Tool Control Program and Lost Tool/Object
Procedures

OPR: 142d MXG/MXQ (CMSgt. Norio Colipano)

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This Maintenance Operating Instruction (MOI) establishes specific policies, procedures, and responsibilities for the 142d Maintenance Group tool control program including Lost Tool/Object procedures and the Unit's rag control program. It has been established in accordance with AFI 21-101 ANGSUP.

All 142d Maintenance Group personnel will comply with the provisions of AFI 21-101, applicable technical orders, Air Force instructions, and this MOI in accounting for and maintaining Composite Tool Kits (CTKs) and individual tools.

All other Wing activities to include the Base Civil Engineers, Communications Flight, Vehicle Maintenance, Base Fire, and Security Forces, will apply strict accountability procedures in accordance with Wing OI 23-001when working on or around the flightline or in any aircraft maintenance area. Visiting military units, Contract field teams, Depot teams, other civilian contractors, and visitors utilizing 142d MXG tools and facilities will comply with the provisions of all applicable technical orders, Air Force instructions and this MOI.

SUMMARY OF CHANGES: Complete rewrite

1. References: AFI 21-101 ANGSUP-1, T.O. 00-20-1, T.O. 32-1-101, 142d FWI 21-033 and 23-001, and MOI 21-011.

2. Areas of responsibility:

   2.1. The Maintenance Group commander and Unit commanders are responsible for the 142d Maintenance Group tool control program. In addition, they will appoint, in writing, a limited number of Composite Tool Kit (CTK) custodians to serve as database administrators for the TCMax® program. A copy of this appointment will be maintained in the QA office.

       2.1.1. The unit commanders will appoint one Aircraft Maintenance Squadron and one Maintenance Squadron TCMax® database administrators.

   2.2. TCMax® administrators, in conjunction with 142d Communication Flight personnel, are responsible for maintaining the TCMax® database on the server. They will assist other CTK custodians with TCMax® issues and, in coordination with QA, will establish standardized TCMax® formats throughout the MXG.

       2.2.1 At a minimum, TCMax® administrators working with 142d Communications Flight will ensure that the database has a full backup accomplished weekly. The backup copy will be maintained separately from the main database IAW AFI 21-101.

2.3. Branch/Section Chiefs are responsible for ensuring 142d MXG personnel comply with the 142d Tool Control Program.

2.4. Shop supervisors are responsible for:

2.4.1. The administration and implementation of the 142d Tool Control Program in their respective areas IAW AFI 21-101, and ANGSUP.

2.4.2. Ensuring that all assigned personnel are familiar with and understand the tool control requirements, such as issue, inventory, turn-in, and documentation procedures required for tool control per AFI 21-101, ANGSUP, and this MOI.

2.4.3 Designating and documenting a sufficient number of highly responsible personnel to serve as CTK custodians to administer and control the tool control program within their work center.

2.4.4. Designating and documenting a sufficient number of tool room representatives. Supervisors need to ensure that a complete inventory is performed and the appointment letter is updated whenever custodians change.

2.4.5. Designating and documenting specific personnel who are authorized unescorted entry in the Tool Room. This documentation will be maintained in the shop's Tool Accountability Binder (TAB).

2.4.6. Performing the duties of the CTK Custodian(s) and tool room representative(s) and ensuring the following duties are performed when the custodians are unavailable.

2.5. Composite Tool Kit (CTK) Custodians are responsible for:

2.5.1. CTK custodians are the designated point of contact with overall responsibility for the control of all work center tools and for controlling access to tools, tool rooms, key boxes, CTKs, hazmat items and vehicles. Custodians are responsible for ensuring accountability and positive control over all tools and equipment within their work center tool room.

2.5.2. Compiling and maintaining a database in TCMax® that contains, at a minimum, all dispatchable CTKs and tools assigned to their work center.

2.5.3. Ensuring all work center MILs are formatted using the TCMax® minimum standard. (Refer to attachment 1b.).

2.5.4. Procuring and replacing broken tools and equipment and notifying the shop supervisor about any tools requiring warranty repair.

2.5.5. May per worksheet the duties of the Tool Room representative.

2.6. Tool Room Representatives are responsible for:

2.6.1. In the event that TCMax® is unavailable, the 142d MXG Worksheet 21-14 will be used to perform and document the tool room (Shift) inventory at the beginning and end of each shift to account for all tooling, i.e. signing out/signing in the tool room.

2.6.2. In the event that TCMax® is unavailable the CAF 140 will be used to sign in or account for individual tools or CTK's that were checked out of the tool room.
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2.7. Tool Users are responsible for:

2.7.1. Knowing and adhering to the tool control and accountability procedures described in AFI 21-101, ANGSUP, and this MOI.

2.7.2. Ensuring accountability and positive control over the tools, equipment, and hardware in their charge, which means they must know where these items are at all times and confirm that they are secure and accounted for.

2.7.3. Adhering to the maintenance, use, and care of tools set forth in T.O. 32-1-101.

2.7.4. Per worksheet an inventory, inspecting tools for serviceability, a worksheet the custodian of any discrepancies, and signing out the CTK/tool (accepting responsibility for it). These actions will, also, take place when transferring a CTK/tool to another user. See section 4.3.6.

2.7.5. Understanding and following the Lost Tool/Object procedures per 21-101 ANGSUP and section 5 of this MOI.

2.7.6. Strictly controlling consumables such as safety wire, nitrile/latex gloves, tech wipes, wire bundle lacing etc…. in a manner that prevents FOD and accounts for all the pieces.

3. Tool Control Program/Tool Room Set up

3.1 Master Inventory Listings (MIL) and Tool Accountability Binder (TAB)

3.1.1 Work centers will create one Master MIL Tool Room inventory list (Parent list) that lists all the CTK's, tools, and equipment they own. The Tool Room inventory list is maintained in TCMax®.

3.1.1.1 All dispatchable CTKs, kits, equipment, e-tool computers, and individual tools or sets will be assigned a World Wide Identifier number according to section 3.4 and will be accounted for and maintained in the owning work center tool room.

3.1.1.2 Dispatchable equipment having multiple pieces will be accounted for as either a kit or a set.

3.1.1.2.1 Dispatchable equipment accounted for as a kit must have a MIL (per attachment 1a and b.) to account for all parts and pieces of that equipment.

3.1.1.2.2 Dispatchable equipment being counted as a set must be marked IAW with section 3.4.2.

3.1.2. All MILs will be formatted in the same manner as the TCMax® minimum format requirements outlined in attachments 1a and 1b of this MOI. The Tool Control Working Group may change the standard format, if needed, and will publish changes in the minutes of the Working Group meetings.

3.1.3.   The key will be listed first on the MIL and will include a description (i.e. key, lanyard, and tag). Unit of issue is EA. Quantity is one.

3.1.4. At a minimum, all MILs will contain the following:

Note:
LM followed by the local part number will be for locally manufactured tools and equipment. If an item is identified as LM, QA must have a description and picture of the item on file in accordance with MOI 21-011.

3.1.4.1. A National Stock Number (NSN), Part Number, or LM number (for Local manufacture/modification) if the item does not have a NSN or part number, Local Purchase (LP) or not stock listed (NSL) may be used.

3.1.4.2. Indicate the unit of issue (i.e. EA, SE, or KT).

3.1.4.3. Indicate the number of pieces (QTY).

3.1.4.4. Annotate the nomenclature of the tool or item. (This includes a description of the tool if it has more than one piece)

3.1.4.5. The signature of the shop supervisor and CTK custodian, approving the initial inventory of the CTK. The date will only reflect the initial approval of the CTK inventory. All subsequent annual inventories will be recorded in TCMax®. The date and signatures do not need to be changed unless the contents of the CTK change.

3.1.4.6. The MIL must accurately reflect all tools in the CTK. The paper copy of the MIL located in the CTK will only be replaced if there is a permanent change made to the kit's contents.

3.1.4.7. If the MIL is affixed to the CTK to prevent FOD, the size and shape, as well as the signature block may be modified to fit space requirements. These modifications must be accomplished in a way that the MIL still meets the intention of this MOI.

3.1.5. Every work center/tool room will maintain a Tool Accountability Binder (TAB) as a backup to TCMax®, which at a minimum contains the Custodian/Tool room representative appointment letter, a printed copy of the Tool room inventory (Parent list), 142d MXG Worksheet 21-14, AF IMT 1297 or local worksheet, and a reference copy of this MOI.

3.1.6.   Completed (full) CAF Form 140s and 142dMXG Worksheet 21-14s (Shift inventory sheet) if used will be kept on file by the CTK custodian or supervisor for a minimum of three work days.

3.2. Worksheets Used:

3.2.1. Each dispatchable CTK or equipment item (containing multiple pieces) will contain a copy of its MIL and a minimum of 2 sets (total of four) of AF IMT 1297 at CTK sign out.

3.2.2.AF 1297 (Hand Receipt)
Used for long term sign out, transfers, or for shop items not accounted for in TCMax®. See sections 3.1.1.2.1 and 4.6.

3.2.3. 142MXG Worksheet 21-11 (Missing/Removed Tool and Equipment) Used to annotate when a tool or equipment has been removed or missing.

Note
The following worksheets will be used in the event that TCMax® is unavailable.

3.2.3. CAF Worksheet 140
The CAF Form 140 is used to sign items in/out of the tool room or work center. Signing the CAF Form 140 also signifies that an inventory has been completed and the person who has signed the 140 accepts full responsibility for that item. CAF Form 140s will not be kept in CTKs. They will only be maintained in the Tool Room.

3.2.4. 142d MXG Worksheet 21-14 (Shift inventory Log)
The Shift Inventory Log, (Worksheet 21-14) is used to document a tool room (shift) inventory for accountability at the beginning and end of each shift.

3.3. "Show and Know"

3.3.1. All CTKs, equipment, cabinets, shadow boards, lockers, shelving units, and portable carts will use shadows, cutouts, in-lays, markings, or labels to demonstrate the "show and know" concept as described in AFI 21-101 ANGSUP. Non-descript cutouts will be labeled for positive visual identification purposes.

3.3.2. Equipment having multiple pieces will have a MIL (see attachment 1a and 1b) to account for all parts and pieces of that equipment item.

3.3.2.1. Equipment may be counted as a set, as long as, is complies with "show and know" and the definition given in section 6 (for set).

3.3.3. All individual tools, equipment, and parts of equipment (items that are not part of a CTK or kit), such as probes, cables, sensors, adapters, etc. used on aircraft, engines, or support equipment will be accounted for in the same manner as other tools. These items will be marked, assigned to a designated location, and kept with the next higher assembly if possible.

3.3.4. Shop equipment such as brooms, dustpans, mops, and mop buckets, etc. will be marked with the shop designator not the WWID, unless it is dispatchable or checked out regularly to the flightline or mobility. These items will be stored in a designated and marked location for accountability and housekeeping purposes.

3.3.5.   Markers may be used as a visual reference in the shadow or cutout to indicate tools/equipment that has been signed out of the tool room for mobility or PMEL. They will not be used in dispatchable CTKs.

3.4 Tool and Equipment marking and Identification:

3.4.1. CTKs, tools, and equipment will be marked/etched/labeled with the World Wide Identifier (WWID) in accordance with AFI 21-101, ANGSUP1, and Functional Area Codes as listed in section 3.4.6 of this MOI.

3.4.1.1. The WWID for the 142d FW is K3 followed by one of the functional area codes listed in section 3.4.6. The Functional area codes in section 3.4.6 identify the unit and shop in the WWID for the 142d FW.

3.4.1.2. For example, a flashlight belonging to the QA office would be etched as K3QA00001. K3designates the 142d FW, Portland, OR and QA designates the Quality Assurance office of the 142d Maintenance Group. The 00001 is unique to that flashlight. The next flashlight would be marked K3QA00002, etc….

3.4.1.3. For tools inside a CTK or kit, there is no requirement to etch all nine digits on each item. The CTK requires all nine digits (parent id), but the tools (children) inside only require the K3 and Functional area code (in this example, QA) for the owning work center and then the CTK designator, i.e. 1. For example, a socket in K3QA00003 would be marked as K3QA3 or K3QA03.

3.4.1.3.1. All tools inside the CTK or kit must be marked with the same WWID.

3.4.2. A set consists of items stored together in a container, usually used for a single purpose e.g. a set of drill bits or a set of files. These items will be marked and/or etched in a manner that allows the user to identify the total number of inclusive pieces. For example: A drill bit container with 20 bits will be marked as 20 drill bits, 1 container, 21 PCS. Each item in the set will be physically marked, if possible. The storage location of the bit in the container will also be marked if possible for "show and know".

3.4.2.1. Items that cannot be readily marked and/or etched will be stored together in a container as a set, which is marked and/or etched in a manner that allows the user to easily identify the total number of inclusive pieces. For example: At a minimum a drill bit container with 20 bits will be marked as 20 drill bits, 1 container, 21 PCS. The quantity in TCMax® will reflect the total number of pieces in the set. (E.g. a drill index with 20 bits and 1 container will have a quantity in TCMax® of 21) The number of sets is implied to be one since every individual tool and/or set has its own unique barcode ID.

3.4.2.2. Sets will be marked once with the CTK/kit parent ID or will have their own WWID assigned if they are a standalone item.

Note
For CTK key marking see section
3.1.2

3.4.3. Shop Codes for use in the TCMax® database.

Note

Shop codes are used in the TCMax® program to differentiate between shops and organize the Functional area codes listed in 3.4.3 under the applicable shop code. These shop codes will be used for all components of that shop, to include back shop, mobility, tool room, etc.

3.4.3.1. The following functional area codes will be utilized (after K3 of the WWID) when marking or etching tools.

Shop	Shop Codes	Functional Area Codes
Maintenance Group		
Quality Assurance `	(K3QA)	QA
TCMax® Administration	(K3TX)	TX
Aircraft Generation Squadron (AMXS)		
Flightline	(K3FL)	FL
Flightline Mobility	(K3FL)	MOB
Alert	(K3AL)	AL
Avionics Flightline	(K3AF)	AF
Armament Services	(K3AS)	AS
Weapons Loading/	(K3WL)	WL
Weapons Loading Standardization	(K3WS)	WS
Maintenance Squadron (MXS)		
Pneudraulic	(K3HS)	HS
Electrical	(K3EL)	EL
AGE	(K3AG)	AG
Fuel Systems	(K3FS)	FS
Fuel System Tool Room	(K3FS)	FSTR
Fuel System Cabinet	(K3FS)	FSC
Engine Shop	(K3ES)	ES
Engine Mobility	(K3ES)	EM
Hush House	(K3ES)	HH
Secondary Power	(K3ES)	SP
Engine Change	(K3ES)	EC
Inspection	(K3PM)	PM, MSP, PMDS, INSP
Non-Destructive Inspection	(K3ND)	ND
Sheet metal	(K3SM)	SM
Corrosion Control	(K3SM)	PA
Machinist	(K3MH)	MH
Survival Equipment	(K3SE)	SE, LSM, LSH, LSH2
Survival Equipment Mobility	(K3SE)	SEM
Life Support	(K3SE)	AFE
Egress	(K3EG)	EG
Egress Mobility	(K3EG)	EGM
AIS	(K3MA)	MA
Repair and Reclamation	(K3RR)	RR
Crash Recovery Trailer	(K3RR)	RRT
Tire Shop	(K3RR)	TS
Munitions/ Missile Maintenance	(K3MX)	MX
Conventional Munitions	(K3MX)	MC
Munitions Trailer Maintenance	(K3MX)	MT

3.5. Deleted.

3.6. Broken/Removed and Spare Tools and Equipment:

3.6.1. The user will immediately notify the CTK custodian or supervisor of any broken tools and will account for all pieces of the broken tool. If pieces are missing the user and/or the custodian will follow the lost tool procedures as outlined in section 5 of this MOI.

3.6.2. If the broken tool cannot be immediately replaced the custodian will document using a 142MXG WORKSHEET 21-11 worksheet or computer program to annotate when a tool/item was added or removed.

3.6.2.1. The custodian will cover the shadow or inlay with tape and will write "removed" on the tape.

3.6.2.2. When the item is replaced the custodian will annotate on 142MXG Worksheet 21-11 when tool/item has been added, and remove the tape.

3.6.2.3. Tags, chits, or tape can be used by a custodian to indicate broken or temporarily removed tools in non dispatchable CTKs, cabinets, or shelves where no potential for FOD exists.

3.6.3. When tools are permanently removed, the custodian will fill in the cutout/shadow, update TCMax®, and replace the copy of the MIL as it constitutes a change to the inventory and requires a new MIL.

3.6.4. Only CTK custodians will procure new/replacement tools. They are responsible for the repair/replacement of tools that are covered under warranty.

3.6.5. Broken tools will be exchanged on a one for one basis. No tools will be replaced without the user turning in the old/broken tool or a copy of the completed CAF 145 to the custodian. The CAF 145 indicates that the tool is missing and has been properly reported as such per section 5.3.2.

3.6.6. All replacement tools and equipment will be marked and/or etched with the WWID IAW with section 3.4.7 of this MOI prior to being placed into service.

3.6.7. Broken/replaced tooling will have all markings removed before being disposed of by the custodian.

3.6.8. Access to replacement tools will be limited to the shop supervisor and work center custodian(s). Spare tool inventories will be updated as quantities change to reflect an accurate count of assets.

3.6.9. Custodians will visually inventory spare tools whenever they are accessed. A quarterly inventory will also be accomplished and documented on the spare tools inventory listing.

3.7. Expendable tools and consumable materials assigned to CTKs.

   3.7.1. Expendable tools such as brushes, scalpel blades, etc. and consumable materials such as safety wire, wire bundle lacing, etc. assigned to CTKs will be listed on the CTK's MIL as consumables. Note: if the user discovers broken or missing pieces on these items, such as pieces broken off a safety wire spool, they will account for the missing piece(s), if possible, and notify the custodian. The custodian will mark the piece, if possible, to show that the missing piece has been accounted for.

   3.7.2. All Hazmat stored in CTKs will be labeled correctly, stored in an approved container, and replaced through the Base pharmacy program in accordance with AFI 21-101, ANG SUP.

   3.7.3. Each CTK/Tool user will be responsible for ensuring positive control and reporting of expended/depleted consumable items to the CTK custodian. The CTK custodian will immediately replace the item or document it IAW with section 3.6.2 if it cannot be immediately replaced.

   3.7.4. Consumable items coded as pilferable or designated by shop supervision such as hacksaw blades, drill bits, apex bits, etc. are procured, controlled, and replaced by the custodian.

Note:

Bench stock/work residue may be placed in the bottom drawer of a CTK temporarily in the event the user must leave the job site for a short period of time. However, the user will lock the CTK and will account for all the pieces they place in the drawer. At no time will such items be left in the CTK when transferring it to another user or when signing it back into the tool room.

   3.7.5. Bench stock/shop stock items will not be stored in or assigned to CTKs.

   3.8. Consumables
Products such as Chem. wipes, tech wipes, paper towels, canopy cloths and disposable gloves etc. will be strictly controlled by maintenance personnel to prevent FOD and maintained in a manner that promotes good housekeeping.

   3.9 Deployed/combined Tool Rooms
Note:
Two shops physically in one room due to space restrictions will not be considered a combined tool room. They will maintain separate tool control accounts as described in this MOI.

   3.9.1. When a deployed tool room is being established, shop custodians will sign out the tools and equipment that will be transferred to the deployed tool room from their work center. They will sign items out to the appropriate TDY/deployment designator in TCMax® as specified by the TCMax® administrators and deployed tool room custodians. Shop custodians will assist the deployed tool room custodians in establishing the master MIL and will provide them with a copy of all CTK MILs and LM tools. Deployed equipment custodians will work with TCMax®

administrators to generate a complete list of all tools and equipment items that are packed for the deployment.

3.9.1.1. In the event that TCMax® is unavailable, the 142 MXG Worksheet 21-14 worksheet will be used to perform and document the tool room (Site inventory at the beginning and end of each shift to account for all tooling, i.e. signing out/signing in the tool room).

3.9.1.2. In the event that TCMax® is unavailable, the CAF 140 will be used to sign in and account for individual tools or CTK's that were checked out of the tool room.

3.9.2. Shop Tool Room Custodian

3.9.2.1. Each shop will perform an equipment inventory on a CAF Form 140.

3.9.3. Tool storage locations will be outlined with tape or other clearly visible medium and each individual shop area will be marked with the number of items within the marked area. A photo TDY/Deployed tool layout should be used for "show and know" when feasible.

3.9.4. Overall tool check out will utilize:

3.9.4.1. TCMax®

3.9.4.2. CAF Form 140 as a backup in case, TCMax® is inoperable.

3.9.5. The deployed/TDY maintenance OIC will appoint the deployed/TDY Tool Room Custodians for each shift.

3.9.6. A Tool Accountability Binder will be maintained during the deployment/TDY.

3.10. Industrial Machinery/ Non-dispatch-able tools

3.10.1. Industrial shop equipment and accessories such as blades, arbors, chucks, hoists, slings, engine transfer gear, floor jacks, and hand trucks/ carts, etc. do not need to be controlled as tools, as long as they do not leave the work center. However, they must be marked with a shop designator and have an assigned (marked) storage location for accountability. In the event these parts are stored in cabinets, drawers, or on shelves they will be shadowed and the drawers/shelves labeled appropriately. An AF IMT 1297 or local worksheet will be used in the event they are to be temporarily removed for use outside of the work center. They will be maintained IAW TO 34-1-3.

3.10.2. In the event that these items are used on aircraft, aircraft parts, or engines, they will be inventoried and accounted for prior to releasing the aircraft, engine, or aircraft part from the work center.

3.11. The Rag Control Program

3.11.1. Rags are defined IAW AFI 21-101.

3.11.2. The Rag control program will consist of CTK custodians and tool room representatives controlling access to rags. Rags will be signed out and signed back in to the tool room in quantities or lots designated by the custodian.

3.11.3. Clean rags received from the vendor will be placed in a container/bin that is strictly controlled by the custodian/Tool room representative. Access to the bulk rag bin/clean rags will be strictly limited to the custodian/representative for security/accountability purposes. Custodians will not be required to maintain a constant physical count (inventory) of the rags store d in the clean/dirty bulk rag containers due to the fact that rags are received and picked up in bulk from the vendor. However, when rags are removed from the tool room (other than pick-up and delivery by the vendor) they will be strictly accounted for (signed out/signed in).

3.11.4. Lost rags will be handled in the same manner as lost tools or items.

3.11.5. Dirty/contaminated rags will be stored in an appropriate container IAW all applicable environmental guidance.

3.12. Personal Protective Equipment (PPE) and Other Equipment assigned to individuals

3.12.1. The shop or section supervisor may issue equipment/PPE, i.e. headsets, reflective belts, safety glasses etc. to an individual. Control and accountability of equipment assigned to an individual is the individual's responsibility. Personally assigned equipment will be maintained and controlled by the individual. Individuals are accountable at all times (on the spot) for knowing where their PPE is and its condition.

3.12.1.2 Supervisors will document the equipment they assign to individuals.

3.12.2. PPE not assigned to an individual will be controlled and accounted for in accordance with this MOI in the same manner as other dispatchable tools and equipment.

3.12.3. Individuals will report lost PPE and personally assigned equipment IAW section 5 of this MOI.

3.12.4. Assigned equipment will be marked with the individual's 1st initial of their first name, full last name, and employee number. Note: PPE previously marked with the last 4 of the owners SSN (i.e. JDoe7777) need not be remarked. New PPE will be marked with the employee number IAW AFI 21-101 ANGSUP.

3.13. Special purpose Coveralls (i.e. Bunny Suits)

3.13.1. Special purpose coveralls such as cotton bunny suits for LOX and intake/exhaust inspections will be worn per technical data only while per worksheet in T.O. directed tasks where coveralls are called for. They are to be removed immediately upon completion of these

tasks.

     3.13.2 Coveralls will be laundered at least once per month or sooner, if required. Heavily stained coveralls will be replaced.

   3.14. Tools Loaned to Contractors
When contract field teams, depot teams, or factory representatives require the use of unit tools or equipment they will notify the affected shop supervisor. The supervisor will be responsible to ensure that tools and equipment loaned to outside entities will be accounted for in accordance with this MOI and appropriate Technical Orders.

   3.15. R&R Crash Recovery Trailer

     3.15.1. The Repair and Reclamation shop will maintain the Crash Recovery trailer in the same manner as a CTK. The trailer will have its own inventory listing and a CAF Form 140 to account for items signed out/in while the trailer is in use. Individual CTKs assigned to the trailer will have their own inventory and contain their own MIL to account for the tooling contained in them.

     3.15.2. The Crash recovery trailer inventory listing will be maintained by the R&R shop.

     3.15.3. An inventory of the trailer will be conducted and documented before and after each use. An annual inspection will, also, be accomplished and documented.

   3.16. Locally manufactured, developed, or modified tools and equipment.

<u>Note</u>
<u>Do Not</u> alter tools if it will void warranty, affect serviceability, or make them un-repairable, unless approved by QA.

Procedures for locally manufactured and developed tools are covered by MOI 21-011; however they will be controlled and accounted for IAW this MOI. QA must have a description and picture of the LM item on file. A copy of this in worksheet may also be kept in the work center's TAB, TCMax® database, and in the deployed tool room, if applicable.

4. Tool Room Operations and Security:

   4.1. Shift Inventories

       4.1.1. Work center tool rooms will be inventoried and signed out/ in only by a designated CTK custodian, or a tool room representative.

       4.1.2. The CTK custodian(s) or tool room representative will account for all CTKs, tools, and dispatchable equipment at beginning and the end of each shift in TCMax®. Documentation of this inventory will be accomplished in TCMax®, if TCMax® is unavailable, use the142d MXG Worksheet 21-14. CTKs that were not issued and cabinets that were not opened during the shift do not need to be opened for inventory. During shift change, the on duty custodian/representative will conduct this inventory.

       4.1.3 Every item that leaves the tool room will be documented/signed out. Normally, this will be done in TCMax, but can be on an AF IMT 1297 (or local worksheet) or CAF Form 140, if TCMax® is not available.

   4.2 Tools and Equipment Accountability, Control, and Inventory

                                   Note
Do not apply RTV to torque wrench ratchet head screws and hardware. They may be secured by PMEL using "torque seal."

       4.2.1. Users will inspect all tooling per T.O. 32-1-101 for serviceability prior to sign out (issue)/sign in (receipt). Tool users will ensure that all hardware pieces such as ratchet head screws, selector levers, and inspection mirror nuts….etc. are secured in a manner that prevents it from loosening up and becoming F.O.

       4.2.2. Users will inventory their tools and equipment prior to operation of aircraft, engines, or powered support equipment.

       4.2.3. In the event of an exercise/inspection or a real world threat requiring personnel to take immediate shelter, users will inventory their CTKs/equipment upon returning to the job site after sheltering.

4.2.4. All dispatchable CTKs will be equipped with a foreign object container in accordance with 142d PIAI 21-033.

4.3. Accountability of Hazardous Materials

4.3.1. All Hazmat items dispatched from the tool room will be accounted for in TCMax®. Quantity on hand does not need to be tracked, because it is tracked by HazMart.

4.4. Sign-Out/Issue Prior to signing out (issuing) an individual tool or CTK, the user will per worksheet an inventory check and visually inspect it to ensure that all tools/tool pieces are there and are serviceable. The user will immediately report any broken, unserviceable, or missing tools/tool pieces to the custodian. The user will then sign out the tool/CTK from the tool room, accepting full responsibility for that tool/CTK and its contents.

4.5. Sign-In/Receipt W h e n the user returns the tool/CTK, the tool room representative/custodian will per worksheet an inventory prior to signing (accepting) it back into the tool room. After the inventory has been per worksheet, a custodian or tool room representative (must be a designated representative and not the same person who signed the item out) will sign the tool/CTK back into the tool room.

4.6. On equipment inventories (Intra job/Intra shift) the users will per worksheet an inventory check after completing any maintenance and at the end of their shift.

4.6.1. In the event an end-of-shift/end-of-job inventory cannot be accomplished and the CTK was used on an aircraft, engine, or powered support equipment, a Red X entry will be made in the appropriate worksheets (e.g. AFTO 781A, AFTO 244, Work package worksheets) stating: "Do Not Operate Aircraft, Engine, or Support Equipment Until Inventory of CTK K3___ is accomplished IAW MOI 23-001."

4.6. Loaned Tools (AF IMT1297 or local worksheet)

4.6.1. Loaned tools are tools borrowed from a CTK in use at one job site and taken from that site by the borrower (someone other than the user responsible for the CTK) to another job site.

4.6.2. Normally individual tools will not be loaned out of a CTK/equipment item while it is in use. However, mission accomplishment may require this to occur. When a tool must be loaned out of a CTK, the individual who wishes to borrow a tool will ask the permission of the person responsible for the CTK and sign out the tool on an AF IMT 1297 or local worksheet. The 1297 will be placed in the CTK's MIL binder until the tool is returned. At a minimum, the 1297 must include the printed name and signature of the borrowing individual, the CTK ID, nomenclature of the tool, and the location/ aircraft where it will be used. The CTK will not be turned back into the tool room until all loaned tools have been returned. After the tools have been returned and accounted for, the person responsible for the CTK will destroy the 1297.

4.7. One person Sign-in Procedures

In the case of a one-person shop, at the end of the shift or duty day the user will inventory the CTK to ensure all tools are accounted for. A custodian or tool room representative or supervisor from another shop from that shift will ensure that the CTK has been returned and will sign it in. Note: The custodian/tool room rep/supervisor on the next shift will verify that all the items have been accounted for.

4.8. Transfers

4.8.1. Normally, CTKs/equipment will not be transferred to another user. However, when such actions are required, the current user and the new user will per worksheet a joint inventory of the CTK to account for all its contents. The person taking over responsibility for the CTK will proceed directly to the tool room custodian and have the CTK transferred to them in TCMax®. If this is not possible or TCMax® is unavailable, the person taking over responsibility for the CTK will fill out the AF IMT 1297 or local worksheet and hand it to the original user. The original user who signed the CTK out of the work center or tool room will promptly return the hand receipt to the owning tool room custodian or representative, thereby relinquishing responsibility for the CTK. The AF IMT 1297 or local worksheet will be kept by the custodian/tool room representative in the tool room until the CTK is turned back into the tool room. Once the CTK has been returned to the tool room, the custodian/representative will destroy the AF IMT 1297 or local worksheet and sign the CTK back in to the tool room.

4.8.2. At a minimum, the AF IMT 1297 or local worksheet must include the printed name, signature and employee number of the borrowing individual, the CTK WWID, and the location / aircraft where it will be used.

5. Lost Item/Tool Procedures:

5.1. Supervisors will ensure that all personnel in their work center know and follow the following procedures.

5.2. In the event of a lost tool or item, all personnel will follow this MOI and procedures per AFI 21-101 ANGSUP.

5.3. If the item is lost in or around an aircraft or aircraft related equipment the following procedures apply;

5.3.1. The individual who discovers that the tool/item is missing will immediately notify the expeditor or MOC and will conduct a search of the immediate area. If the item is suspected to be in an aircraft and the aircraft has taxied MOC will notify the SOF who will recall and ground the aircraft.

5.3.2. A Red X entry will be made in the aircraft 781A's or the equipment worksheets that describes the missing item and the last known location of the item, if possible. A second entry

for the search of the missing item or tool will be entered in the aircraft 781A's (see attachment 1c). The individual who discovered the item missing will initiate a CAF form 145 lost tool/item report and annotate the JCN on top of the CAF form 145. The expeditor/X-Ray will keep blank copies of the CAF form 145 on hand.

5.3.3. The Expeditor (X-Ray) will notify MOC, Production Supervisor, Flight Chief, and QA and will start a more thorough search for the missing item with the option of borescope or NDI inspection of the area. The CAF form 145 will be inserted into the aircraft worksheets 781A's as close as possible to the page and item referenced on the worksheet.

5.3.4. If the missing item is recovered the individual who found it will notify MOC or the Expeditor (X-Ray). MOC or the expediter will then notify QA. The CAF form 145 will be removed from the aircraft worksheets and taken to QA. QA will destroy the CAF form 145, ensure the Red X is signed off IAW paragraph 5.5 of this MOI.

5.3.5. If after a thorough search the item is not found, QA or MOC, if QA is not available, will notify the maintenance group commander. The MXG/CC or his designated alternate will determine if/when the search will be discontinued.

5.3.6. Once the MXG/CC or alternate has discontinued the search and the missing item has not been found, the red X entry for the search will be cleared IAW paragraph 5.5 of this MOI and the CAF form 145 will be removed from the aircraft worksheets and taken to QA. Quality Assurance (MXG/MXQ) will ensure the CAF form 145 is complete, input the data into QuAD and annotate the RCN number on the worksheet. They will forward the CAF form 145 to Plans and Scheduling who will file it in the aircraft jacket file.

5.3.7. If the item is located in the aircraft in an inaccessible captive area and is determined by QA and the specialist to pose no FOD threat, an AFTO form 345 Aerospace Vehicle Transfer Inspection Checklist and Certification will be completed and sent with the aircraft to PDM. The item may be removed at PDM.

5.4. If the item is lost on a piece of equipment (not involving aircraft), the following procedures apply:

5.4.1. The individual who discovered the tool/item missing will immediately notify their supervisor and conduct an immediate search of the area. If the item is not found, the individual will place a red X entry in the equipment worksheets and initiate a CAF form 145.

5.4.2. The Supervisor will notify QA and will initiate a more thorough search to include borescope and NDI inspections, if applicable, and route the CAF form 145 to QA.

5.4.3.If the item is found, QA will ensure the Red X entry is signed off IAW with paragraph 5.5 of this MOI and destroy the CAF form 145.

5.4.4. If after a thorough search the item is not found, the supervisor will notify QA of the results. QA will notify the MXG/CC. The MXG/CC or designated alternate will determine when the search will be discontinued.

5.4.5. Once the MXG/CC or alternate has discontinued the search and the missing item has not been found, Quality Assurance (MXG/MXQ) will ensure the CAF form 145 is complete, enter the worksheet into QuAD and will keep the CAF form 145 until the item is recovered.

5.5. Clearing the Red X for lost or missing tools/items.

5.5.1 The Red X entry for lost items will only be cleared by personnel authorized by the MXG/CC as d e s i g n a t e d on the Special Certification Roster.

5.6. Found Items.

5.6.1 Any Items that are found that cannot be accounted for will be turned in to QA.

6. CTK Definitions

Composite Tool Kit (CTK) – A controlled area or container used to store tools or equipment and maintain order, positive control, and ease of inventory. CTKS are assembled as a kit and designed to provide quick, easy visual inventory and accountability of all tools and equipment. CTKs may be in the worksheet of a toolbox, a shadow board, shelves, system of drawers, (Stanley Vidmar, Lista, etc.), cabinets, or other similar areas or containers. The CTK contains tools and equipment necessary to accomplish maintenance tasks, troubleshooting, and repair.

Special Purpose CTK- Small individually issued tool kits that because of the nature of contents or type of container could preclude shadowing or silhouetting (e.g., launch kits, recovery kits, cartridge cleaning kits, oxygen servicing kits, etc.).

Shop CTK- Tool kits (not dispatchable) used by the work center personnel during a shift, provided a single person is responsible for the tool kit.

Dispatchable CTK- CTK issued out and designated to be used outside the work center

Individual Tool- A single tool that is separate from a CTK or Kit having its own WWID, (e.g. a hammer, flashlight, or special purpose tool, etc.)

Set- A group of items put together for a specific purpose or task (e.g. a set of drill bits, a file set, set of Allen wrenches, or ignition test set). A set can either be commercially procured or it may be locally manufactured by assembling pieces and placing them together in the same container in a manner that displays "show and know". If a kit is LM it must comply with the requirements of section 3.16. Sets must be constructed in a manner that complies with "show and know" and accounts for all the pieces to include the container.

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. MIL may be automated.

Christopher E. Lantagne, Lt.Col, ORANG
COMMANDER   Reviewed by Quality Assurance

142d MOI 23-001 Attachment 1a. (TCMax® MIL minimum requirement options.)

```
┌─ MIL Options ──────────────────────────────────────────────────────────────┐
│ CHOOSE WHICH VERSION OF THE REPORT TO RUN:                                  │
│ ○ Air Force MIL                                                             │
│ ◉ Air Force MIL with Grandchildren Listed on Report                         │
│                                                                             │
│ Order By:                          Group By:                                │
│ ☐ Item Storage Locations           ☐ Group Item's with the Same Part Number │
│    ☐ Item Descriptions                                                      │
│    ☑ Item Barcode Numbers                                                   │
│                                                                             │
│ Formatting Options:                                                         │
│ ☑ Show Barcodes and Barcode Numbers    ☐ Use Check Box for Warranty         │
│ ☐ Show Barcode Numbers Only            ☐ Use Check Box for Local Mfg.       │
│ ☐ Show PMEL ID's                       ☐ Use Check Box for Consumable       │
│ ☐ Show Serial Numbers                  ☑ Hide Date and Time Report was Run  │
│ ☑ Show NSNs                            ☑ Hide All Item Information          │
│ ☑ Show Part Numbers                    ☐ Hide Broken and Unservicable Status Only │
│ ☐ Show Item Pictures                   ☐ Print in Landscape                 │
│ ☐ Add Page Breaks After Every Storage Location                             │
│                                                                             │
│ Grandchildren Options:                                                      │
│ (Options below only apply to Standard Air Force MIL and Air Force MIL, For Items Not in a Kit.) │
│ ☐ Display Grandchildren Totals in the Comments Section only.               │
│ ☑ Display Grandchildren Totals in the Comments Section, Location Subtotals, and CTK │
│    Component Total.                                                          │
│                                                                             │
│                          ┌─────────────┐                                    │
│                          │   Update    │                                    │
│                          └─────────────┘                                    │
└─────────────────────────────────────────────────────────────────────────────┘
```

142d MOI 23-001 Attachment 1b

Tool Accountability System
MIL for CTKs/Kits with Item ID Selection
142d MXS

Record Count: 14

CTK ID	Location	CTK Nomeclature	CTK UOI	Qty
K3XX10000		TOOL BOX -K3XX00001	EA	1

Nomenclature	Comments || Part Number	Location	UOI	Qty
Barcode				
KEY, LANYARD, TAG		KEY BOX 1	EA	1
K3XX10001				
			Sub Total:	1
BLADE BLEND KIT, 20 PCS, 1 CASE, 21 TOTAL	Item has 20 Children/Grandchildren. || N/A	DRAWER A	KT	1
K3XX01A01				
KEY, LANYARD, TAG	|| N/A	KEY BOX	EA	1
K3XX01A01-001				
PROTECTOR, SHIM W/FLAG	Local Mfg. || LMXX000000001	K3XX00001-006	EA	1
K3XX01A01-002				
SWISS FILE SET 12 ITEMS, 1 CASE, 13 PCS	Consumable || B15587	K3XX00001-006	SE	13
K3XX01A01-003				
MAGNIFIER	|| 256817	K3XX00001-006	EA	1
K3XX01A01-007				
FILE, STONE (CONSUMABLE)	|| PX001	K3XX00001-006	EA	1
K3XX01A01-008				
SWISS FILE, ROUND #2	|| LP	K3XX00001-006	EA	1
K3XX01A01-009				
SWISS FILE, ROUND	|| LP	K3XX00001-006	EA	1
K3XX01A01-010				
MASTER INVENTORY LISTING	|| N/A	K3XX00001-006	EA	1
K3XX01A01-011				
			Sub Total:	21
BIT, APEX PHILLIPS OFFSET 1/4DR	|| 5120-01-035-3344	DRAWER B	EA	1
K3XX01B01				
SCREWDRIVER	|| 5120-01-335-1418	DRAWER B	EA	1
K3XX01B02				

142d MOI 23-001 Attachment 1b continued

Tool Accountability System
MIL for CTKs/Kits with Item ID Selection
142d MXS

Record Count: 14

CTK ID	Location	CTK Nomeclature	CTK UOI		Qty
K3XX10000		TOOL BOX -K3XX00001	EA		1

Nomenclature	Comments || Part Number	Location	UOI	Qty
Barcode				
REMOVER, PIN 8	|| SGCP1BR	DRAWER B	EA	1
K3XX01B03			Sub Total:	3
MASTER INVENTORY LISTING	|| N/A	DRAWER C	EA	1
K3XX01C01			Sub Total:	1
			CTK Component Total:	26

Inventory Reviewed on (date):   _____

by: _____
       TSgt Justin Meininger
       CTK Custodian

Inventory Reviewed and Approved on (date):   _____

by: _____
       SMSgt Vance Guenther
       Propulsion Supervisor

142d MOI 23-001 Attachment 1c

Lost Tool/Item AFTO Worksheet 781A

Entries First Entry Example

DISCREPANCY:

```
Tool or item missing from what location.
```

CORRECTIVE ACTION:

```
Action taken for missing tool or item i.e. Replaced tool or item in
accordance with technical order/job guide reference.
```

Second Entry

DISCREPANCY:

```
Search for missing tool or item.   CAF 145 initiated.
```

CORRECTIVE ACTION:

```
Search completed. Item found/not found.   CAF worksheet 145 filed in aircraft
jacket IAW MOI 23-001, para. 5.3.4 (Item found) or para. 5.3.5. (Item not
found).
```

```
REFER TO PG_____BLK_____FOR ORIGINAL DISCREPANCY.
```