

**BY ORDER OF THE COMMANDER
45TH SPACE WING**

45TH SPACE WING INSTRUCTION 21-101

30 JANUARY 2014



Maintenance

**AIRFIELD TOOL CONTROL FOR
AIRCRAFT MAINTENANCE AGENCIES**

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(Colonel Douglas A. Schiess)

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This publication implements AFPD 21-1, *Air and Space Maintenance*, and fulfills the AFI 21-101, *Aircraft and Equipment Maintenance Management*, requirement. This supplement provides policy, additional guidance, and establishes tool and equipment management procedures. It is applicable to 45 SW Aircraft Maintenance Agencies that support the Patrick AFB and Cape Canaveral AFS flight lines. For non-aircraft maintenance tool control activities, applicable agencies will refer to governing AFIs/regulations. This publication does not apply to State Department or Air Force Reserve Command units. This AFI may be supplemented at any level, but all supplements that directly implement this publication must be routed to SAF/AAIL Policy Branch for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items.

Ensure that all records created as a result of processes prescribed in this publication are maintained 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)*.

1. General This instruction provides positive tool control and accountability procedures. Airfield Services, to include the 45 Operational Support Squadron (OSS) Contracting Officer Representatives (COR) and its contractor, maintain safe and reliable tool control for all Patrick Air Force Base (PAFB) and Cape Canaveral Air Force Station (CCAFS) airfields. The 45 Range Management Squadron (RMS) COR and its contractor oversee tool control aspects related to Precision Measurement Equipment Laboratory (PMEL). Adhering to this instruction aids in reducing and deterring Foreign Object Damage (FOD) to aircraft, engines, aircrew training devices, and support equipment. This instruction is not all inclusive; but rather supplements responsibilities in AFI 21-101 through a reliable tool control program.

2. Consolidated Tool Kit (CTK) Identification (markings)

2.1. The 45 SW COR and its contractors will mark all tools and equipment used to support aircraft maintenance operations with the most current 9-digit Equipment Identification (EID) marking guidance. 45 SW entities will remove or mark out previous markings, with the exception of PMEL markings. An EID marking uses exactly 9 digits. The EID will include a combination of upper case letters and numbers, without spaces or special characters. The first 4 digits of the EID are assigned using the base World Wide Identifier (WWID) number. The contractor's unit tool custodian will assign the remaining 5 digits (any combination of numbers/letters) for all CTKs, tools, and dispatch equipment that are of sufficient size. *For example: PF4T00001.* Responsible parties can mark tools located inside a kit or "parent" CTK with less than 9 digits, but these subordinate EIDs always contain the assigned 4-digit WWID and identifying character that ties that tool (children) back to its "parent" CTK. *For example, one can mark subordinate tools as PF4T1, located inside CTK: PF4T00001.*

2.2. Units may affix non-metallic bar code labels on tools to prevent re-etching as long as the use of the tool and its work environment does not result in excessive damage to the label making it unreadable. Bar codes without the EID annotated on the label are not considered properly marked. **Note: Do not etch hacksaw blades.** Unit tool custodians make all 9-digit EID markings clear, legible, and easy to read.

2.3. The 45 SW COR and its contractors will mark or etch Personnel Protective Equipment (PPE) with EID markings and load into TCMAX (or other tool management software) for proper tracking. Each organization will store PPE in designated storage location per facility.

2.4. The unit tool custodian will identify dispatched Custodian Authorization/Custody Receipt Listing (CA/CRL) equipment items using assigned 9-digit EIDs.

2.5. The 45 SW COR and its contractors will properly mark, etch, stamp, or barcode various tools too small or unfit for fixing an EID by using the Master Inventory List (MIL) and/or TCMAX (or other software) exclusively in these cases. The contractors will use visual identifiers (VID) - "foam cut-outs" or "shadowing" as an additional aid for tool identification that cannot receive proper EID markings.

2.6. The 45 SW COR and its contractors will place small tools in a suitable container (holder, pouch, bag, etc.) and identified using the MIL. The contractors will identify the tool name, quantity, container, and type of item(s) in the MIL and/or TCMAX (or other software) consistently. *For example: apex container: 8 ea apex's, + container + lid = 10 pieces, etc.*

The contractors will mark small tool containers, holders, pouches, bags, etc. with an EID according to para. 2.1., and have a tag, placard, label, or equivalent list placed within the CTK (either attached to the item, written on the case or identified on the MIL) to allow inventory by the user. *For Example: 2ea #10 hex apex, 3ea #8 TT apex + container + lid = 7 pieces, etc.* The 45 SW COR and its contractors will account for the total number of contents, including the container, on the MIL and/or TCMAX (or other software).

2.7. The 45 SW and its contractors will mark safety wire as part of a CTK, according to paragraph 2.1. The unit tool custodian will add the diameter of the wire to the label (*exempt: if the wire diameter is already identified on the spool*). The contractors will identify the spool and wire diameter on the MIL and record in TCMAX (or other software) as a consumable. The contractors will return empty/broken spools to the owning support section/shop for replacement.

2.8. The 45 SW and its contractors will place consumables (grease, dye, cleaners, etc.) in a suitable container properly placed/marked inside the CTK. Once empty, contractors will return the consumable containers to the owning support section/shop for proper disposal, replacement or refill.

2.9. Calibrated tools: if part of a CTK, shall have the inspection status loaded into TCMAX (or other software) against the CTK to which the tool is installed. Test, Measurement and Diagnostic Equipment (TMDE) items may have additional TMDE number(s) different from the EID. If the item TMDE number differs from the CTK EID, then the unit tool custodian will annotate the TMDE number on the MIL and/or TCMAX (or other software) as part of the CTK.

2.10. CDDAR: 45 SW Transient Alert (TA)/Aerospace Ground Equipment (AGE) shall inspect and document the tools and equipment inside the Crash Damaged or Disabled Aircraft Recovery (CDDAR) trailer as a CTK on a monthly basis or as required by manufactured technical data provided to AGE. The COR and the contractor will inspect the lifting bags and document discrepancies on the appropriate AFTO Form 244 (annually). In the event of an aircraft crash, the CDDAR Team Chief shall designate a CTK custodian responsible for the issue, control, and accountability of all tools and equipment assigned to the crash trailer.

2.11. The 45 SW COR and its contractors will etch or mark grease guns with the military specification (MIL-SPEC) with a 9-digit EID.

3. Master CTK Program Book (binder): At a minimum, the work center shall maintain CTK binders containing the following:

3.1. Tab A - appointment letter for CTK Custodian and, if applicable, a letter of memorandum signed by the section and/or flight chief (or equivalent) approving the CTK MIL.

3.2. Tab B - 45 SWI 21-101.

3.3. Tab C - a printed copy of the MIL (The contractor can keep the MIL in a separate binder).

3.4. Tab D - applicable CTK inspection log (for tools that are not tracked in TCMAX).

3.5. Tab E - blank Form 174, Lost Tool/Object Report.

3.6. Tab F - completed lost tool reports.

3.7. Tab G - local written shop policies and procedures (if applicable).

4. Inventory and Inspection Procedures:

4.1. CTK binders shall contain an accurate MIL that identifies the total amount of tools and status.

4.2. Personnel shall conduct a visual inventory and notify the CTK custodian of any foreign objects or missing/damaged tools, before signing out any tools, equipment or CTK. The unit tool custodian or their management, will enter missing, removed and damaged tools into TCMAX (or other software) and annotate the finding using the broken/removed/missing tool report and on the hard copy MIL.

4.3. When CTK tools or equipment are returned to the work center/tool room, the CTK custodians or work center personnel shall conduct a visual inventory checking for foreign objects and missing/damaged items before transferring accountability back to the tool room/work center. The unit tool custodian or management will enter missing, removed and damaged tools into TCMAX (or other software) and annotate the findings using the broken/removed/missing tool report and within the MIL.

4.4. The COR and/or contractor management will authorize on-site transfer of a CTK or equipment, only when there is a significant increase in operations. Both individuals involved in the transfer will conduct a CTK inventory together prior to transferring ownership. If TCMAX (or other software) is not available during the transfer of ownership, then the individual who is assuming responsibility shall sign for the CTK or equipment using an AF Form 1297. The recipient of the CTK will take the AF Form 1297 to the work center for accountability.

4.5. The CTK custodians shall conduct and document a comprehensive inventory annually and/or when there is a change of custodian to account for all tools and equipment.

4.6. The CTK custodians shall account for all tools and equipment at the beginning and end of each shift.

4.7. Centralized tool rooms shall conduct and document a comprehensive tool inspection of each CTK every 60 days (minimum). This prevents co-mingled tools and enhances inventory requirements by ensuring correct locations, serviceability, and removal of all FOD.

4.8. Each tool room shall indicate in writing the interval for when CTK inspections are conducted (i.e. 30, 45 or 60 days). During CTK inspections, the COR and contractor will:

4.8.1. Properly shadow, inlay, silhouette, or outline all tools.

4.8.2. Clearly mark or etch all tools or equipment with the current EID. Remove any legacy etchings.

4.8.3. Ensure all tools are free of corrosion.

4.8.4. Account for all tools on the CTK MIL and/or the broken/removed tool list.

4.8.5. Ensure tools and/or CTKs are free of FOD.

4.8.6. Ensure all tools remain in serviceable condition IAW TO 32-1-101. Ensure all Test Measurement Diagnostic Equipment (TMDE) is not overdue calibration and limited calibration stickers are initialed IAW AFI 21-101, Table 14.1, line 31.

4.8.7. Use AFTO Form 244 to document equipment scheduled inspections, not including calibration. Examples include TMDE, AGE, training equipment, industrial plant equipment, shop equipment, PPE harnesses, and special tools such as engine slings, floor jacks, cradles and cranes. Automated AFTO Form 244s are authorized however, a hard copy AFTO 244 must accompany all equipment during a “prior use inspection.”

5. Composite Tool Kit (CTK) Custodian:

5.1. The unit flight chief (or shop equivalent) shall appoint a primary and alternate CTK custodian in writing for all areas of responsibility with tools assigned.

5.2. The CTK custodian shall maintain a continuity binder to include at a minimum: current appointment letters, CTK approval documentation, approved local or commercial off the shelf (COTS) manufactured tool letters, and any other applicable items such as waivers, documentation for permanently removed tools, etc., as required by AFI 21-101 and this OI. The contractor can file the documents in a location other than the continuity binder, as long as a DD Form 2861 references the alternate filing location.

5.3. The CTK custodian is responsible for Warranty and Replacement Tool Management, Local Manufactured and Modified Tool Program, and Lost Tool Item Programs within their section. The support section supervisor or shop chief (or equivalent) shall delegate by letter additional personnel to assist in this responsibility (i.e., shift leads can have access to spare tool bins). If delegated, the contractor will maintain a file of the appropriate letters that demonstrate authority delegation if appropriate. The CTK custodian’s continuity binder will have a copy of this authority delegation letter. The CTK custodian remains ultimately responsible for overall compliance with tool control programs.

5.4. The CTK custodian shall ensure procedures are in place to control access to tool rooms or limit the number of personnel authorized to procure tools. Only authorized personnel are allowed access to the tool room to check out tools. Tools are checked out through the use of TC MAX (or other software). The contractor will request an item/tool from the tool room monitor, the tool room monitor will then scan employee’s name and employee number (if applicable), then scan the bar code of the tool they wish to check out. Once the employee has finished using the item/tool, they will return the item/tool back to the tool room monitor to be checked/scanned back into the TC MAX tracking database, thus adding it back into the tool room inventory.

6. Control, Inventory, and Security Procedures:

6.1. The same person cannot check-out and return the same item to the tool room/inventory. The person who signs for a CTK, equipment, or shop tool must have a different authorized person sign the item(s) back in to the tool room/inventory. This guidance also applies to CTKs affixed inside of vehicles.

6.2. The contractor will remove detachable pieces from parent equipment to minimize FOD potential (i.e., rubber switch covers from Flashlights). The contractor will annotate the detached item within TC MAX (or other software) and on the MIL.

6.3. Section supervisors/shift leads are authorized to perform job site (on-site) transfers of tools and equipment (*ref paragraph 4.4*). Section supervisors or shift leads cannot delegate this authority. Individuals performing the transfer are personally responsible for the inventory and ensuring that tool control documentation is immediately updated. Prior to CTK use, ensure the applicable support data in TCMAX (or other software) is updated to reflect the change in responsibility.

6.4. All CTKs with lockable wheels shall have the wheels locked after repositioning. The contractors will secure CTKs with un-lockable wheels to prevent rolling or tipping hazards. Do not secure to aircraft, AGE, or vehicles.

6.5. Contractors will lock dispatched CTKs to prevent unauthorized or cross contamination of tools whenever the CTK is not in use. Contractors are also required to secure equipment designated as TMDE, large special purpose tools, fixtures and jigs. If these items are too large to be stored in a CTK, then contractors must secure the items in some way to prevent unauthorized access.

6.6. If the contractor is unable to lock up special CTKs, unique tools, Technical Orders (TOs), or other support equipment items, they will make every effort to secure or close the item(s) when not in use.

7. Unique/Special Tools and Equipment:

7.1. The contractor will designate special tools or equipment (i.e., Johnson bars, jacking pad set, etc.) or small tool sets issued in COTS containers (i.e., jack pad kits, tire inflator kits, job guide boxes, hex driver sets) as a CTK and issue independent EIDs to them. The contractor can issue some kits as a sub-item to a CTK and the name/number of separate pieces and include them on the appropriate MIL.

7.2. The contractor will tag, label, or mark special tools not designated or assigned to a CTK with a current EID. They will attach an inventory list to the special equipment (typically attached to the item or written on the case) to allow inventory by the user at the job site (i.e., torque wrench with case).

7.3. Special tools with multiple pieces that remain assembled during storage and usage (i.e., inventories, flashlights, headsets, and communication cords) do not require attached inventory lists. The contractor will also list dust caps, even if attached by lanyards.

7.4. The contractor will assign an EID to Electronic devices (e-tools, multi-meters, test equipment etc.) and control the items using TCMAX (or other software).

7.5. Radio/laptop batteries are considered consumable. The contractor will mark batteries not tracked in TCMAX (or other software) as part of the original unit assigned to the section/work center.

7.6. The contractor will store maintenance computers (TCMAX, technical order, portable computers, palm pilots, etc.) utilizing a method that ensures access to software updates. Units with more computers than update stations must ensure a rotation cycle is established to ensure they receive updates. Computers shall not remain out of the rotation cycle more than 2 duty days. The contractor will store these computers without anyone logged in. The 45 SW COR and its contractors will ensure these computers remain connected to the local area network to ensure software updates are accomplished by network administrators.

8. Lost Tool/Object Procedures:

8.1. TCMAX (or other software) generated reports or AFRC Form 174, Lost Tool/Object Report will be completed for each lost tool or object unless the item is recovered within one hour. The CTK custodian shall maintain a hard copy of the AFRC Form 174. Destroy the report after one year. File “recovered” and “not recovered” copies of paperwork separately.

8.2. If an item is lost, the person to whom the tool or object was issued to must search the immediate work area for the item. After a thorough search, initiate an AFRC Form 174. The FOD Prevention Program Manager will issue a control number for the lost tool/object report. The section supervisors/shift leads shall ensure a thorough search is conducted to include utilizing x-ray, bore scope, and other state-of-the-art equipment to locate tools or objects in inaccessible areas if required.

8.3. If a lost tool report is generated, the contractor shall notify the 45 OSS COR. The COR will in-turn notify the 45 OSS/CC. If the lost tool impacts the mission, such as a departure delay, immediately notify the 45 OG/CC (MXG/CC equivalent).

8.4. Quality Assurance (QA) shall ensure that an AFRC Form 174 tracking log is maintained to control and track all lost tool reports.

8.5. If the contractor cannot recover a lost item after search, immediately place a Red X in the aircraft or equipment forms with a description of the lost tool and last known location. A copy of the completed report is given to QA and the wing FOD Prevention Program Manager. The contractor will complete the forms to declare the missing tool (*Ref: AFI 21-101, paragraph 10.8*).

8.6. QA shall segregate completed AFRC Form 174s, “recovered” and “not recovered.” The contractor and the COR will maintain these forms on file for 1 year.

8.7. Limit authorization to clear red Xs for lost tools to no lower than Operations Officer/Maintenance superintendent or equivalent.

9. Lost Tool/Object Procedures for Taxied Aircraft:

9.1. The Maintenance Flight Chief (or equivalent contractor supervisor) shall ensure an AFRC Form 174 is accomplished and shall maintain on file for trend history.

9.2. If a tool or object is discovered missing and the affected aircraft has taxied, the following procedures to hold or recall the aircraft are followed:

9.2.1. The person making the discovery shall immediately notify 45 OSS Airfield Management Operations through the most expedient means possible. Additional notifications are made to the work center supervisor, and 45 OSS COR.

9.2.2. 45 OSS Airfield Management Operations shall notify the Command Post and Control Tower. The Control Tower shall instruct the aircrew to hold or return to the designated parking ramp. If the aircraft is airborne at the time of notification, the air traffic controllers will direct the aircraft to return to base with minimal maneuvering.

9.2.3. Once the aircraft lands, initiate the Lost Tool/Object investigation report.

10. Procedures for the Replacement of Expendable, Consumable, Common and Warranted Hand Tools, HAZMATs, and Other Items Contained in CTKs:

10.1. Storing expendable, consumable, bench stock, and replacement tools can potentially weaken the FOD prevention aspect of the CTK program. CTK custodians must manage these items to ensure positive control. The contractor will keep replacement expendables, consumables, and bench stock in a separate cabinet labeled "expendables/consumables or bench stock." Inventory and Lost Tool procedures shall apply to consumable/expendable items as they do for tools and equipment.

10.2. The contractor shall replace all consumed expendables, consumables, common warranted tools, and hazmat items. The contractor will identify the replacement items with proper etching or marking, as appropriate. If the replacement item is not available, tool custodians shall annotate the item as 'removed' on the MIL.

10.3. The contractor will label HAZMAT containers according to directives in AFOSH Standard 161-21, Hazard Communication, paragraphs d(1), d(3) and 8(a).

10.4. The contractor will replace all tools under warranty with another like warranted tool. Tool custodians shall follow the warranted tool replacement procedures IAW vendor requirements.

10.5. CTK custodians shall establish controls to ensure damaged/unserviceable tools are de-etched, secured, and accounted for until processed for disposal or turn-in.

NINA M. ARMAGNO, Brigadier General, USAF
Commander

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

AFI 10-403, *USAF Mobility Planning*, 20 Sep 2012

AFI 21-101, *Maintenance Management of Aircraft*, 26 Jul 2010

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AFMAN 23-220, *Reports of Survey For Air Force Property*, 1 Jul 1996

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AFI 90-821, *Hazard Communication*, 27 Jan 2014,

TO 32-1-101, *Maintenance and Care of Hand Tools*, 9 Aug 2010,

TO 34-1-3, *Inspection and Maintenance of Machinery and Shop Equipment*, 11 Sep 2006,

TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation*, 15 Jun 2013,,
Policies and Procedures

TO 00-25-245, *Operating Instructions, Testing and Inspection Procedures for Personnel Safety and Rescue Equipment*, 10 Aug 2013

Abbreviations and Acronyms

AFI—Air Force Instruction

AFTO—Air Force Technical Order

AFOSH—Air Force Occupational Safety & Health

AFMAN—Air Force Manual

CA/CRL—Assigned/Controlled Equipment Account List

CDDAR—Crash Damaged or Disabled Aircraft Recovery

COR—Contracting Officer Representative

CTK—Consolidated Tool Kits

EID—Equipment Identification Number

FOD—Foreign Object Damage

HAZMAT—Hazardous Materials

MIL—Master Inventory List

MOC—Maintenance Operations Center

NCO—Non Commissioned Officer

OI—Operating Instruction

QA—Quality Assurance

SW—45th Space Wing

TA—Transient Alert

TAS—Tool Accountability System

TCMAX—Tool Control System/Software

T.O.—Technical Orders/COTS Manuals

TMDE—Test Measure and Diagnostics Equipment

VID—Visual Identifier

WWID—World Wide Identification Designator