

## CHAPTER 8

## ARMY AIRCRAFT QUALITY CONTROL AND TECHNICAL INSPECTION

Technical inspection is the commander's system of checks and balances which ensures the highest-quality maintenance effort. High quality decreases unscheduled maintenance, which disrupts flight and maintenance schedules. It also lessens the possibility of maintenance error or inadequate aircraft inspections, which can lead to aircraft damage, personal injury, and even death.

**TECHNICAL INSPECTOR**

A technical inspector is responsible to the maintenance or quality control (QC) officer, the QC non-commissioned officer in charge (NCOIC), and ultimately the unit commander. The inspector is the commander's representative in aircraft safety-of-flight areas. Otherwise, conflicts of interest arise which sacrifice objectivity. For this reason, the technical inspector's rating official should not be from the maintenance production area. If a QC NCOIC or QC officer is assigned, that person should be the rater; otherwise, the unit executive officer or unit commander rates the technical inspector. However, if either the unit executive officer or maintenance officer also serves as the production control officer, that officer will not rate the senior technical inspector.

Inspectors are under the operational control, not supervision, of the maintenance officer. The maintenance officer establishes priorities for inspector work assignments but does not supervise the work. The OIC or the NCOIC distributes the work and supervises the inspectors to meet the maintenance officer's work assignments.

**QUALITY CONTROL DUTIES**

Quality control is a management function. It ensures that maintenance is performed according to maintenance manuals for specific aircraft. QC management is coordinated with all phases of production and work load control to maintain maximum production effectiveness. Well-designed QC procedures assure an acceptable level of quality and a decrease in inspection requirements and management efforts. Maximum effective production is balanced against quality without lowering standards. The QC supervisor (the senior ranking or most qualified

inspector) coordinates the efforts of the QC team, while technical inspectors do the actual inspecting. Technical inspectors are responsible for the safety of aircrew members. Their most critical duty is inspecting aircraft. They are also responsible for component and shop inspections and for maintaining and revising publications, forms, and records.

**Aircraft Inspection**

Safety of the aircraft and crew depends on how well the aircraft is inspected. Refer to TM 1-1500-328-23 for information on the preventive maintenance inspection system, acceptance inspection, transfer inspection, and in-storage inspection. For maintenance expenditure limits, as well as disposition instructions for crash, mishap, battle damage, deteriorated, or other natural phenomenon, refer to TB 43-0002-3.

**Turn-In/Pickup of Aircraft at AVIM**

Because technical inspectors are the people most knowledgeable of support maintenance, they accompany aircraft turned in to AVIM for maintenance. They also review aircraft records with AVIM personnel, resolve questions on the spot, perform a joint inventory with AVIM personnel, and accompany AVIM inspectors on the initial inspection of the aircraft. Upon completion of repairs and before acceptance of the aircraft, inspectors perform a joint inventory with AVIM personnel, review aircraft records for accuracy and completeness, and inspect aircraft to ensure that requested work was properly performed. If repairs are deferred because parts are unavailable, technical inspectors ensure that they are ordered.

**Aircraft Technical Compliance (Technical Bulletins)**

Inspectors ensure that all requirements of applicable aircraft technical bulletins are met and required entries are made on applicable DA forms. Inspectors are also responsible for two actions: (1) grounding an aircraft if required by the technical bulletin (refer to AR 95-3) and (2) submitting reports required by AR 95-3 to report compliance with technical bulletins.

### Army Oil Analysis Program

Inspectors ensure that all aircraft are entered in the program and that all required records are maintained. Refer to AR 750-1, TB 43-0106, and DA Pam 738-751 for specific instructions. Inspectors ensure that—

- Oil samples are taken according to TB 43-0106.
- DD Form 2026 (Oil Analysis Log) is complete and accurate.
- All samples are dispatched expeditiously to the laboratory.
- Special samples requested by the laboratory are taken immediately.
- Notification is given to the assigned servicing laboratory of replacement or removal of AOAP components.

### Component Inspection

QC personnel use computerized printouts or a time between overhaul and retirement life component chart to monitor the in-service time of all aircraft components requiring replacement on an hour or calendar basis. For a list of these components, refer to the applicable aircraft maintenance manual.

Component inspection ensures that the time between overhaul or retirement life is not overflowed unless specifically authorized in TM 1-1500-328-23. Review TBO chart or computerized printouts and update periodically but not less than the reporting period (AR 700-138) and when reportable components are replaced. Two variations of the TBO chart can be used: time-change component schedule chart (Figure 8-1) and time-change bar graph component chart (Figure 8-2). If computerized printouts are used, make sure they contain all required information (Figure 8-3) and maintain a separate disk copy in the QC office. QC personnel must notify maintenance officers and noncommissioned officers when 100 hours remain until replacement of hourly components and when 2 months remain until replacement of calendar components.

### Shop Inspection

This QC inspection includes two areas: facility and equipment (shop safety) and test equipment (calibration). When performing the facility and equipment inspection, inspectors check the shop and shop equipment for proper layout, clear fire lanes, fire extinguisher serviceability, and installation and use of equipment safety devices. See below for inspection procedures. Other details are provided in TM 1-1500-204-23-1. After the shop is properly

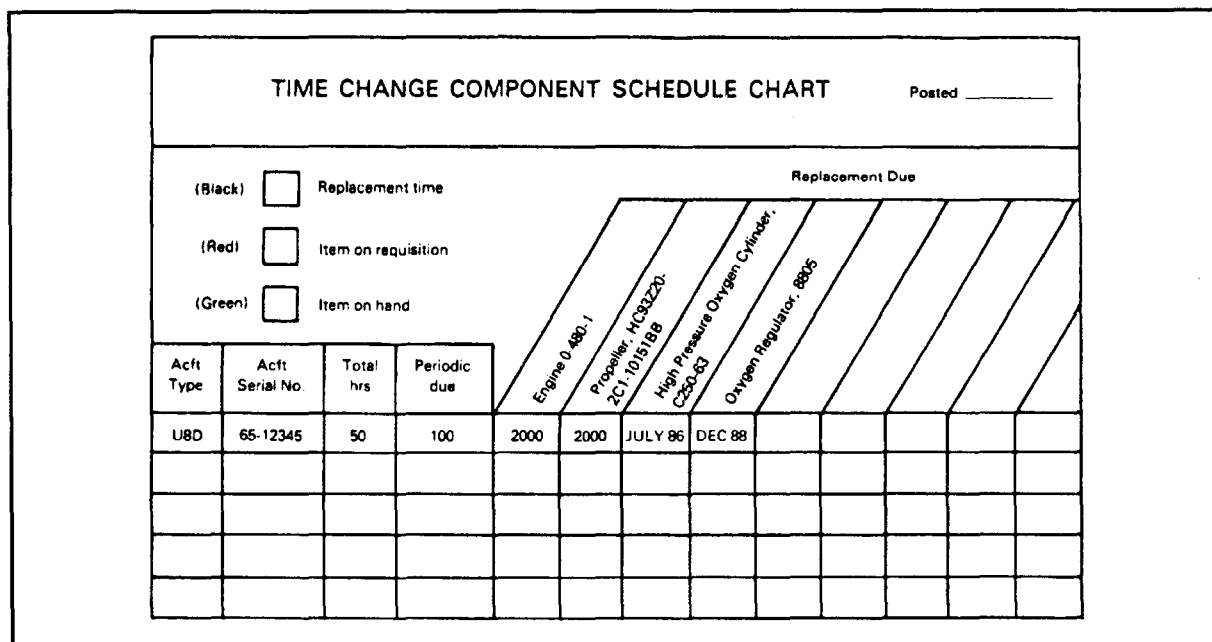


Figure 8-1. Time-change component schedule chart

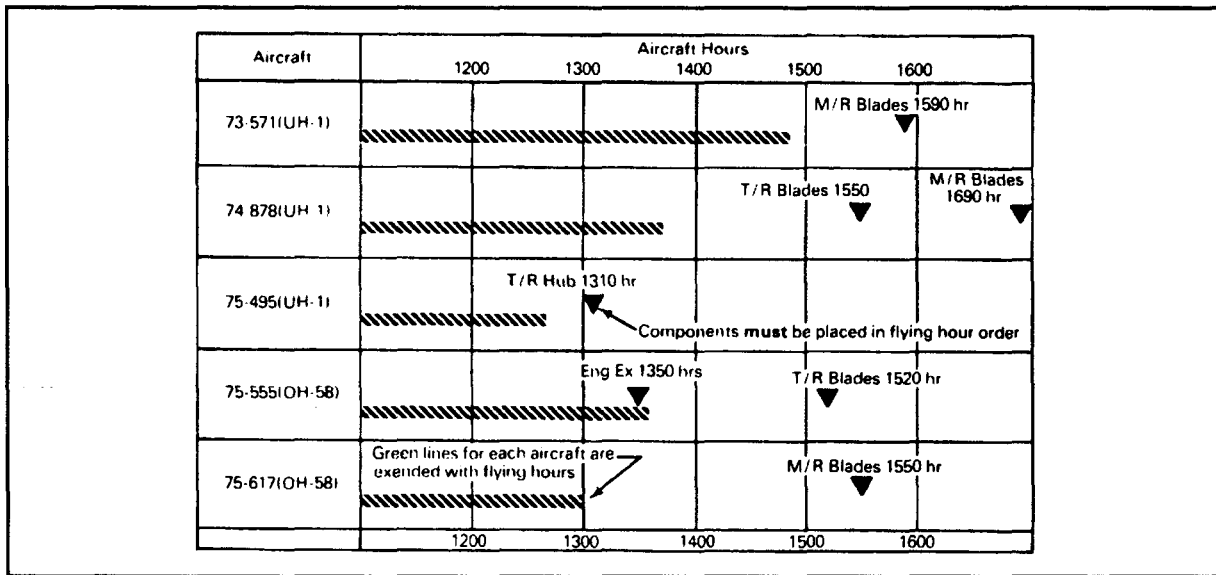


Figure 8-2. Time-change bar graph component schedule chart

2488-16 COMPONENT PROJECTION REPORT

PCN:AWAMR16A

REPORT DATE: 12-MAY-94      UIC: W631A8

AIRCRAFT SERNO: 6916148    CURRENT HOURS: 3576.8

PROJECTED HOURS: 900

WUC	PART NUMBER	NSN	NOMENCLATURE	SERIAL NUMBER	AIRCRAFT HOURS	
					TBO DUE	UNTIL DUE
85A01H04	206-011-140-1	1615010306653	RETENTION STRAP FITTING	A-4503	3695.0	118.2
85A01H04	206-011-140-1	1615010306653	RETENTION STRAP FITTING	A-1940	3695.0	118.2
85A01H03	206-010-123-3	5315000919350	RETENTION STRAP PIN	A19-30090	3695.0	118.2
85A01H03	206-010-123-3	5315000919350	RETENTION STRAP PIN	A19-30060	3695.0	118.2
85A01H	206-011-154-101	1615010631260	RETENTION STRAP	LK-11923	3695.0	118.2
85A01H	206-011-154-101	1615010631260	RETENTION STRAP	LK-11919	3695.0	118.2
84A05C	6895653	2915010444551	PUMP ASSY, FUEL	PE6390	4010.0	433.2
84A05G	2524912-2	2915011799734	GOVERNOR ASSY	86160606	4200.0	711.2
84A05A	2524911-3	2915012510680	FUEL CONTROL	337434	4473.0	896.2

Figure 8-3. Computerized printouts (example)

inspected, check the test equipment for accuracy. QC personnel ensure that all calibration requirements are met. Technical inspectors ensure that—

- An organizational maintenance program for TMDE is established.
- A TMDE support coordinator is appointed in the unit. The support coordinator is the focal point of contact for matters pertaining to TMDE support. An alternate coordinator is appointed and assigned the responsibility of monitoring the TMDE support program. Keep a copy of the appointment in the QC files (AR 750-43 and AR 25-400-2).
- ADA Form 2416 (Calibration Data Card) or DA Form AMXTM 34A is submitted to the supporting activity for each item requiring calibration (TB 750-25).
- A TMDE not listed in TB 43-180 is reported according to TB 43-180 and TB 750-25.
- ADA Label 80 or DA Label 163 is attached to items requiring calibration.
- TMDE are calibrated at the prescribed interval (TB 43-180). After removal from temporary storage, submit TMDE for calibration before use.

### Publications Maintenance

QC and shop personnel establish and maintain a complete, up-to-date set of technical publications for supported aircraft. These publications provide instructions on procedures and issue, operation, maintenance, repair, modification, serviceability standards, testing, inspection, and storage of equipment.

Publication personnel are appointed in the unit. They are responsible for ordering and maintaining the unit's publication accounts.

Monthly and upon receipt of a new index, DA Pam 25-30 (published quarterly), the technical inspector reviews publication files (technical libraries) throughout the maintenance activity for completeness and currency.

Prepare recommendations for changes to publications on DA Form 2028 or DD Form 173/3 (OCR) (Cat I Deficiency Report only). The technical inspector establishes and maintains a file of recommended changes (AR 25-400-2).

### Familiarization Chart

QC and shop personnel must have a technical data familiarization chart or computer printout to ensure that maintenance personnel are familiar with publications relevant to their duties. See Figures 8-4 and 8-5 for samples.

All publications applicable to equipment maintained and names of maintenance personnel are listed also. Personnel initial beside each publication to indicate their familiarity with that publication. As changes are received, post the change number and erase the initials. After reviewing each change, personnel initial the chart or printout again. Each shop maintains separate charts or printouts. Inspectors check the charts or printouts monthly to ensure that—

- All publications used by the shop are listed.
- All shop personnel are listed.
- All personnel have initialed to indicate their understanding of the publications.
- All changes are posted according to DA Pam 310-13.

### Files Management

The most important files maintained by QC personnel are TWX files. These TWXs may ground aircraft, impose operating limitations, or provide information on aircraft maintenance techniques. Maintain separate TWX files for each model of aircraft assigned or supported. Maintain one file for general messages. TWXs are either informational or apply to specific models of aircraft. Separate each aircraft TWX file into two sections: SOF messages and maintenance and technical advisory messages. For more guidance on files management and SOF messages, refer to ARs 95-3 and 25-400-2.

### Forms and Records

Technical inspectors monitor all forms and records for accuracy and completeness. These include—

- Aircraft historical records.
- Weight and balance records.
- Aircraft maintenance records.
- Blank Forms.
- Deficiency reports (DR).

*\* Quality Control*

**TECHNICAL DATA FAMILIARIZATION CHART**

BY PLACING MY INITIAL OPPOSITE MY NAME, I CERTIFY THAT I HAVE READ AND I AM FAMILIAR WITH THE LITERATURE LISTED BELOW

\*\*TECHNICAL MANUAL

	CHANGE NUMBER	MSG LAYMAN	MSG MATTOX	SFC BARR	SFC GAST	SSG HONEYCUTT	SSG WILEY	SSG MAZER	SGT KAY	SGT KEMP	SGT FAUSTICH	SGT WESLEY	SGT KRAFT
55-1510-201-23	21	L	M				M						K
55-1510-202-23	2	L	M				M				W	K	
55-1510-205-23		L	M				M						
55-1510-206-23	1	L	M				M		K				
55-1520-202-23	16	L	M	B		H	M						
55-1520-203-23		L	M	B		H	M						
55-1520-204-23		L	M	B		H	W	M	K				
55-1520-205-23	6	L	M	B			M			J			
55-1520-206-23		L	M	B			M	X					
55-1520-208-23		L	M	B		W	M						
55-1520-210-23	31	L	M	B		H	M						
38 750	102	L	M	B	J	H	M		K	J			
55-1500-204-25/1	31	L	M	B	J	H	M		K	J			

\*Enter name of section or shop.  
\*\*Enter manuals most commonly used when performing the duties of each shop or section.

Figure 8-4. Technical data familiarization chart

FAMILIARIZATION CHART  
D/1-234TH ATTACK BN  
QUALITY CONTROL

	WO1 DAVENPORT	SFC ARNOLD	SSG OOOD	SSG HARRIS	SSG COOPER	SSG GREEN
AR 95-1						
AR 95-2						
AR 95-3						
AR 25-400-2						
DA PAM 25-30						
DA PAM 25-400-2						
DA PAM 730-751						
FM 1-500						
TM 1-1500-320-23						
TM 55-1500-284-25/1						

BY PLACING MY INITIALS OPPOSITE MY NAME, I CERTIFY THAT I HAVE READ AND I AM FAMILIAR WITH THE LITERATURE LISTED ABOVE.

Figure 8-5. Computer printout

## Aircraft Historical Records

Inspectors maintain historical records for each aircraft assigned to their unit as follows:

- DA Form 2408-4-1 (Weapon Record Data).
- DA Form 2408-5 (Aircraft Modification Record).
- DA Form 2408-5-1 (Equipment Modification Record Component).
- DA Form 2408-15 (Historical Record for Aircraft).
- DA Form 2408-15-2 (Aircraft Vibration Record).
- DA Form 2408-16 (Aircraft Component Historical Record).
- DA Form 2408-16-1 (History Recorder Component/Module Recorder).
- DA Form 2408-17 (Aircraft Inventory Record).
- DA Form 2408-19 (Aircraft Engine Turbine Wheel Historical Record).
- DA Form 2408-19-1 (T53/T55 Turbine Engine Analysis Check Record).
- DA Form 2408-19-2 (T700-Series Turbine Engine Analysis Check Record).
- DA Form 2408-19-3 (T700-Series Engine Component Operating Hours Record).
- DA Form 2408-20 (Oil Analysis Log).

For specific information about these forms, refer to DA Pam 738-751.

## Weight and Balance Records

The assigned technician maintains the aircraft's weight and balance records. Inspectors coordinate with the technician anytime that maintenance on the aircraft could affect weight and balance. Refer to AR 95-3, TM 55-1500-342-23, the aircraft operator's manual, and the aircraft maintenance manual for information. The -10 operator's manual and the applicable maintenance manual contain weight and balance data.

Use standard forms with this data to provide an effective system for weight and balance control. Each aircraft serial number and information to be inserted on the charts or forms apply only to the individual aircraft. Maintain the weight and balance

data and related forms for each aircraft according to AR 95-3 and TM 55-1500-342-23.

Before an aircraft is delivered, the manufacturer inserts all aircraft-identifying data on the various charts and completes all forms. Maintain DD Form 365 series, charts, and any other pertinent data about the aircraft's weight and balance in a permanent binder. The binder and all forms list the aircraft's designation and serial number. Annotate any changes that affect the aircraft's weight and balance on these forms.

Safeguard and maintain weight and balance forms for each aircraft. Individual weight and balance forms serve various purposes; therefore, their retention periods vary. Use the following to record aircraft weight and balance:

- DD Form 365 (Record of Weight and Balance Personnel) is a semipermanent form. Keep it in the weight and balance data file until all entry space is filled and a new replacement form is started. When new forms are started, destroy the replaced form.
- DD Forms 365-1 (Chart A-Basic Weight Checklist Record) and 365-3 (Chart C-Basic Weight and Balance Record) are permanent forms. Keep them in the weight and balance data file for the life of the aircraft. When new forms are started, staple them to the original form.
- DD Form 365-2 (Chart B-Aircraft Weighing Record) is a semipermanent form. Keep the current completed form in the weight and balance data form until the aircraft is reweighed, a new form is started, computations are verified, and necessary entries are made on DD Form 365-3. Then destroy the old DD Form 365-2.
- DD Form 365-4 (Weight and Balance Clearance Form F-Transport) is used to compute standard loads using the aircraft's current basic weight. The form is a current work form as long as load weights and locations remain current, until the basic aircraft weight is recomputed or changed. A weight and balance technician reviews and updates this form every 90 days. When entries are revised, destroy the old form. As a minimum, prepare DD Form 365-4 for each configuration in the operator's manual describing normal loading procedures. If a unit requires a configuration

not described in the operator's manual but within load and center of gravity limits, prepare DD Form 365-4 and keep it on file.

- The current Chart E (Loading Data, Charts, and Graphs), taken from the applicable aircraft maintenance manual, is revised when the maintenance manual is revised. Retain Chart E, a semipermanent chart, in the weight and balance file until a revised Chart E is published in the maintenance manual. Then destroy the old Chart E.

Duplicate DD Form 365 series to replace lost, mutilated, or illegible forms. When forms are duplicated, certify and sign each entry, date the form, and identify the organization. If information is lost or illegible, duplicate the forms and take a physical inventory to complete DD Form 365-1. To complete DD Form 365-2, reweigh the aircraft.

Upon transfer of an aircraft, the commanding officer of the transferring activity ensures that the weight and balance file accompanies the aircraft. A copy of the weight and balance data will normally be on the aircraft (see AR 95-3).

Dispose of aircraft weight and balance files for aircraft stricken from Army inventory as follows:

- Destroyed or damaged aircraft. If the aircraft does not fall into one of the following categories, destroy the file locally after necessary investigation and reporting
- Aircraft involved in accidents resulting in death, personal injury, or nongovernment property damage. The operating activity retains weight and balance records for one year. After one year, forward the records along with a statement that aircraft may be subject to litigation to: Commander, US Army Aviation Systems Command, ATTN: DRSTS-M, 4300 Goodfellow Boulevard, St Louis, MO 63120.
- Damaged aircraft not economically repairable by Army standards. Transfer these aircraft or offer them for sale to other than an Army custodian. Then transfer weight and balance files for the aircraft to the receiving agency or individual.
- Excess aircraft. Transfer or offer for sale serviceable or repairable aircraft to other than

an Army custodian. Weight and balance files accompany these aircraft to the receiving agency or individual.

### Aircraft Maintenance Records

Inspectors monitor all records used in aircraft maintenance for accuracy and completeness.

These records include—

- DA Form 2405 (Maintenance Request Register).
- DA Form 2407 (Maintenance Request).
- DA Form 2408-4 (Weapon Record Data).
- DA Form 2408-12 (Army Aviator's Flight Record).
- DA Form 2408-13, 13-1, 13-2, 13-3 (Aircraft Inspection and Maintenance Record).
- DA Form 2408-14 (Uncorrected Fault Record).
- DA Form 2408-18 (Equipment Inspection List).
- DA Form 2410 (Component Removal and Repair/Overhaul Record).
- DD Form 1574 (Serviceable Tag-Materiel).
- DD Form 1575 (Suspended Tag-Materiel).
- DD Form 1576 (Test/Modification Tag-Materiel).
- DD Form 1577 (Unserviceable [Condemned] Tag-Materiel).
- DD Form 1577-2 (Unserviceable [Repairable] Tag-Materiel).

Refer to DA Pam 738-751 for complete information about these forms.

### Blank Forms

Inspectors ensure that a 30-day supply of blank forms is on hand in the maintenance section.

### Deficiency Reports (DR)

Technical inspectors are responsible for maintaining a deficiency report file (AR 25-400-2), assigning DRs control numbers, and establishing a DR log (see example at Figure 8-6). Inspectors check all submitted DRs for accuracy and completeness and assist in determining the category. If an exhibit is needed, they ensure that all applicable forms and records

CONTROL NUMBER	SUBJECT & CATEGORY	EXHIBIT Y or N	DATE OF SUBMITTAL	DATE OF REPLY
8TZPFF 800002	OH-58 PUMP, SUBMERGED, RUBBER CHECK VALVE	YES	11 OCT 83	29 APR 84
	MISSING FROM TOP OF FUEL BOOST PUMP HOUSING (CAT I)			

Figure 8-6. Deficiencies log

accompany the exhibit (DA Pam 738-751). Technical inspectors review the TB 43-0001 series of equipment improvement and maintenance digests prior to submitting the DR.

**Investigation of Recurring Deficiencies**

The inspector investigates any deficiency that occurs on a continuing basis. If a materiel defect is involved, the inspector submits a DR informing ATCOM of the problem. If the defect is due to workmanship, the inspector informs all maintenance personnel of the problem, its possible effects, and how to correct it.

**TYPES OF PUBLICATIONS**

Army publications describe policies and procedures used in Aircraft maintenance and maintenance management. QC personnel ensure that publication libraries are current and updated with the latest changes. Technical inspectors set up and maintain the master reference library.

**Army Regulations (AR)**

Army regulations provide policies and responsibilities which govern administrative procedures and ensure compliance at all levels. Section 4 of DA Pam 25-30 contains an index of Army regulations. Subject matter is identified by a basic number. For example, all Army regulations in the 95 series are about aviation. A sub-number preceded by a dash indicates additional information about the basic subject. For example—

- AR 95-1, flight regulation.
- AR 95-3, SOF and weight and balance information.

**Department of the Army Pamphlets (DA Pam)**

DA pamphlets contain permanent information or reference material. Section 4 of DA Pam 25-30 contains an index of DA pamphlets. DA pamphlets are numbered in the same manner as Army regulations. A subnumber preceded by a dash distinguishes between DA pamphlets with the same basic number. For example, all DA pamphlets in the 25 series are about Army publications:

- DA Pam 25-30 is an index of publications and blank forms.
- DA Pam 25-33 is the standard Army publications system (STARPUBS) revision of the DA 12-series forms, usage, and procedures.

**Field Manuals (FM)**

Field manuals outline military doctrine, tactics, and techniques. They include instructions and reference material on training and operations, maintenance management, and aircraft systems repair theory. Section 5 of DA Pam 25-30 contains an index of field manuals. Field manuals are also numbered in the same manner as Army regulations. A basic number identifies the primary subject, and a subnumber indicates additional information. For example, all field manuals in the 1 series are about aviation operations:

- FM 1-500, aviation maintenance.
- FM 1-563, airframe maintenance.

## Technical Manuals (TM)

Technical manuals provide training information on a variety of subjects and on specific items of equipment. Section 8 of DA Pam 25-30 contains an index of technical manuals.

Manuals for specific equipment provide instruction on operation, maintenance, and overhaul. They also provide a parts list and breakdown. The first two digits of these manuals identify the preparing technical service.

A dash and a four-digit number indicate the FSC code, including the equipment within the FSC. For example, -1510 represents fixed-wing aircraft, and -1520 represents rotary-wing aircraft.

A dash and a three-digit number indicate the MDS of a particular aircraft. For example, -210 represents UH-1D/H helicopters, and -228 represents OH-58A helicopters. A dash and a two-digit number represent the category of maintenance. For example, -10 is for operators, and -23 is combined for AVUM and AVIM personnel.

A serial number preceded by a dash or a slash is added when a manual is published in more than one volume; for example, -1, -2, or /1, /2, and so forth. The letter "P" is used as a suffix when the repair parts and special tools lists are published in a volume separate from the maintenance instructions. This volume will have the same basic number as the corresponding technical manual. For example:

- TM 55-1510-213-10/1, maintenance manual for the OV-1D aircraft.
- TM 55-1520-210-23-1, maintenance instructions for UH-1D/H/F/EH-1H helicopters.
- TM 55-1520-228-23P, repair parts and special tools list for OH-58A/C helicopters.

## Technical Bulletins (TB)

Technical bulletins contain technical information on equipment or professional management techniques. The most common technical bulletins encountered by QC personnel direct one-time inspections of aircraft or components. Section 7 of DA Pam 25-30 contains an index of technical bulletins. Urgent inspection requirements are initially sent to the units by a TWX. The subsequent technical bulletin then supersedes the TWX.

Technical bulletins directing one-time inspections are classified by priority as urgent, limited urgent, and normal.

### Urgent

Urgent technical bulletins contain aircraft conditions which affect safety of flight. These conditions may cause damage or destruction to aircraft and death or injury to personnel. An urgent technical bulletin may direct that a specific aircraft be grounded. Normally, grounding takes place within a certain flying hour or calendar period. When grounding aircraft, follow procedures listed in the technical bulletin.

### Limited Urgent

A limited urgent technical bulletin allows the aircraft to be operated only under specific conditions or limitations. These conditions are listed in the technical bulletin.

### Normal

Normal technical bulletins are issued when problems occur that reduce equipment efficiency, life expectancy, or use of the aircraft. These technical bulletins do not impose any operating limitations; however, maintenance must be accomplished within a specified time.

Technical bulletins for specific items of equipment are numbered in the same manner as technical manuals for that item. An added number preceded by a slash differentiates between technical bulletins on the same item. The two-digit group indicates which category performs the technical bulletin maintenance. Technical bulletins pertaining to two or more different items of equipment within the same FSC have a zero for the third digit. For example—

- TB 55-1510-213-20/8—
  - -213 refers to OV-1D fixed-wing aircraft.
  - -20 refers to AVUM level of maintenance.
  - -/8 indicates that this is the eighth OV-1D AVUM technical bulletin published.
- TB 55-1520-242-35/1—
  - -242 refers to UH-1D/H helicopters.
  - -35 refers to AVIM level of maintenance.
  - -/1 indicates that this is the first UH-1 AVIM technical bulletin published on special-purpose/special-mission modification.

- TB 55-1500-337-24—
  - -1500 refers to all aircraft.
  - -24 indicates that this technical bulletin applies to AVUM through depot levels of maintenance.

**Modification Work Orders (MWO)**

MWOs are the only publications that authorize modification or alteration of Army equipment. MWOs are issued—

- To provide compatibility with newer equipment.
- To prevent serious damage to equipment.
- To increase operational effectiveness.
- To reduce support requirements.

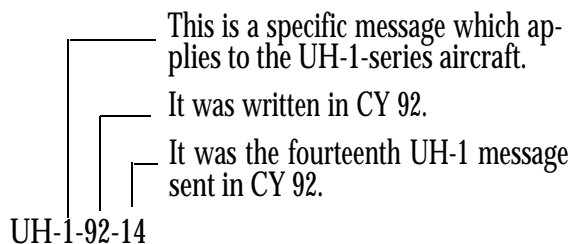
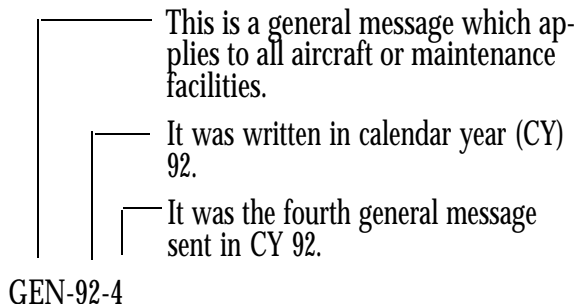
Each MWO contains specific instructions concerning—

- Time limit for compliance.
- Maintenance category to which the MWO applies.
- Parts required.
- Man-hours required.
- Form entries required.
- Method for performing the modification.
- Weight and balance data.

As with technical bulletins, MWOs are assigned priorities. The priority classifications and numbering system are the same as for technical bulletins. Section 6 of DA Pam 25-30 contains an index of MWOs.

**Safety-of-Flight/Aviation Safety Action Messages**

Safety-of-flight and aviation safety action messages provide information concerning safe operation of an entire model or series of Army aircraft. These messages are transmitted by TWX to all organizations concerned. The message number indicates general or specific information. General messages apply to all aircraft, while specific messages apply only to a specific series of aircraft. For example—



There are three types of safety-of-flight messages: emergency, operational, and technical. There are also three types of aviation safety action messages: maintenance mandatory, informational, and operational.

**Emergency**

These messages contain serious information. They usually denote hazardous aircraft conditions that cause aircraft damage or personal injury. Emergency safety-of-flight messages are later published as urgent technical bulletins or MWOs.

**Operational**

These messages, issued by the US Army Safety Center (USASC), impose operating limitations on aircraft.

**Technical**

These messages ground or require modification of the aircraft. They usually require removal and replacement, or modification of the parts or components. Messages are issued by ATCOM and are later published as urgent action technical bulletins or MWOs.

**Maintenance Mandatory**

These messages direct maintenance actions and/or updates technical manuals.

**Informational**

These messages provide information of a maintenance technical or general nature.

## Operational

These messages pertain to aircraft operations, flight procedures, limitations, or operational policies.

Every three months, ATCOM publishes an index of all messages they transmitted during that period. Check the message file when the index arrives to ensure that all required messages are on hand. For a detailed discussion of safety-of-flight or aviation safety action messages, refer to AR 95-3 and DA Pam 738-751.

## Supply Bulletins (SB)

Supply bulletins provide important supply information to maintenance personnel—

- Stock number changes.
- Direct-exchange list changes.
- Reports on new materiel.
- Information on AIMI.

Supply bulletins are numbered in sequence by calendar year and usually have an expiration date. Section 6 of DA Pam 25-30 contains an index of supply bulletins.

## Federal Aviation Administration (FAA) Publications

The FAA publishes books on aviation and aircraft maintenance. Only authorized Army-approved publications are used for aircraft maintenance. Do not use FAA or any other federal agency publications for maintenance unless authorized in writing or as part of a logistic support plan.

## CHANGED/REVISED/RESCINDED PUBLICATIONS

Effective aircraft maintenance requires that the latest technical information be on hand at all times. Since Army publications are continually being updated, QC personnel ensure that units have adequate quantities of current publications. Therefore, it is necessary to understand how the publications distribution system operates. DA Pams 25-33 and the 310-10 series are a must for the technical inspector. These explain—

- How initial distribution and resupply are made.
- Which DA forms are required to order publications.
- Where to order publications.
- How a publications account is set up.

Refer to DA Pam 310-13 for information on posting and filing publications.

## Changes

Rather than reprint an entire manual, changes are published to update existing manuals. Minor changes accumulate before being printed.

Serious errors result in the immediate printing of a change, which may be issued as an immediate action interim change (IAIC). The IAIC is only printed once and is not stocked for reorder.

## Posting

When posting changes—

- Be accurate and neat. A publication that is incorrectly or illegibly posted is as worthless as one that has not been posted.
- Use a sharp, black pencil so that posting can be erased easily if future changes or corrections are necessary.
- Print or write the authority for changing a basic publication in the outside margin of the page by the changed portion. This authority is usually a numbered change (for example, C1). If the changed portion affects more than one page, make the same notation on all pages concerned.
- Draw a line through the first and last lines of the text when three or more lines of text are affected; then connect these lines from top right to bottom left, forming a Z-shaped figure.
- Ensure that change numbers are posted in proper sequence. An urgent change may be posted out of sequence (ahead of previous numbered changes) if authority to do so is stated on its front page.
- Ensure that manuals are not superseded or rescinded.

## Message Changes

When there is no time to issue a printed change, a TWX is used to amend a publication. The message is identified as an interim change. Prepared in the format of a published change, the message provides the exact language of the changed material. When posting the change, follow the procedures directed by the message. Show the message number

and date in the margin of the publication opposite the changed portions (for example, DA message 0614202 Mar 92).

File a copy of the message in front of the basic publication or the last printed change. If a copy is not available, insert a cross-reference sheet showing where a copy of the message can be found. When the next printed change or revision of the publication is received, check the supersession notice. If the notice states that the message is rescinded or superseded, remove the message or cross-reference sheet and destroy it.

### Revisions

A revision is a complete new edition of an existing publication. It replaces or supersedes the preceding publication, together with all changes, supplements, and appendixes.

### Safety-of-Flight Supplements

Safety-of-flight supplements are used to quickly provide safety information when a hazardous condition exists. These supplements contain important operational, precautionary, and restrictive instructions that cause flight limitations. The first page is printed with a bold red border of FS initials and the words SAFETY-OF-FLIGHT appear at the top and bottom of the page. Supplements have the same title as the basic publication they supplement. When safety-of-flight information applies to more than one type of aircraft, an individual supplement is issued for each type of aircraft involved. These supplements are issued in one of two forms: interim or formal.

#### Interim

Interim supplements are publication changes issued by TWX when loss of life or serious personal injury is involved.

#### Formal

Formal supplements are issued and distributed through normal channels when serious damage to the aircraft is involved or to replace previously issued interim supplements.

#### Rescissions

A publication is rescinded (canceled) when its material becomes obsolete. Destroy obsolete publications. DA Pam 25-30 contains a list of rescinded publications.

### Disposal

Dispose of publications after they have been rescinded, replaced, or superseded. Classified publications are disposed of in accordance with AR 380-5; unclassified publications, according to instructions from the local disposal officer. However, do not discard old publications until new ones are reviewed. Use the DA Form 12 series (Requirements for Distribution of Publications and Blank Forms) to order the quantity of publications needed. If more publications are received than needed, update the DA Form 12 series in accordance with DA Pam 310-10 and DA Pam 25-33. Determine if publications are needed by other aviation units; if not, contact the post adjutant general (AG) publications officer for disposal instructions.

### TECHNICAL LIBRARIES

Technical files and libraries are required on all equipment. Local policies differ according to the size of the unit concerning the location of publications. In a small unit, they may be filed in the maintenance office or QC office. In field maintenance (AVUM/AVIM) or depot operations, they may be filed in a technical library. In either case, the area should be convenient to maintenance personnel. DA Pam 310-13 is required reading for technical inspectors. It explains setting up, maintaining, and posting changes to technical libraries.

#### Master and Shop

Technical inspectors are responsible for two types of libraries: master and shop. The master library is located in the QC office and is used by all personnel. It contains publications required to maintain all series of aircraft supported by the shop. The shop library contains manuals on the specific duties of the shop. Inspectors ensure that these manuals are up to date. Technical inspectors also check the master and shop libraries monthly to ensure that—

- Libraries are located conveniently to users.
- All required manuals are on hand or on order.
- No unnecessary publications are on hand.
- Changes are properly posted and indexes reflect current status of publications on hand.
- No superseded or rescinded manuals are used.
- Classified manuals are controlled according to the AR 380 series.

## Filing System

Use AR 25-400-2 and DA Pam 310-13 as master guides for maintaining the technical publications file. DA Pam 25-30 contains an index of DA publications and forms. Verify the status of publications against the listings in the latest index. A star by the number indicates a new publication or a revised edition. A star following the entry indicates a change in the title or a new change.

If publications are received before they appear in the index, prepare and keep a list with the index. When these publications appear in the index, delete them from the list. Also, line out rescinded publications as rescission notices are received. Be sure to check the current supersessions and rescissions section of the index. If all supersessions and rescissions are posted correctly, files are accurate and agree with the index. File the following types of publications as described below:

- Technical manuals—numerically when letters are added to the publication number—numerically and alphabetically. For example—
  - TM 55-1500-204-23 series
  - TM 55-1520-238-10
  - TM 55-1520-238-23-1
  - TM 55-1520-238-23P-1
  - TM 55-1520-238-23P-2
  - TM 55-1520-238-PMD
- Technical bulletins—numerically, preceding or inside the front cover of the applicable technical manual (if related to a specific technical manual). Technical bulletins that do not pertain to a specific technical manual are numbered consecutively and filed alphanumerically, separately from technical manuals.
- MWOs—numerically, separately from technical manuals.
- Supply manuals—alphanumerically.
- Lubrication orders (LOs)—with manuals that they apply to (an LO has the same number as the technical manual or technical bulletin that best covers preventive maintenance for the equipment).
- Supply bulletins—numerically.
- Field manuals—numerically.
- Supply catalogs—numerically by FSC, then alphabetically.
- Department of Defense (DOD) manuals—numerically by federal classification, then alphabetically.
- Supply letters—numerically, separated by CY.
- Safety-of-flight supplements—alphanumerically immediately following the basic publication.

## INTERSERVICE PUBLICATIONS ACCOUNTS

### Air Force Publications

Some of the equipment used by the Army is procured through the Air Force. However, publications to support these interservice items are not always obtained with the equipment. To establish an Air Force publications account—

- Complete two copies of AFTO Form 43 (Air Force Technical Order).
- Complete one copy of AFTO Form 187 (Resupply and Initial Distribution Form).
- Mail copies to Commander, Oklahoma City Air Logistics Center, ATTN: OC-ALC/M-MDUB, Tinker AFB, OK 73145.

### Navy Publications

Use NPFC 2002 to order Navy publications. This index is available only on microfiche and is obtained by calling customer service (DSN 442-2600). There is no charge for Navy publications, but there is a charge for blank forms. To obtain permanent distribution of the index, write to Naval Publications and Forms Center, 5801 Tabor Avenue, ATTN: CODE 1011, Philadelphia, PA 19120.

Once an account is established, order Navy publications using DD Form 1348M (DOD Single Line Item Requisition System Document [Mechanical]). For requisitioning instructions, refer to AR 725-50. An authorized DODAAC number, which can be obtained from the unit supply document register, must be assigned to DD Form 1348M when ordering Navy publications. After a proper unit identification code (UIC) is established, mail publications to the address on the DODAAC. To obtain permanent distribution

of publications, write to Commanding Officer, Naval Air Technical Services Facilities, 700 Robins Avenue, ATTN: CODE 321, Philadelphia, PA 19111. For coordination by telephone, call AUTOVON 442-2660. Binders used to store publications are available through the same procedures.

Military specifications and standards are also available through the Naval Publications and Forms Center (AUTOVON 422-2660). Use DD Form 1425 (Specifications and Standards Requisition) to request a copy of the index. Once the initial index is received, request all further orders using DD Form 1425.

### **TECHNICAL INSPECTION PROCEDURES**

Technical inspection of aircraft maintenance ensures that standards and practices established by applicable publications are followed. It also ensures that all applicable technical requirements are met, the maintenance shop is organized, and quality work is performed efficiently. Before performing an inspection, QC personnel review the latest applicable reference material to ensure that the inspection meets current requirements. To ensure uniform safety and reliability, inspection procedures must be standardized.

#### **Red-X Authorization**

The technical inspector is the commander's designated representative for aircraft maintenance QC. Authorization to sign off "red-X" or "circled-red-X" conditions is designated in writing (by memorandum for record or on DA Form 1687) by the owning unit commander. This provides the name, rank, and duty position of the inspector and authorizes him to inspect and sign off red-X and circled red-X conditions on specific aircraft models and components. Only the inspector's initials and signature are required to release an aircraft for flight. A sample signature and initials help eliminate unauthorized use by other personnel.

A technical inspector or maintenance supervisor who works on a red-X or circled-red-X fault cannot sign off the work as his own inspector. The work must be inspected and signed off by another person designated in writing by the commander. If no repair work or maintenance is involved and only an inspection required, the technical inspector performs the inspection and signs off with no recheck. The parent unit's orders are sufficient authority to sign off a red-X or circled-red X on aircraft belonging to another unit (DA Pam 738-751).

NOTE: When authorization is given to sign off red-X or circled red-X conditions on specific aircraft models or components, the memorandum for record must list these items and be signed by the commander. Keep a copy of the authorization on file in the QC office for six months after the representative departs the unit.

#### **Designated Representative**

Several manuals contain phrases stating that an individual (the commander or property book officer, for example) or a designated representative performs a particular function. This authority is designated in writing (by memorandum for record) or DA Form 1687 (Notice of Delegation of Authority—Receipt for Supplies). Maintain a list of the following as applicable to TOE/TDA units:

- Aviators appointed as maintenance test pilots (AR 95-1 and TM 1-1500-328-23).
- Personnel entering deferred maintenance on DA Form 2408-14 (DA Pam 738-751).
- Personnel signing for and turning in equipment (aircraft maintenance only) (AR 750-43).
- Personnel authorizing evacuation of aircraft on a red-X status for a onetime evacuation mission (DA Pam 738-751).
- Personnel authorizing a change of aircraft red-X (status symbols) for the performance of a one-time test flight (DA Pam 738-751).
- Personnel inspecting aircraft first aid kits (TM 1-1500-328-23).
- Weight and balance technician (AR 95-3).
- Unit safety officer (AR 385-95).
- Unit safety NCO (AR 385-95).
- TMDE support coordinator and alternate (AR 750-43).
- Personnel qualified to inspect, service, and repair oxygen equipment.
- Publications officer or NCO (DA Pam 310-10).
- Commander's assumption of command orders.
- AOAP monitor (TB 43-0106).
- Personnel qualified to inspect ejection seats by type and model.

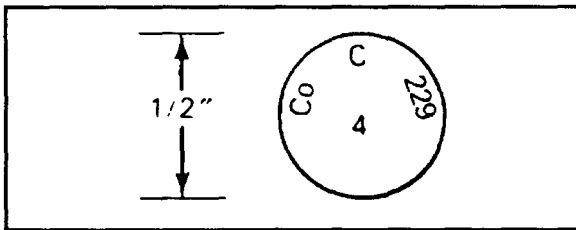
- Personnel qualified to repair or work on ejection seats by type and model.
- Unit maintenance officer.
- Controlled exchange officer (AR 750-1).
- Servicing records manager (AR 25-400-2).

Whichever form is used, it states the function that is delegated. Keep completed forms on file in the QC office. Review any changes or revisions to subsequent Army publications affecting the above designations. Make any additions or deletions of orders at that time.

**Inspection Stamps**

Use an inspection stamp to indicate a satisfactory condition. It carries the same authority as an inspector's signature and must be guarded against unauthorized use. If an inspection stamp is used, it is round and no larger than 1/2 inch in diameter (see Figure 8-7). It includes the unit designation and inspector's number. Obtain the stamp through local purchase. The following requirements must also be met:

- Keep unissued stamps under lock and key.
- Destroy illegible stamps.
- Do not assign relieved stamps for six months.
- Keep a stamp inventory or register (see Figure 8-8) in the QC section.



**Figure 8-7. Sample of inspection stamp**

**Status Symbols**

For a discussion of status symbols for aircraft defects, refer to DA Pam 738-751.

**AIRCRAFT INSPECTION**

Aircraft are inspected to ensure that published specifications are followed, maintenance requirements are complied with, and quality work is completed efficiently. Many times an inspector is not completely familiar with the area or item being inspected. If this is the case, the inspector reviews the

STAMP NUMBER*	ASSIGNED TO	DATE ASSIGNED	DATE RELIEVED
1	JERRY H. BROWN SSG	17 JULY 1985	
2	JOHN W DOW SSG	10 JAN 1985	23 SEPT 1985
3			
4			
5			
6	STAMP DESTROYED (1351)		
2	DAVE E. HONEYCUTT SFC	25 APRIL 1985	

\*All stamp numbers must be included and accounted for.

**Figure 8-8. Sample of inspection stamp inventory/register**

manuals on the subject area or item. In general, monitor maintenance procedures to ensure that—

- Proper tools and equipment are used.
- Aircraft and components are maintained according to specific publications.
- Publications used are current.
- Forms and records are complete and accurate.
- Safety precautions are observed.

The most common aircraft technical inspections are discussed below.

**Forms and Records Inspection**

Forms and records are the first items checked in any aircraft inspection. All form entries must follow the policies in DA Pam 738-751, TM 55-1500-342-23, and TB 43-0106. All necessary forms, publications, tools, and test equipment are available at the inspection station. Refer to DA Pam 738-751 for the required locations of the various forms.

**DA Form 2408-12**

Ensure that hours and landings are correctly totaled.

**DA Form 2408-13**

Ensure that—

- Hours and landings are correct and correctly carried forward from DA Form 2408-12.
- Current aircraft hours, landings, autorotations, and APU history and rounds field, if applicable, are correctly carried forward from previous DA Form 2408-13.

- Status in Block 10 reflects the most serious uncorrected fault listed on DA Form 2408-13-1, -2 -3, and DA Form 2408-14.
- All corrected red-X and circled-red-X corrective actions were inspected by an authorized inspector.
- All entries signed off as carried forwarded from the previous DA Form 2408-13-1 are on the current DA Form 2408-13-1.
- Entries are carried forward word for word, and status symbols are correct.
- Inspection times are correctly carried forward from previous DA Form 2408-13.

#### **DA Form 2408-14**

Ensure that—

- Faults are transcribed word for word from DA Form 2408-13-1 or 13-3.
- Reasons for delay are valid.
- Individual's signature (Block 8) is an authorized signature, as designated in writing.

#### **DA Form 2408-18**

Ensure that all required inspection items are entered. Enter any inspection that is due on DA Form 2408-13-1.

#### **DA Form 2408-5 and -1**

Ensure that—

- All applicable modifications are entered in Section 4.
- Required completion date is entered in pencil in Block 5F for modification not complied with.

#### **DA Form 2408-15,-1, and -2**

Ensure that—

- Form is on hand for aircraft and/or for each gas turbine engine.
- Significant historical data is shown, as required by DA Pam 738-751.
- Turbine engine analysis checks are listed.

#### **DA Form 2408-16 and -1**

Ensure that—

- Required forms are on hand as listed in DA Pam 738-751.
- Serial numbers match component serial numbers on the aircraft.
- Replacement due date is correct and not past due.

#### **DA Form 2408-17**

Ensure that—

- All applicable items listed in the Master Inventory Guide are shown in Column b.
- Property additions and deletions made after aircraft delivery are correctly reflected.
- All equipment checks have a signature in the corresponding numbered block at the bottom of the form.
- All items added, deleted, or short are explained on the back of the form (refer to DA Pam 738-751).

#### **DA Form 2408-19,-1,-2, and -3**

Ensure that it is properly completed and on hand for each gas turbine and engine turbine wheel.

#### **DA Form 2408-20**

Ensure that a properly completed form is on hand for each aircraft component in the AOAP.

#### **DD Form 365 series**

Ensure that forms are on hand and up-to-date as required by AR 95-3 and TM 55-1500-342-23.

#### **Initial Inspection**

AVIM inspectors perform an initial inspection before the aircraft enters the shop for maintenance. This inspection determines—

- Deficiencies.
- Work required.
- Economical repair of aircraft and components.
- Accountability of equipment.
- AVUM deficiencies (minor AVUM deficiencies will not justify refusal to accept an aircraft into the AVIM shops).

Enter all deficiencies on DA Form 2408-13-3. Return the form(s) to production control after the inspection.

Perform the initial inspection at AVIM level to verify that aircraft or components meet specifications of published maintenance manuals. Remove only those cowling and access panels necessary to inspect the faults listed on DA Form 2407 or DA Form 5504 by the AVUM unit.

### One Hundred Percent Inspection

If numerous faults are found after the initial inspection is completed, conduct a 100 percent inspection. Also remove all cowling and access panels and inspect the entire aircraft, including all systems and components. Items to look for during the inspection are—

- Correct assembly.
- Proper safety techniques (for example, use of wire and cotter pins).
- Wear.
- Rigging.
- Leaks.
- Structural defects (cracks, punctures, loose rivets, separation in honeycomb panels, and so forth).
- Security of components.

### In-Progress Inspection

AVUM and AVIM technical inspectors perform this inspection. It ensures that—

- Final product is reliable.
- Areas are inspected before they are covered by access panels or components,
- Mistakes are discovered and corrected on the spot.

Before performing an in-progress inspection on aircraft in phase maintenance, review all logbook forms and records which are completed by the maintenance crew. Enter deficiencies missed by the maintenance team on DA Form 2408-13-1.

The in-progress inspection is a continuing inspection performed periodically while the aircraft or component is in the shop. The technical inspector should be available to answer the repairers' questions and re-

solve problems. Set up the stations, if possible, so that the inspector is near the work being performed. Equipment at each station should include all items needed to perform the inspection. All necessary forms, publications, tools, and test equipment should also be available.

### Final Inspection

A final inspection is a complete inspection and functional test (if required) of all aircraft or components released from the shop after maintenance. Inspections determine if—

- Repairs meet the specifications of the maintenance manuals.
- Work requested on DA Form 2407 or 5504 was completed.
- Correct tools and equipment were used.
- Entries on DA forms are complete and accurate.
- Aircraft or component conforms to standards.

Correct major (red-X) deficiencies before the aircraft or component leaves the shop. Correct minor (red-diagonal) shortcomings based on the availability of parts and man-hours. All deferred maintenance has a valid requisition or work-order number. The decision to defer maintenance rests with the commander or designated representative as stated in DA Pam 738-751.

### Nondestructive Inspection

NDI is a tool of quality control inspection. Aircraft components may have suspected metal flaws which must be confirmed or denied. A defect may be visible, but the seriousness of it is unknown. For example, scratches can look like cracks and hairline cracks can look like scratches. In any case, the technical inspector must evaluate the defect. That is when the technical inspector turns to the NDI. NDI details and procedures are fully discussed in FM 1-514 and TM 55-1500-335-23.

### TECHNICAL COMPLIANCE

The technical inspector monitors and ensures compliance with the following publications:

- Modification work orders.
- Technical bulletins.

- Safety-of-flight messages.
- Aviation safety action messages (ASAM).

**Modification Work Orders**

Use the following forms to ensure MWO compliance:

- Upon receipt of an MWO that applies to the serial-numbered aircraft assigned to your unit, enter MWO information on DA Form 2408-5 (refer to DA Pam 738-751). This includes MWOs directed by a higher commander. Also enter MWOs that apply only to aircraft based at specific locations. If the aircraft serial numbers are included, list the MWO on DA Form 2408-5. Complete DA Form 2408-5 showing MWO compliance. Sign off the MWO entry on DA Form 2408-13-1 (refer to DA Pam 738-751).
- If the MWO is not applied by the specified date, enter the MWO on DA Form 2408-13-1. For an overdue normal MWO, reenter it on DA Form 2408-14 (refer to DA Pam 738-751).

**Technical Bulletins**

Technical bulletins direct one-time inspections of an aircraft or component. Use the following forms to ensure compliance with technical bulletins:

- DA Form 2408-13-1. Use this form to enter the one-time inspection due on the aircraft or aircraft component. Perform inspections according to the technical bulletin. Normally, if a technical bulletin is not applied within the specified time frame, the aircraft is grounded. If no defects are found, sign off the inspection due on DA Form 2408-13-1. If defects are found, enter them on DA Form 2408-13-1. Then notify maintenance personnel for corrective action. After the defect is corrected, inspect the corrective action and sign off the inspection due on DA Form 2408-13-1.
- DA Form 2408-15. Enter on this form a one-time inspection of an aircraft or aircraft component. Also enter technical bulletins for turbine engines on DA Form 2408-15 (TEAC).
- DA Form 2408-5. Enter technical bulletins that apply to components on DA Form 2408-5

(see DA Pam 738-751). The procedure is the same as for MWOs.

- DA Form 2408-16. If a technical bulletin applies to a component on which DA Form 2408-16 is maintained, enter technical bulletin compliance in Block 8. DA Pam 738-751 and TB 55-1520-238-23 (AH-64) list all components that require DA Form 2408-16.
- DA Form 2408-18. A technical bulletin may require a recurring inspection at specified intervals. If so, enter this inspection on DA Form 2408-18 for the aircraft.

**Safety-of-Flight Messages**

Comply with safety-of-flight messages and log them on applicable DA forms in accordance with DA Pam 738-751.

**SHOP INSPECTION**

A shop that is below standard cannot put out quality work. Inspectors conduct informal inspections of the various shops periodically and bring any deficiencies or safety hazards found to the attention of shop supervisors. Keep a file of all safety inspections in the QC section and a file copy in the subject area inspected.

The USASC publication, Guide to Aviation Resources Management for Aircraft Mishap Prevention, outlines safety procedures. It has guidance on inspection requirements for the technical inspector. Get copies from the unit safety officer. Minor changes to the guide appear in the USASC publication, Flightfax, which is distributed weekly to all aviation units. Other publications outlining specific safety precautions are FM 10-68 and TM 1-1500-204-23 series.

See Appendix E for a sample shop safety inspection checklist.

**DIAGNOSTIC AND TEST EQUIPMENT**

Diagnostic and test equipment includes testers, test sets, and other test equipment used to verify that aircraft systems are functioning properly or that they are malfunctioning. Diagnostic and test equipment may be portable or fixed in place, depending on the design. This paragraph describes typical diagnostic and test equipment, identified by national stock number or type. It also identifies applicable technical manuals for detailed descriptions and operating instructions. Whether or not a unit contains specific

items of equipment depends on its category of maintenance (AVUM or AVIM) and its TOE.

Diagnostic and test equipment is used to test aircraft, components, and accessories. The equipment tests systems for proper functioning, analyzes malfunctioning units, and presents an accurate picture of serviceability. Quality control inspectors use diagnostic and test equipment to monitor maintenance procedures. Safe, economical operation of Army aircraft depends on the skilled use of diagnostic and test equipment in a comprehensive maintenance program.

### **Exhaust Gas Temperature Tester**

The exhaust gas temperature (EGT) tester (4920-00-673-5514) is a portable unit used primarily to check the entire EGT indicating system of a gas turbine engine. All tests can be conducted without running the engine.

The EGT tester checks—

- Individual thermocouples before they are placed in the parallel harness.
- Each engine thermocouple in the parallel harness for continuity.
- Resistance of the EGT circuit (without the EGT indicator) to determine if it is within allowable limits.
- Insulation of the EGT circuit for shorts to ground.
- EGT circuits for shorts between leads.
- Engine thermocouple and parallel harness on the engine after removing the engine from the aircraft.
- Engine readings to determine if they are within +/-0.1 percent during engine run-up.

The EGT tester can also be used to check—

- Compressor speed indicating system.
- Fire detector system.
- Overheat detector.
- Engine anti-icing systems.

Refer to TM 55-4920-244-14 for operating instructions.

### **Vibration Tester**

The vibration tester (4920-00-973-2149) measures turbine engine vibration at specified operating

speeds to determine if maximum permissible engine vibration is exceeded. Vibration pickups attached to adapters mounted on the engine transmit electrical impulses through cables to the vibration meter. The vibration meter indicates the total amount of engine movement. Refer to TM 55-4920-326-40 for operating instructions.

### **Electronic Blade Tracker**

The electronic blade tracker (4920-00-623-5954) is a portable instrument that detects and measures the out-of-track condition of helicopter rotor blades. The three major units of the electronic blade tracker are the electro-optical pickup unit, electronic conversion unit, and magnetic phase detector. The electro-optical pickup unit has two photoelectronic cell-and-lens assemblies; it is placed on the ground under the rotor blades. As the rotor blades cut through the photoelectronic cell-and-lens assemblies, the out-of-track distance, or difference in blade planes, is indicated on a meter on the electronic conversion unit. Two to six blades can be tracked on single- or dual-rotor installations. The magnetic phase detector is mounted on the rotor swash plate or near any component having the same RPM as the rotor blades. Refer to TM 11-4920-215-15 for operating instructions.

### **Propeller Balancing Kit**

The propeller balancing kit (4920-00-572-0987) is used to balance fixed-wing aircraft propellers. The maximum weight of propellers that can be balanced is 550 pounds. The kit can balance propellers with spline sizes of SAE 20 through 50 and flange sizes of SAE 1 through 4. Refer to TM 55-4920-201-14 for operating instructions.

### **Electronic Weighing Kit**

The electronic weighing kit (6670-00-526-8498) can weigh aircraft up to 150,000 pounds. It consists of three cells placed between the aircraft jack points and the pad on the hydraulic jacks. The cells are connected to a control unit by electrical cables. The control unit can zero the kit and read out the aircraft weight when the aircraft is on jacks. Refer to TM 55-6670-200-14&P for operating instructions.

### **Fuel Quantity Gage Tester**

The fuel quantity gage tester (6625-00-302-4802) checks the accuracy of fuel indicating systems that

use capacitance-type fuel probes. Refer to TM 11-6625-363-15 for operation and maintenance details.

#### **Aircraft Electronic Fuel System Test Set**

The aircraft electronic fuel system test set (6625-00-987-9868) checks the serviceability of capacitance-type fuel gaging systems on Army aircraft. The test set measures the capacitance of fuel gaging systems and calibrates fuel quantity indicators in compensated and noncompensated fuel gaging systems. It also measures the insulation resistance of tank units, fuel quantity indicators, cables, and fittings. Refer to TMs 11-6625-363-15 and 55-4920-325-14&P for operating instructions.

#### **Gyrocompass Tester**

The gyrocompass tester (4920-00-341-1892) checks the accuracy of gyromagnetic compasses, flux valves, slavings, and the power supply. Refer to TM 11-6625-247-15 for operating instructions.

#### **Fire Detector Systems Test Set**

The fire detector systems test set (4920-00-334-9595) is used to test 28-volt aircraft fire detector systems. The test set tests all major components of an aircraft fire detector system. It tests the system or any of its major components by substituting equivalent circuits into the aircraft fire detector system. Refer to TM 55-4920-413-13&P for operating instructions.

#### **Pitot-Static System Tester**

The pitot-static system tester (4920-00-474-8311) is a self-contained pressure and vacuum system. Its primary function is to test aircraft instruments such as altimeters, rate-of-climb indicators, airspeed indicators, and manifold and fuel pressure gages. The tester accurately simulates engine or atmospheric

pressures and vacuums such as those encountered in the aircraft's normal operation. This is accomplished by a small, high-speed pump capable of producing pressures up to 50 psi and a vacuum equivalent to an altitude of 80,000 feet. Refer to TM 55-4920-231-14 for operating instructions.

#### **Hydraulic Test Stand**

The hydraulic test stand (4920-00-141-8801) contains a complete hydraulic system with the necessary valves, controls, and gages for creating and controlling various hydraulic systems. Several sizes of hydraulic fluid hoses are provided for conducting fluid to the hydraulic system of the tested aircraft. (A manual is being developed.)

#### **Torque Tester**

The torque tester (6635-00-514-4836) provides a simple, positive method for testing the accuracy of torque wrenches. The principle of operation is based on a geared-down pendulum. Torque applied to the input segment transmits movement to the pendulum, which, in turn, moves an indicator calibrated in both inch-pounds and foot-pounds. The scale is trigonometric and based on the angle through which the pendulum is moved. The scale reading is compared with the torque wrench readings to determine torque wrench accuracy. Refer to TB 5-6635-200-35 for operating instructions.

#### **Aircraft Inspection Tool Kit**

The aircraft inspection tool kit (5180-00-323-5114) consists of items primarily used by technical inspectors: a briefcase and various flashlights, mirrors, tools, and measuring instruments. Exact contents are subject to change. Refer to SC 5180-99-A09 for a list of contents.