, SE, etc.

A4.2.2. Average QA Pass Rate. The table contains 5 columns, each corresponding to a different average QA pass rate. Inspection areas with low QA pass rates are sampled at a much higher rate than those with consistently high QA pass rates.

**Table A4.1. Sampling Plan.**

<u>TD Population</u>		<u>Average OA Pass Rate (previous 6 months)</u>				
		<u>&lt;87%</u>	<u>87-89.99%</u>	<u>90-94.99%</u>	<u>95-99.99%</u>	<u>100%</u>
1	8	2	2	2	1	1
9	15	2	2	2	1	1
16	25	2	2	2	1	1
26	50	3	3	2	2	1
51	90	5	4	3	2	1
91	150	8	7	5	4	2
151	280	13	11	8	6	3
281	500	20	16	12	8	4
501	1,200	32	26	20	13	7
1,201	3,200	50	40	30	20	10
3,201	10,000	80	64	48	32	16
10,001	35,000	125	100	75	50	25
35,001	150,000	200	160	120	80	40
150,001	500,000	315	252	189	126	63
500,001		500	400	300	200	100

**A4.3. Using the Sampling Plan.** The monthly QA sample rate will be re-calculated every month. For each inspection area, cross reference the inspection area's average QA pass rate for the previous 6 months with the inspection area's TD population on the sampling plan table. The result will be the number of QA inspections required for that inspection area this month.

**A4.4. Business Rules.** Business rules are applied to inspection categories to document how you are applying the ANSI to each category. Business rules are structured to limit scheduled inspections and to prevent over inspecting.

A4.4.1. **CTKs** . Inspections  $\leq$  100% of population per calendar year (CY).

A4.4.2. **TMDE** . Use population/12 for sampling plan, inspections  $\leq$  100% of population per CY.

A4.4.3. **FOD** . Inspections  $\leq$  100% of population per quarter.

A4.4.4. **VEHICLES** . Inspections  $\leq$  100% of population per quarter.

A4.4.5. **SUPPORT EQUIPMENT** . Inspections  $\leq$  100% of population per CY.

A4.4.6. **ESD** . Inspections  $\leq$  100% of population semi-annually.

A4.4.7. **TDS** . Use population/12 for sampling plan, inspections  $\leq$  100% of population per CY.

A4.4.8. **EM** . Use population/12 for sampling plan, inspections  $\leq$  100% of population per CY.

A4.4.9. **SUPPORT STOCK** . Inspections  $\leq$  100% of population per CY.

A4.4.10. **FACILITY** . Inspections  $\leq$  100% of population per CY.

**A4.5. Deviations.** There may be instances when it will be necessary to deviate from the sampling plan table results. Some examples include trend analysis results, SIP results, TD requests and inspection results. Deviations should be infrequent and of limited duration. Document all deviations, including reason and duration, in the monthly QA summary report.

**Attachment 5**

**COMPLETION INSTRUCTIONS FOR AFMC FORM 61**

**A5.1. CTK NO.** Enter the EID for the distributed CTK. For shadow boards/cabinets, enter the location designator.

**A5.2. SQUADRON.** Enter the wing/TD identifier.

**A5.3. WORK CENTER.** Enter the branch identifier.

**A5.4. NOMENCLATURE.** For distributed CTKs, enter the description of the item. For dispatchable and shadow board/cabinet items, enter the tool EID and a brief item description (e.g., WPWS00001/Pipe Wrench). See [Figure A5.1](#).

**A5.5. REASON.** Enter the reason the item was removed or to identify a broken item that has not been removed. For example, use broken and removed; broken not removed; or removed for Precision Measurement Equipment Laboratory (PMEL).

**A5.6. VERIFIED BY.** Print the first initial of the first name and last name of the person identifying/removing the item or loaning the specialty item.

**A5.7. DATE OUT.** Enter the date the item is removed or identified.

**A5.8. DATE REPLACED.** Enter the date the item is returned or replaced.

**A5.9. INITIALS.** For broken items, enter the CTK Custodian initials. For specialty items, enter the initials of the person replacing the item.

**Figure A5.1. Sample AFMC Form 61.**

MISSING/REMOVED TOOLS AND EQUIPMENT					
CTK NO.		SQUADRON		WORK CENTER	
WPP0023E		AFRL/RQOEE		RQOEE	
NOMENCLATURE	REASON	VERIFIED BY	DATE OUT	DATE REPLACED	INITIALS
Screwdriver	broken/removed	M. Washington	20121010	20121201	MJW





## Attachment 8

## STANDARD MIL FORMAT

**A8.1.** A different format may be used, but it must address the items identified in [Table 8.1](#) below. **Note:** The Part Number and Manufacturer fields are optional.

Table A8.1. Standard Mil Format with Same EID.

Location	CTK EID: WPMLO0001 Tool Description	Org: RXOF		Tool EID: WPMLO1	
		C/E?	Part Number	Manufacturer	Qty
	CTK KEY (and padlock if used)		UNK	UNK	1
DRAWER 1	11/32 NUTDRIVER		UNK	CHANNELLOCK	1
DRAWER 1	Multi tip driver (Driver + 8 bits)		MEGAPROOF	CULLY	2
DRAWER 1	Multi tip driver (Driver + 4 bits + 3 bit holders)*		32477	KLEIN	1
DRAWER 1	SCREW STARTER		UNK	UNK	1
DRAWER 1	WIRE MARKER TAPE (10 Rolls+Dispenser)*	C	50716	3 M	1
DRAWER 1	TOTAL				6
DRAWER 2	Empty				0
DRAWER 3	15-13MM OPEN END WRENCH		44507	CRAFTSMAN	1
DRAWER 3	15" FLAT FILE With Handle		UNK	NICHOLSON	1
DRAWER 3	25' TAPE MEASURE		UNK	KOBALT	1
	Nutdriver / Screwdriver Set (13+case) Contains: Handle, Extension, # 1 Phillips, # 3 Phillips, 3/16" Straight, 1/4" Straight, 3/16", 7/32", 1/4", 9/32", 5/16", 11/32" 3/16 Hex		99PS-50	Xcelite	1
DRAWER 3	1/4" DRIVE SOCKET SET (24pc + case)		9-34804	CRAFTSMAN	1
DRAWER 3	HOLE SAW KIT (14pc + case)*	E	49-22-4066	MILWAUKEE	1
DRAWER 3	TOTAL				6
DRAWER 4	RIVET GUN + 4 TIPS* + WRENCH		UNK	STANLEY	1
DRAWER 4	DEBURRING TOOL WITH TIP*	E	UNK	UNK	1
DRAWER 4	15" FLASHLIGHT (2 bulbs max)		LEGEND	BRINKMAN	1
DRAWER 4	6" RAZOR KNIFE WITH BLADE* (6 blades max)	E	UNK	ALLWAY	1
DRAWER 4	15" HACKSAW WITH BLADE*	E	UNK	LAWSON	1
DRAWER 4	ROLL OF ELECTRICAL TAPE	C	UNK	UNK	1
DRAWER 4	TOTAL				6
DRAWER 5	27 OZ. DEAD BLOW HAMMER		593573	HUSKY	1
DRAWER 5	12" "L" SQUARE		45-912	STANLEY	1
DRAWER 5	DRILL INDEX (29pc + case)*	F	UNK	UNK	1
DRAWER 5	12" LEVEL SQUARE (2 PCS) NO SCRIBE		UNK	CRAFTSMAN	1
DRAWER 5	DRILL/TAP/DEBURR BIT SET (6pc+ case)	E	UNK	GREENLEE	1
DRAWER 5	ADJUSTABLE MIRROR		HT-S2	ULLMAN	1
DRAWER 5	ALLEN WRENCH SET METRIC (9pc + case)*		UNK	ALLEN	1
DRAWER 5	METRIC ALLEN WRENCH SET		88015	CHESCO	1
DRAWER 5	TOTAL				8
DRAWER 6	Torque Wrench 3/4" drive (1pc+Case)		96355	Central Tools Inc.	1
DRAWER 6	WIRE STRIPPERS		UNK	GREENLEE	1
DRAWER 6	DIGITAL METER + 2 PROBES * (TMDE:C835265)		23 III	FLUKE	1
DRAWER 6	PEN STYLE DMM+ PROBE* (TMDE:C835268)		DM73B	METERMAN	1
DRAWER 6	14.4V Cordless Drill + Battery*		SID 144-A	HILTY	1
DRAWER 6	HAMMER DRILL WITH CHUCK KEY		5370-1	MILWAUKEE	1
DRAWER 6	Leather Electrical Gloves (1 PAIR)		40021	Klein	1
	TOTAL				7
	<b>TOTAL TOOLS CTK WPMLO00001</b>				<b>34</b>

CTK Custodian Signature

Date

## Attachment 9

## INDEXED MIL FORMAT

**A9.1.** A different format may be used, but it must address the items identified in [Table A9.1](#) below. Note: The Part Number and Manufacturer fields are optional.

**Table A9.1. Indexed Mil Format with Indexed EID.**

Bldg 655 Rm 038		Org: RXLMP		Cabinet CTK example		
Location	Tool EID	Tool Description	C/E	Part Number	Manufacturer	Qty
	CAB 1	CTK KEY				1
Backwall	WPRXOF001	24" Pipe Wrench		UNK	Task Force	1
Backwall	WPRXOF002	Strap Wrench, 17 7/8" Length, 1 3/4" Wide Strap		NO. 5	Ridgid	1
Backwall	WPRXOF003	Crow Bar, 18 1/2" Length		UNK	UNK	1
Backwall	WPRXOF004	Pry Bar, 30" Length, Tongue End		UNK	UNK	1
Backwall	WPRXOF005	Wrench, Adjustable, 24"		UNK	Pittsburgh	1
Backwall	WPRXOF006	Wrench, Open End, 1 1/2"		UNK	UNK	1
Backwall	WPRXOF007-8	C-Clamp, 4 1/4" Opening, 2 1/8" Depth		NO. 104	Armstrong	2
Backwall	WPRXOF009-12	C-Clamp, 4" Opening, 1 3/4" Depth		66724	Craftsman	4
					<b>Total Tools Back Wall</b>	<b>12</b>
Door 1 - Inside	WPRXOF013	C-Clamp, 8" Opening, 3" Depth		UNK	Cincinnati Tool Co.	1
Door 1 - Inside	WPRXOF014	C-Clamp, 6" Opening, 2 3/8" Depth		66726	Craftsman	1
Door 1 - Inside	WPRXOF015	Clamp, 8" Opening, 8 1/2" Length		UNK	Brink & Cotton	1
					<b>Total Tools Door 1 - Inside</b>	<b>3</b>
Door 1 - Outside	WPRXOF016-17	C-Clamp, 8 1/2" Opening, 4 5/8" Depth		78-408	Armstrong	2
Door 1 - Outside	WPRXOF018	C-Clamp, 12" Opening, 3" Depth		UNK	Cincinnati Tool Co.	1
Door 1 - Outside	WPRXOF019-20	C-Clamp, 12" Opening, 3 1/4" Depth		UNK	UNK	2
					<b>Total Tools Door 1 - Outside</b>	
Door 2 - Inside	WPRXOF021	Crosscut Saw, 24" Blade		UNK	Berkshire	1
Door 2 - Inside	WPRXOF022	Crosscut Saw, 15" Blade + cover		15-334	Stanley	1
Door 2 - Inside	WPRXOF023	C-Clamp, 2" Opening, 1 3/4" Depth		UNK	Hargrave	1
Door 2 - Inside		C-Clamp, 2" Opening, 3 3/8" Depth		UNK	B & C	1
Door 2 - Inside		C-Clamp, 6" Opening, 2 3/8" Depth			Craftsman	1
					<b>Total Tools Door 2 - Inside</b>	<b>5</b>
Door 2 - Outside		C-Clamp, 6" Opening, 3 1/2" Depth			Armstrong	3
					<b>Total Tools Door 2 - Outside</b>	<b>3</b>
Door 3 - Inside		Empty			<b>Total Tools Door 3 - Inside</b>	<b>0</b>
Door 3 - Outside		Empty			<b>Total Tools Door 3 - Outside</b>	<b>0</b>
Door 4 - Inside		Empty			<b>Total Tools Door 4 - Inside</b>	<b>0</b>
Door 4 - Outside		Empty			<b>Total Tools Door 4 - Outside</b>	<b>0</b>
Shelf 1	WPRXOF029	Torque Wrench 3/4" drive (1 pc + Case) * (C822584)		96355	Central Tools Inc.	1
					<b>Total Tools - Shelf 1</b>	<b>1</b>
Shelf 2	WPRXOF030	Tap & Die Set (54 pieces + case)*		UNK	Greenfield	1
					<b>Total Tools - Shelf 2</b>	<b>1</b>
Shelf 3		Empty			<b>Total Tools - Shelf 3</b>	<b>0</b>
					<b>Total Tools</b>	<b>31</b>

\_\_\_\_\_  
CTK Custodian Signature

\_\_\_\_\_  
Date



## Attachment 11

## AFRL EID CONVENTION

**A11.1.** The first four characters of the EID are the WWID code. The following WWIDS shown in **Table A11.1** are established for AFRL.

**Table A11.1. AFRL EID Convention.**

<u>SITE</u>	<u>TD/711 HPW</u>	<u>WWID</u>
Tri-Service Research Laboratory (TSRL)	711 HPW	BRHE
Edwards RS	RQ	EBME, EBIN, EBFB, EBSP, EBAL, EBHA, EBHC, EBFZ, EBPC, EBIL, EBIS, EBVT, EBEC, EBFL, EBEB, EB13, EBSM, EBSC, EBSH
Eglin RS	RW	EMNA, EGMN, EMGI, EMGN, EMGS, EMED, EMEI, EMEP, EMER, EMEX, EMMF, EMMI, EMMW
Maui RS	RD	KRDMS
Phillips RS	RD	KRDB, KRDC, KRDE, KRDF, KRDH, KRDL, KRDS
	RV	HAL0, HANT, HANB, KRA0, KRAB, KRVA, KRVB, KRVC, KRVD, KRVE, KRVF, KRVG, KRVH, KRVI, KRVJ, KRVK, KRVL, KRVM, KRVO, KRVP, KRVS
Rome RS	RI	RSIF
Wright RS	711 HPW	WPHE, WV13
	RQ	WPPR, WPVA
	RX	WPML
	RY	WPSN, WPSNH, WPIF, WPML
	WS	WPWS
ARNOLD AFB	RQ	WPPR

**A11.2.** The process to assign the remaining five characters will be established by the TD/711 HPW LOG MGR.



## Attachment 13

**LOCALLY MANUFACTURED/MODIFIED TOOLS (LMT) MEMORANDUM  
FORMAT**

Figure A13.1. LMT Memorandum Format.



**DEPARTMENT OF THE AIR FORCE  
AIR FORCE RESEARCH LABORATORY  
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433**

(Date)

MEMORANDUM FOR (Applicable Branch Chief)  
FROM: (Owning Work Center)

SUBJECT: Locally Manufactured Modified Tools Approved

1. The following locally manufactured modified tool was approved for use in (enter owning work center). (Enter description of the locally manufactured modified tool). (Choose one of the following statements: the locally manufactured modified tool was added to CTK (CTK EID) or \*nle LMT is only approved for one-time use).

2. A digital picture of the item is attached.

3. If there are any questions, please contact me.

(Work Center Lead Signature Block)

Attachment  
Digital Picture

**Attachment 14****COMPLETION INSTRUCTIONS FOR AFMC FORM 310 (FOR FOD CRITICAL AREAS ONLY)**

- A14.1. Block 1.** Enter a wing/TD unique control number. Use the wing/TD, Date, and running total for that date to construct the control number, for example, WS36105. See [Figure A14.1](#).
- A14.2. Block 2.** Print the name of the individual who discovered the item missing or found the item.
- A14.3. Block 3.** Enter the office symbol of the individual listed in block 2.
- A14.4. Block 4.** Enter the date and time the item was discovered missing. Leave blank for found items.
- A14.5. Block 5.** Enter a brief description of the lost/ found item.
- A14.6. Block 6.** Enter the CTK EID for the item.
- A14.7. Block 7A .** Describe the area where the item was lost. Leave blank for found items.
- A14.8. Block 7B .** Enter the serial number or describe the major end item the item was on or near. Leave blank for found items.
- A14.9. Block 8.** Provide a brief description of how the item was lost or found.
- A14.10. Block 9.** Enter a legible signature for the person identified in Block 2.
- A14.11. Block 10.** Print the CTK Custodian name and the date/time they were notified of the lost/found item.
- A14.12. Block 11A.** When a replacement tool is authorized, enter the Branch Chief's signature.
- A14.13. Block 11B.** Enter the date the replacement tool is authorized.
- A14.14. Block 11C.** Enter the Branch Chief's phone number.
- A14.15. Block 11D.** Enter the Branch Chief's office symbol.
- A14.16. Block 11E.** Enter the legible signature of the CTK Custodian issuing the replacement tool.
- A14.17. Block 11F.** Enter the date the replacement tool was issued.
- A14.18. Block 12.** Provide a description of the search efforts used to find the lost item. Leave blank for found items.
- A14.19. Block 13.** Enter the date and time the search was initiated for the lost item. Leave blank for found items.
- A14.20. Block 14.** Enter the date and time the search was terminated for the lost item. Leave blank for found items.
- A14.21. Block 15.** Print the full names of the individuals that primarily conducted the search for the lost item. Leave blank for found items.
- A14.22. Block 16.** When a lost item search is terminated, indicate if the item was found or not. Leave blank for found items.

**A14.23. Block 16A.** Provide the location and date an item is found.

**A14.24. Block 16B.** If used, this is completed by the Branch Chief. If not used, leave blank.

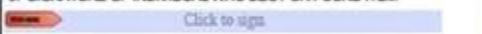
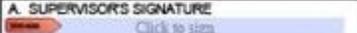
**A14.25. Block 17A.** The work center lead enters a legible signature and the date/time signed.

**A14.26. Block 17B.** The CTK Custodian enters a legible signature and the date/time signed.

**A14.27. Block 17C.** The Branch Chief enters a legible signature and the date/time signed.

**A14.28. Block 18.** The TD/711 HPW designated representative enters a legible signature and the date/time signed.

Figure A14.1. Sample AFMC Form 310.

LOST/FOUND ITEM REPORT				1. CONTROL NUMBER		
2. NAME OF INDIVIDUAL WHO LOST OR FOUND ITEM (Last, First, MI)		3. ORGANIZATION AND SHOP		4. DATE AND TIME LOST		
5. DESCRIPTION OF LOST/FOUND ITEM AND STOCK NUMBER				6. KIT IDENTIFICATION NUMBER		
7A. AREA WHERE ITEM WAS LOST		7B. GIVE SERIAL NUMBER OF MAJOR END ITEM (If applicable)				
8. STATEMENT OF HOW ITEM WAS LOST OR WHERE FOUND. IDENTIFY ITEM WORKED ON AT TIME OF LOSS BY PART NUMBER/STOCK NUMBER OR SERIAL NUMBER (TMS/MDS/SN). (Use reverse if more space is needed)						
9. SIGNATURE OF INDIVIDUAL WHO LOST OR FOUND ITEM 				10. SUPERVISOR'S NAME/DATE AND TIME NOTIFIED		
11. REPLACEMENT TOOL AUTHORIZED/OPTION AT THIS POINT OR FOLLOWING COMPLETION OF REPORT						
A. SUPERVISOR'S SIGNATURE 		B. DATE	C. PHONE	D. OFFICE SYMBOL	E. ISSUED BY	F. DATE
12. DESCRIBE EFFORTS TO FIND LOST ITEM OR WHERE FOUND ITEM ORIGINATED (Attach all support documents required i.e., checklist, logic tree. Use reverse side if more space is needed)						
13. TIME AND DATE SEARCHED STARTED			14. TIME AND DATE SEARCH TERMINATED			
15. SEARCH CONDUCTED BY (List primary individual(s))						
16. WAS ITEM FOUND <input type="checkbox"/> YES <input type="checkbox"/> NO		A. IF FOUND, GIVE LOCATION AND DATE		B. IF NOT, WAS ITEM THE RESULT OF NEGLIGENCE <input type="checkbox"/> YES <input type="checkbox"/> NO		
17. COORDINATION						
A. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL 						
B. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL 						
C. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL 						
18. AUTHORIZATION TO DISCONTINUE SEARCH AND RELEASE END ITEM						
SIGNATURE AND TITLE OF AUTHORIZED INDIVIDUAL 						

## Attachment 15

## AFRL FORM 30 ESD CONTROL SURVEY/ CERTIFICATION

Figure A15.1. AFRL Form 30.

ESD CONTROL SURVEY/ANNUAL CERTIFICATION			
ORGANIZATION/BRANCH/ROOM #		Date (YYYYMMDD)	
I. SURVEY TEAM MEMBERS			
NAME			
II. WORK AREA DESCRIPTION <i>Define ESDS control area and work performed.</i>			
DESCRIPTION OF WORK AREA			
III. ESDS ITEMS <i>Please check ESD items found within work center</i>			
<input type="checkbox"/> CIRCUIT BOARDS/MODULES		<input type="checkbox"/> DISCRETE PARTS	
		<input type="checkbox"/> ASSEMBLIES	
		<input type="checkbox"/> LRUs/SRUs	
IV. ESD CONTROL REQUIREMENTS			
NOTE: ESD workstation includes word surface, wrist strap, & common point ground (7.5.d(1))		NOTE: Static dissipative flooring system includes static dissipative flooring, shoes and seating (7.5.d(7))	
<input type="checkbox"/> ESD Workstation (fixed)*	Quantity	<input type="checkbox"/> Static dissipative flooring *	Quantity
<input type="checkbox"/> Portable workstations	Quantity	Nozzles* <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Soldering Iron(s)	Quantity	Type <input type="checkbox"/> Dry nitrogen <input type="checkbox"/> Hot air blowers	
<input type="checkbox"/> Wrist Strap Tester	Quantity	<input type="checkbox"/> Compressed Air <input type="checkbox"/> Vacuum	
<input type="checkbox"/> Bench Top Ionizer	Quantity	Garments/Gloves/Fingercots <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Caps/Plugs	Quantity	Packaging Materials/Containers <input type="checkbox"/> Yes <input type="checkbox"/> No	
Add'l Grd Elec Tools		Storage Cabinets and Shelves <input type="checkbox"/> Yes <input type="checkbox"/> No	
Explain in Remarks below or Pg 2 <input type="checkbox"/> Yes <input type="checkbox"/> No		Other	
		Misc <input type="checkbox"/> Describe in Remarks below or Page 2	
Surveyor's Remarks <i>(Include specific instructions or comments or additional ESD control requirements. Continue on Page 2 if needed)</i>			
V. ESD CERTIFICATION			
<i>By signing below, you are certifying that the above Work Center meets all requirements as identified in this document and TO-00-24-234 for electrostatic discharge sensitive items.</i>			
Initial/Annual ESD Training accomplished on all routine employees <input type="checkbox"/> Yes <input type="checkbox"/> No		Periodic testing accomplished (* in Section IV) (See Table 7-5 for full list) <input type="checkbox"/> Yes <input type="checkbox"/> No	
Name	E-Mail	Office Symbol	Phone Number
Signature		Date	

AFRL FORM 30

PREVIOUS EDITIONS ARE OBSOLETE

Prescribing Directive: AFRLI 21-101



**Attachment 17****APPOINTMENT LETTERS**

**A17.1.** If a contractor is appointed as a primary/alternate in some type of role, please ensure the appointment letter contains, as a minimum, the following elements:

A17.1.1. The contract number/task order number

A17.1.2. The name of the company

A17.1.3. The name of the individual appointed on the company's behalf

A17.1.4. The name of the COR

**A17.2.** If the appointment letter designates both a government and contractor POC, the roles for each should be clearly defined in the appointment letter. A copy of all appointment letters appointing a contractor as POC shall be forwarded to the COR and the Contracting Officer.