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MALAYSIAN STATE AIRWORTHINESS AUTHORITY

MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

MSTAR 145 - REQUIREMENT FOR MAINTENANCE ORGANISATIONS
INTERIM
VOLUME 4

The Malaysian State Airworthiness Authority (MSAA) issued the Malaysian State Technical Airworthiness Manual (MSTAM) as a Technical Airworthiness Management System. Authority given by the Minister of Defence under Council of Ministers of Defence Meeting Series 02/06 *(Mesyuarat Lembaga Menteri Pertahanan Siri 02/06)* dated 05 September 2006, the State Airworthiness Authority (SAA) makes this MSTAM.

MSTAM contains Airworthiness Management System (AMS) information related to policies, regulatory frameworks, State Technical Airworthiness Regulations (STAR), Airworthiness Requirements, and Implementing Rules specific to the State Technical Airworthiness Program. The Implementing Rules describe the Technical Requirements, Acceptable Means of Compliance, and Guidance Material to give effect to the MSTAR provision applicable to state aircraft set out in the Malaysian State Technical Airworthiness Regulation (MSTAR) produced by the technical airworthiness regulator (TAR) MSTAM and its supplementary documents apply to every person, aircraft, aeronautical product, and maintenance training related to State aircraft.

Non-compliance with these Orders

Any organisation or person subject to and upon the terms and conditions of the agreement who contravenes any provision in this MSTAM shall be liable to the implication imposed under appropriate airworthiness instruments.

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LIST OF EFFECTIVE PAGES

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** The incorporation of the amendment is to be done by authorised persons only.

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LIST OF ABBREVIATIONS

Notes:

1. Definitions with no superscript have been sourced directly from the European Military Airworthiness Document (EMAD 1). Those definitions and terminologies with a superscript* are either DGTA specific or derived from other sources.

AA*	Airworthiness Authority
AAC*	Airworthiness Advisory Circular
ABDR*	Aircraft Battle Damage Repair
AD	Airworthiness Directive
AO*	Airworthiness Order
AMS*	Airworthiness Management System
AM*	Accountable Manager
AMC	Acceptable Means Compliance
AMO*	Approved Maintenance Organisation
AMTO*	Approved Maintenance Training Organisation
AB*	Airworthiness Board
ASR*	Airworthiness Standards Representative
ARC	Airworthiness Review Certificate
BoSTA*	Board of State Technical Airworthiness
CAA*	Civil Aviation Authority
CAAM*	Civil Aviation Authority of Malaysia
CAD*	Civil Airworthiness Directive
CAESE*	Centre for Aerospace and Engineering Services Establishment
CAP*	Competent Authority Procedures
CAME	Continuing Airworthiness Management Exposition
CAMO	Continuing Airworthiness Management Organisation
CAR*	Corrective Action Request
CARs*	Canadian Aviation Regulations
CDCCL	Critical Design Configuration Control Limitations
CDL	Configuration Deviation List
CI	Configuration Item
CMaint*	Contingency Maintenance
CMM	Component Maintenance Manual
CRS	Certificate of Release to Service
CoA*	Certificate of Airworthiness
CS	Certification Specification
DAR*	Delegated Airworthiness Representative
DCA*	Department Civil Aviation
DGTA*	Directorate General Technical Airworthiness
DOE	Design Organisation Exposition
DoD*	U.S. Department of Defence
DOA	Design Organisation Approval
EAC*	Engineering Authority Certificate
EASA	European Aviation Safety Agency
EDA	European Defence Agency
EDP	Electronic Data Processing
EMACC	Europen Military Airworthiness Certification Criteria

EMAD	Europen Military Airworthiness Document
EMAD R	Europen Military Airworthiness Document Recognition
EMAR	European Military Airworthiness Requirement
EMPA	European Military Part Approval
EMTSO	European Military Technical Standard Order
ESF	Equivalent level of Safety Finding
EWIS	Electrical Wiring Interconnect System
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FTS	Fuel Tank Safety or Flight Test Schedule
GFE	Government Furnished Equipment
GM	Guidance Materials
GoM*	Government of Malaysia
HF	Human Factor
ICA*	Instructions for Continuing Airworthiness
ICAO	International Civil Aviation Organisation
IQA*	Internal Quality Audit
LEA*	Letter of Engineering Authority
LEP*	List of Effective Pages
LMA*	Letter of Maintenance Authority
LMS	Learning Management System
LMTA*	Letter of Maintenance Training Authority
MA*	Maintenance Authority
MAA*	Military Airworthiness Authority
MAC*	Maintenance Authority Certificate
MAF*	Malaysian Armed Forces
MAO*	Maintenance Authorising Office
MCAI*	Mandatory Continuing Airworthiness Information
MCAR*	Malaysian Civil Aviation Regulations
MCOQ*	Multiple Choice Objective Question
MM	Maintenance Manager
MEL	Minimum Equipment List
MSTC*	Malaysian State Type Certificate
MTAC	Maintenance Training Authority Certificate
MTC	Military Type Certificate
MTCH	Military Type Certificate Holder
MoD*	Ministry of Defence
MoT*	Ministry of Transport
MI/S*	Maintenance Inspector/Supervisor
MMI*	Maintenance Managed Item
MMP*	Maintenance Management Plan
MMS*	Maintenance Management System
MRM*	Management Review Meeting
MSTA*	Malaysian State Technical Airworthiness
MSTAR*	Malaysian State Technical Airworthiness Regulation
MSTC*	Malaysian State Type Certification
MTF*	Maintenance Test Flight
MTMP*	Maintenance Training Management Plan
NAA*	National Airworthiness Authority
NDT	Non-Destructive Test
OAA*	Operational Airworthiness Authority
OAR	Operational Airworthiness Regulator
OEM	Original Equipment Manufacturer

OJT*	On-Job Training
OM*	Operational Maintenance
OPPDMEF*	Organisation, People, Procedure, Data, Material, Equipment and Facilities
OSH*	Occupational Safety and Health
POA*	Production Organisation Approval
POE	Product Organisation Exposition
PTF	Permit To Fly
QM*	Quality Manager
QMS*	Quality Management System
RMAF*	Royal Malaysian Air Force
RMSTC*	Restricted Malaysian State Type Certificate
SAA*	State Airworthiness Authority
SARPs*	Standards and Recommended Practices
SAO*	State Aircraft Operator
SB	Service Bulletin
SMM*	Senior Maintenance Manager
SMS*	Safety Management Systems
SOI*	Statement of Operating Intent
SOR*	Statement of Operating Requirements
SRAO*	State Registered Aircraft Operator
SSP*	State Safety Programme
STANAG	Standardisation Agreement (in NATO)
STAP*	State Technical Airworthiness Policies
STAR*	State Technical Airworthiness Regulations
STC*	Supplemental Type Certificate
STI*	Special Technical Instruction
TAA*	Technical Airworthiness Authority
TAAC*	Technical Airworthiness Advisory Circular
TAC*	Technical Airworthiness Clearance
TAD*	Technical Airworthiness Directive
TAMM*	Technical Airworthiness Management Manual
TC	Type Certificate
TCCA*	Transport Canada Civil Aviation
TIR*	Technical Information Review
TM*	Training Manager
TSN*	Training Support Network
UAS	Unmanned Aircraft System

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GLOSSARY

Notes:

2. Definitions with no superscript have been sourced directly from the European Military Airworthiness Document (EMAD 1). Those definitions and terminologies with a superscript* are either DGTA-specific or derived from other sources.

Academic and Curriculum Manager*

A person who oversees the curriculum design, training media, lesson plan, and instructor guides to evaluate the effectiveness of basic and type training courses.

Acceptable Means of Compliance

This illustrates a means, but not the only means, by which regulation can be met, and a regulated entity may decide to show compliance by other means. Hence, only an Authority can agree on alternatives to the published Acceptable Means of Compliance. Acceptable Means of Compliance are strongly recommended practices, and justification will be required of the Authority if they are followed. The burden of proof that regulation is satisfied rests entirely with a regulated entity when alternatives are proposed to the Authority.

Accountable Manager*

A person designated by the Approved Organisation and named in the Exposition, who is accountable to the DGTA for maintaining safety standards required by relevant MSTAR and any additional standards specified in the respective Exposition. Also, a key figure who has influence within the organisation and the ability to make appropriate resource decisions to ensure compliance with airworthiness regulations.

Addition

The inclusion of further basic categories or sub-categories to a State Aircraft Maintenance Licence that is already held by an individual.

Adopt

To transcribe, with no deviation, the requirements (European Military Airworthiness Requirements) into national regulations using English or the National Language(s).

Advisory Material

Advisory Material provides interpretation of technical airworthiness requirements and standards to assist in understanding and implementation. It also provides guidance on methods and procedures that are in compliance with technical airworthiness requirements and standards. Advisory material, including the described methods and procedures, is not mandatory, and organisations may choose to follow other means of demonstrating compliance.

Aeronautical Product*

Any airframe, aircraft system (airframe, avionics, engine, armament, and egress and survival),

aircraft power train (including engines, auxiliary power units, and transmissions), propeller, rotor and or components/parts/materials, equipment parts including computer systems software/firmware which when connected has a direct effect on the structural and technical integrity of the aircraft.

Aircraft

Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Aircraft Airborne Equipment*

Equipment that interfaces with and is borne by the aircraft or aircrew during flight. This includes role equipment but not items of cargo.

Aircraft Battle Damage Repair*

Aircraft Battle Damage Repair is the subset of Battle Damage Repair that uniquely applies to aircraft and is used to restore sufficient strength and serviceability to permit damaged aircraft to fly additional operational sorties or to enable those aircraft that are damaged beyond unit repair capability to make a one-time ferry flight to a major repair facility.

Aircraft Flight Manual

An Aircraft Flight Manual is a manual, associated with the Malaysian State Type Certificate (MSTC), containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

Aircraft Maintenance Documentation*

The aircraft's maintenance and operational certificate, maintenance forecast, and technical particulars record.

Aircraft Maintenance Program

A document that describes or incorporates by reference the specific schedule maintenance tasks and their frequency of completion, the associated maintenance procedures, and related standard maintenance practices necessary to preserve the airworthiness of those aircraft to which it applies.

Aircraft Non-Airborne Equipment*

Equipment that interfaces with the aircraft, aircrew, or aircraft equipment but which is not usually airborne itself. Such equipment may include but is not limited to aircraft ground servicing equipment, ground test equipment, and some mission planning systems that interface with the aircraft or aircraft equipment.

Aircraft-Related Equipment*

Aircraft-related equipment can be aircraft airborne equipment or aircraft non-airborne equipment whose performance could directly affect airworthiness.

Aircraft Technical Log*

The primary source for technical and operational data on each flight that occurs on an aircraft. A system for recording data that includes defects and malfunctions, block times, and fuel consumption during the aircraft operation and for recording details of all maintenance carried out on an aircraft between scheduled base maintenance visits. Also known as the journey logbook, it is used for recording flight safety and maintenance information the operating crew needs to know.

Airworthiness

The ability of an aircraft or other airborne equipment or system to operate in flight and on the ground without significant hazard to aircrew, ground crew, passengers (where relevant), or to other third parties.

Airworthiness Codes

Product airworthiness requirements, applicable to the design of a product that is approved by a competent airworthiness authority for the use with standardized aircraft categories (e.g. EASA CS, FAA FAR, STANAG, Def-STAN, etc).

Airworthiness Directive

A document issued or adopted by the Authority that mandates actions to be performed on an aircraft to restore an acceptable level of safety when evidence shows that the safety level of this aircraft may otherwise be compromised.

Airworthiness Limitation Item

This is an item arising from a system safety analysis that has been shown to have failure mode(s) associated with an unsafe condition.

Airworthiness Standards Representative*

A Head of Design Organisation with delegated authority from the Technical Airworthiness Regulator (TAR) to set and review airworthiness standards for the State Aircraft Operator (SAO).

Airworthy*

The status of an aircraft, engine, propeller, or part when it conforms to its approved design and is in condition for safe operation.

Approved Basic Training Course*

The Approved basic training course shall consist of knowledge training, knowledge examination, practical training, and a practical assessment.

Approved Maintenance Organisation*

An organisation that has been sponsored by Maintenance Authorising Office and certified (awarded a Maintenance Authority Certificate) by the TAR and authorized to conduct maintenance on state aircraft and aeronautical products.

Approved Maintenance Training Organisation*

An organisation that has been certified (awarded a Maintenance Training AuthorityCertificate (MTAC)) by the TAR and authorized by the relevant MAO to conduct training and/or examinations and issue certificates to students upon successful completion of the courses.

Approved Training Course*

This means a defined course of maintenance training designed to give a level of knowledge and some experience to a student.

Approved Type Training Course*

Aircraft type training can be divided into aircraft or helicopter type ratings for state aircraft maintenance licensing Category B1 aeromechanical and Category B2 avionics.

Artefact

An airworthiness-related document, either hard copy or electronic, can be used as evidence in making an airworthiness judgment.

Authorised Aircrew*

Nominated aircrew who have been formally authorized by the Senior Maintenance Manager (SMM) or delegate to perform a particular maintenance task.

Authorised Technical Data*

Data that has been reviewed, approved, and released by the TAR or a DOA responsible for the technical equipment to which the technical data applies.

Authorised Tradesperson*

An individual operating as part of an AMO, authorized by the SMM or delegate as competent to carry out a specific scope of maintenance activities.

Authority

Authority means a National Military Airworthiness Authority responsible for the airworthiness of military aircraft.

Aviation Ground Support Equipment*

AGSE is the equipment used to support maintenance and aeronautical equipment directly.

Aviation Software*

Aviation Software is inclusive of:

a. On-aircraft software, off-aircraft software with aircraft interface, and off-aircraft software with no interface but with airworthiness or safety implications.

b. Technologies that resemble software development.

Base Maintenance

Maintenance tasks falling outside the criteria for line Maintenance.

Board of State Technical Airworthiness*

BoSTA is convened at least four times a year or as and when required. It is a platform for recommending technical airworthiness management to the TAR and issuing Aircraft Certificates, Organisation Approval (DOA, AMO, AMTO, CAMO), and Personnel Licensing. BoSTA ensures that each aircraft type remains airworthy to fly by verifying the technical airworthiness requirements are met. Any issues related to technical airworthiness requirements and procedures shall be reviewed and approved by the BoSTA committee.

Continuing Airworthiness Management Organisation*

The State Aircraft Operator / State Registered Aircraft Operator (SAO/SRAO) responsible for Configuration Item (CI) management of the whole aircraft is required to have CAMO approval from TAA-DGTA.

Centre of Expertise*

SAO DOA in which the Senior Design Engineer (SDE) position is a designated Airworthiness Standard Representative appointment.

Certification

Recognition that a product, part or appliance, organisation or person complies with the applicable airworthiness requirement followed by the declaration of compliance.

Certification Basis*

The set of standards that define the criteria against which the design of aircraft or aircraft-related equipment, or changes to that design, are assessed to determine their airworthiness.

Certificate of Release to Service

This statement, signed by an appropriately authorised person, on behalf of an approved organisation, asserts that maintenance has been properly carried out. The Certificate of Release to Service contains the basic details of the maintenance carried out, the date it was completed, and the identification details (may include an authorisation stamp) of the person issuing the certificate.

Certification Review Item

A document recording Deviations, Special Conditions, new Means of Compliance, or any other certification issue that requires clarification and interpretation or represents major technical or administrative issues.

Certifying Staff

Personnel responsible for the release of an aircraft or a component after production and/or maintenance.

Chief Invigilator*

This means a person who is appointed to lead the Invigilators.

Chief Executive Officer

A person who is responsible for a civil company within which the Approved Organisation operates. The Chief Executive Officer may report to a board of directors and may appoint other managers, or he/she may be one of very few people in a small company. In relation to MSTAR M, the Chief Executive Officer is mentioned as he/she may be senior to the Accountable Manager.

Compliance Demonstration

Activities to demonstrate that the product, part, or appliance complies with the requirements in the Certification Basis.

Component

Any engine, propeller, part, or appliance.

Component Maintenance Manual

A formal document that details how off-aircraft maintenance instructions on the specified component shall be accomplished.

Configuration*

The functional and physical characteristics of existing or planned hardware, firmware, software or a combination thereof, as outlined in technical documentation (which includes specifications, standards, and drawings) and ultimately achieved in a product.

Configuration Control

A systematic process that ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.

Configuration Deviation List

A list, established by the Type Certificate Holder and approved by the National Military Airworthiness Authority, which identifies any external parts of an aircraft type that may be missing at the commencement of a flight and which contains, where necessary, any information on associated operating limitations and performance correction. Examples of Configuration Deviation List items will vary from aircraft type but typically may include external light covers, retractable landing lights, etc.

Configuration Item

Any component, module, subcomponent, equipment, technical manuals, software, or ground support equipment, that can be submitted to the configuration control process.

Configuration Management

A management process for establishing and maintaining consistency of a product’s

performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.

Contingency Maintenance*

Those maintenance activities are performed during a declared contingency operation. CMaint involves revised servicing schedules, component lifting strategies (plans), and repair philosophies, including Battle Damage Repair, which will maximize operational availability while constraining and managing risk.

Continuing Airworthiness

All of the processes ensure that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.

Continued (design) airworthiness

All tasks to be carried out to verify that the conditions under which a Type-Certificate or a Supplemental Type Certificate has been granted continue to be fulfilled at any time during its period of validity.

Crew/Aircrew

Include Pilot(s) and other personnel on board the aircraft and/or the Unmanned Aerial Vehicle control station with responsibilities to ensure the safe conduct of the flight.

Critical Design Configuration Control Limitations

Critical Design Configuration Control Limitations identify the critical design features such as proper wire separation, proper installation of a panel gasket, minimum bonding jumper resistance level, etc., that must be maintained in the same manner throughout the life of the aircraft to comply with the (Military) Type Certificate and maintain airworthiness. The purpose of the Critical Design Configuration Control Limitations is to provide instruction to ensure these critical features are present throughout the life of the airplane and are inspected and verified when changes, repairs, or maintenance actions occur in the area.

Declaration of Compliance

A statement, signed by the Head of Design or by an authorized representative, to show compliance with all applicable type certification basis and, where applicable, environmental protection requirements. It declares that the aircraft is airworthy within the specific design limitations.

Deeper Maintenance*

This level of maintenance includes tasks that are more complex than operational maintenance and normally require specialized equipment and technical skills and which rely on access to extensive support equipment and workshop facilities for successful conduct.

Delegated Airworthiness Representative*

An individual within the CAMO whom the TAR has authorized to perform design acceptance functions to make compliance findings and/o r provide airworthiness approval in the configuration item management system.

Design*

The process or act of creating or changing a product and related technical process descriptions through the application of scientific and engineering effort (verb), or the outcome of that process (noun). The design, therefore, encompasses not only the configuration of the product, but also the:

a. Testing and evaluation are needed to validate that the design meets performance and safety requirements.

b. Manufacturing processes (including production test requirements) thatrequire special control to ensure the product meets requirements.

c. In-service monitoring requirements, maintenance processes, and authorized repairs.

d. Maintenance lives and intervals and fatigue life.

e. Operating procedures and limits.

Design Acceptance*

The process whereby a design or design change (i.e. an output of the design process) involving aircraft or aircraft-related equipment is determined to be technically acceptable for SAO use based on a determination that the specified requirements and design standards are sufficient and applicable (to the SAO authorised configuration, maintenance policy and procedures, and operations) and that the quality of the design has been proven to the satisfaction of the responsible CAMO – Continuing Airworthiness Manager. Generally, design quality is assured through approval of the design by a DOA against the approved design requirements and standards plus an acceptable basis of design verification.

Design Acceptance Certification*

The final act of the Design Acceptance process whereby a CAMO – Continuing Airworthiness Manager provides a certified record of the technical acceptability of a change to aircraft or aircraft-related equipment Type Design.

Design Approval Certification*

The act of approval of design output resulting from a process that formally examines and documents compliance of a design (or design change) with specified requirements and design standards.

Design Change*

A design change is a change in Type Design as defined in MSTAR 145.A.91.

Design Engineer*

A professional engineer within a DOA with assigned authority from the SDE to perform certain engineering activities, including judging the significance of design changes and undertaking a design review of significant design changes.

Design Organisation Approval*

An organisation that has been sponsored by the Maintenance Authorising Office and certified (awarded an Engineering Authority Certificate (EAC)) by the TAR to provide design or engineering management services to the SAO.

Design Organisation Exposition*

A controlled quality document containing the details of an organisation's Engineering Management System (EMS). The DOE describes all of the requirements that are satisfied by an organisation to become and remain a DOA.

Design Review*

The act whereby a design (or design change) is independently checked by an authorized person (other than the person who developed the design) to verify the validity of the assumptions, conditions, data, and methods used in design development and to verify that the design output meets the specified design input requirements.

Design Support Network*

A collective term describes a group of agencies that provide design support to a DOA.

Deviation*

A specific written authorisation to depart from an item's current approved configuration documentation. A deviation differs from an engineering change in that an approved engineering change requires revision of documentation defining the affected item. In contrast, a deviation does not revise the applicable document or drawing.

Engineering Authority*

The authority is assigned expressly to an organisation (DOA) or an individual within an organisation to undertake specific engineering activities.

Engineering Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as a DOA.

Engineering Change*

A change to the currently approved configuration documentation of a Configuration Item (CI) at any point in the life cycle of the CI.

Engineering Change Proposal*

An Engineering Change Proposal is defined as a proposed change to the current approved configuration of a CI and the supporting design documentation via which the change is described, justified, and submitted to the Configuration Control Board (CCB).

Examination*

A written or practical examination or combination of both is conducted at the end of every subject.

Examination Department*

Means a department in the training organisation for the management of all examinations conducted.

Examination Manager*

A person who oversees the design of question papers, standards of examinations, and invigilation. Such person(s) may also be an Instructor and/or Assessor.

Examiner*

This means a person approved by DGTA or an approved training organisation to conduct and administer the examination.

Exemption*

The TAR grants written authorisation to either a DOA, AMO, CAMO, AMTO, or licensing to depart from a particular technical airworthiness regulation for a specified period of time.

Exposition

The document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organisation complies with an MSTAR.

Extension

Inclusion of additional topics to Categories A, B1, and B2 Military Aircraft Maintenance Licences as detailed in MSTAR 66 Appendix I (which includes Modules 50-55) that are not part of the applicable modules for that category of Military Aircraft Maintenance Licence.

Flight Safety Critical Item*

Any part, assembly, or installation containing a critical characteristic whose failure, malfunction, or absence could cause a catastrophic failure or an uncommon engine shutdown, resulting in loss or serious damage to the aircraft or an unsafe condition.

Fit for Flight

Condition of a type design being certified as compliant with applicable airworthiness requirements as well as of an aircraft having been serviced and inspected as meeting the certified design and prepared for the intended flight.

Guidance Material

This is typically developed to provide additional explanation to assist the application of the requirement and/or explain the Acceptable Means of Compliance.

Human Factors

Principles apply to design, certification, production, training, operation, and maintenance and seek a safe interface between the human and other system components by properly considering human performance.

Human Performance

Human capabilities and limitations have an impact on the safety and efficiency of operations.

Implement*

To introduce MSTAR requirements into regulations by either adoption or compliance.

Instructions for Continuing Airworthiness

Instructions for Continuing Airworthiness detail the methods, inspections, processes, and procedures necessary to keep aircraft and/or products airworthy.

Instructor*

This means a person appointed to carry out instructional duties, compile questions for examinations, and undertake duties as invigilator and examiner.

Invigilator*

This means a person who is responsible for overseeing the conduct of the examinations.

Letter of Engineering Authority*

An attachment to an EAC that defines the scope of activity and any caveats and limitations under which the EAC is issued.

Letter of Maintenance Authority*

An attachment to the MAC defines the scope of activity and any caveats and limitations under which the MAC is issued.

Letter of Maintenance Training Authority*

An attachment to the MTAC defines the scope of activity and any caveats and limitations under which the MTAC is issued.

Life Limited Parts

Parts that, as a condition of their type certificate, may not exceed specified operating time, calendar time, number of operating cycles, or any other approved service life consumption units.

Limited Certification Authorisation

This is issued by the Approved Maintenance Organisation, in accordance with a procedure approved by the DGTA, for flight crew, flight engineer, or crew chief to carry out specific tasks (usually away from their home base or station). The authorisation permits the holder to issue certificates of release to service following specific tasks within the limits of the tasks specifically endorsed on the authorisation.

Line Maintenance

Carried out before flight to ensure that the aircraft is fit for the intended flight.

Maintenance

Any one or combination of overhaul, repair, inspection, replacement, modification, or defect/fault rectification of an aircraft or component, with the exception of pre-flight inspection.

Maintenance Authority*

The authority to undertake specific maintenance activities.

Maintenance Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as an AMO.

Maintenance Authorising Office*

The MAO is the Head of the SAO Aviation Engineering Organisation and is responsiblefor controlling the resources that enable the maintenance organisation to conduct maintenance.

Maintenance Document*

The orders, instructions, publications, and forms utilised by technical personnel when conducting maintenance include Defence Instructions, Standing Instructions, maintenance forms, Special Technical Instructions, specifications, and worksheets. Maintenance documents may be provided in paper-based and/or electronic formats.

Maintenance Inspector/Supervisor*

A person authorised to conduct compulsory maintenance inspections and/or supervise maintenance activities on nominated aircraft type and aeronautical product. The term applies to all personnel with direct maintenance task supervision or inspection responsibilities and, as such, may include, but is not limited to, trade supervisors, independent/final inspectors, and progressive/mandatory inspectors.

Maintenance Manager*

An authorised person responsible for managing maintenance activities on nominated aircraft type or aeronautical product within an AMO.

Maintenance Manual*

That part of the Instruction for Continuing Airworthiness. Those instructions are required to keep aircraft and aircraft-related equipment in an airworthy condition.

Maintenance Organisation Exposition*

A controlled quality document containing the details of an organisation’s maintenance management system. The MOE describes all of the requirements that are satisfied by an organisation to become and remain an AMO.

Maintenance Records*

This is an important document that demonstrates compliance with the airworthiness requirements has been met. It is completed and signed by an authorized person to certify that the maintenance work performed has been completed satisfactorily under approved data. Maintenance records information includes:

a. The total time in service (hours, calendar time, and cycles, as appropriate) of the aeroplane and all life-limited components.

b. The status of compliance with all mandatory continuing airworthiness information.

c. Appropriate details of modifications and repairs.

d. The time in service (hours, calendar time, and cycles, as appropriate) since the last overhaul of the aeroplane or its components subject to a mandatory overhaul life.

e. The status of the aeroplane's compliance with the maintenance program.

f. The detailed maintenance records show that all requirements for signing a maintenance release have been met.

Maintenance Training Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as an AMTO.

Maintenance Training Management Plan*

A controlled quality document containing the details of an organisation's training management system. The MTMP describes all of the requirements that are satisfied by an organisation to become and remain an AMTO.

Maintenance Personnel*

Maintenance personnel, including aircrew and Non-Trade Personnel (NTP), are authorised to perform maintenance tasks.

Maintenance Support Network*

A collective term describes a group of agencies that provide maintenance support to an AMO.

Maintenance Test Flight*

It is a flight to ensure that an aircraft meets specifications concerning performance and handling characteristics and to establish, on prescribed occasions, that no deterioration of that standard has occurred in service.

Malaysia State Airworthiness Authority*

The Competent Authority consists of the State Airworthiness Authority and includes any officer empowered by him to perform all or any of the functions.

Malaysian State Type Certificate*

A certificate issued by the State Airworthiness Authority (SAA), for an aircraft type entered on the register of state aircraft. The MSTC signifies that the SAO has assessed the particular aircraft type (undergone type certification) as airworthy and supportable in its intended SAO role/s.

Master Minimum Equipment List*

The Master Minimum Equipment List is a list established for a particular aircraft type by the

organisation responsible for the Type Design with the approval of the Malaysian State Airworthiness Authority that identifies items that individually may be unserviceable at the commencement of a flight. The Master Minimum Equipment List may be associated with special operating conditions, limitations, or procedures.

Material*

Products used in the manufacture of components and in the maintenance and operation of aircraft, including fuels, oils, and lubricants.

Mean of Compliance

The techniques will be used to demonstrate the compliance of the type design against each certification requirement identified on the Certification basis. Examples include tests, analyses, and inspections.

Military Aircraft*

Aircraft (including Unmanned Aircraft Systems) in the military service of the Armed Forces include any aircraft commanded by a member of the Armed Forces in the course of his duties as such a member.

Minor Amendment*

Those changes to the Organisation's Exposition(s) do not affect the Malaysian State Airworthiness Regulation-related approval.

Minor Maintenance

Includes repetitive tasks and simple defect/fault rectification.

Mission Critical Item*

An item whose failure will seriously degrade an aircraft's ability to complete an assigned mission or lead to a mission being aborted.

Modification

A modification is a change of the design to the authorized configuration of the approved type design of a product, part, or appliance. Typical examples are component changes, equipment additions, or software changes and often involve a revision to the drawings and support documentation.

Non-Conformance*

The failure of a product, process or system to meet its regulatory, specification, drawing, or quality requirements.

Non-installed equipment

This means any instrument, equipment, mechanism, apparatus, appurtenance, software, or accessory carried on board an aircraft by the aircraft operator, which is not a part, and which is used or intended to be used in operating or controlling an aircraft, support the occupants' survivability, or which could impact the safe operation of the aircraft.

Non-Technical Personnel*

A collective term covering personnel that have not completed formal SAO-recognised technical trade training.

Occurrence Reporting

The reporting to the relevant Authorities, to the Malaysian State Type Certificate Holder, or Restricted Type Certificate Holder, and/or the Supplemental Type Certificate Holder as appropriate, of any failure, malfunction, defect, or other occurrence which has resulted in or may result in an unsafe condition. The Type Certificate Holder can also make an Occurrence Report to the Authority.

Organisation*

This means an organisation is registered as a legal entity. Such an organisation may conduct business from multiple addresses and hold more than one approval.

Original Equipment Manufacturer*

The OEM is the manufacturer listed as the approved source of manufacture for components in the type certificate data sheet. The OEM owns and controls the source drawings, i.e., the design of the component.

Operational Maintenance*

Tasks directly related to equipment preparation for immediate use, recovery, and minor repair of the equipment after use. OM tasks require a limited range of support equipment and may involve the limited use of workshop facilities.

Parts and Appliances

Parts and appliances are lower-level components for which a Technical Standard Order may exist.

Period of Operation*

It is the time from the captains' acceptance of an aircraft until it's released back to maintenance. For rotary wing aircraft, the period of operation includes when the aircraft is released to aircrew for ground running of engines with the rotor engaged.

Permit to Fly*

A permit issued under State Technical Airworthiness Regulations.

Practical Assessor*

This means a person approved by the training organisation to conduct the practical assessment

Procedure*

A documented course of action is to be followed to ensure a consistent outcome.

Product

An aircraft, an engine, or a propeller.

Quality Management System*

All activities of the overall management function determine the quality policy, objectives, and responsibilities and implement them by means such as quality planning, quality controls, quality assurance, and quality improvement within the quality system.

Registration

Registration is a formal recording by the National Military Airworthiness Authority (or national equivalent) of individual aircraft on the military aircraft register and the assignment of a tail number.

Repair

A repair means the elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part, or appliance.

Shall

Used to express mandatory requirements.

Should

Used to express a preferred, but not mandatory, method of accomplishment. An alternative method of accomplishment shall be agreed upon by the relevant authority.

Sign-Off*

A ‘sign-off’ is a statement issued by the ‘authorised person’ that indicates that the task or group of tasks has been correctly performed. A ‘sign-off’ relates to one step in the maintenance process and is, therefore, different from a certificate of release to service.

Special Conditions

Special conditions are included in the Certification Basis of the aircraft when the design features of a particular product or the experience in operation render any of the airworthiness code provisions inadequate or inappropriate to ensure conformity with essential requirements.

Specification*

A document defines a product's essential function and performance requirements and identifies the relevant standards for the acquisition process. In contrast to standards, specifications provide a more complete description of requirements and includethe basis for establishing conformance (particularly during test and evaluation), and hence validation for the acceptance of material.

Standard*

A description of a material, product, doctrine, or process meant for repeated applications by many users.

Standard Parts

A standard part is a part designated as such by the design approval holder responsible for the product, part or appliance in which it is intended to be used and manufactured in complete compliance with an established specification, which includes design, manufacturing, testing, and acceptance criteria, an uniform identification requirements. Examples of standard parts are aircraft general spares as defined by the design approval holder, such as nuts, bolts, washers, split pins, etc. All design, manufacturing, inspection data, and marking requirements necessary to demonstrate the conformity of the part will be in the public domain or established as part of recognised specifications.

State Airworthiness Authority*

The Chief of Air Force appointed by the Minister of Defence under Section 7 to take accountable for the State Airworthiness.

Statement of Operating Intent*

A document that sufficiently details the intended roles, missions, tasks, and in-service usage of the proposed Aeronautical Product Type Design permits an engineering analysis and assessment to determine and apply the appropriate Airworthiness Standards.

Statement of Operational Requirement*

A document or document defining the complete set of DAR requirements on a design agency to allow DAR acceptance of an aircraft or aircraft-related equipment design or design change. The SOR includes or references a *Specification,* which is the document defining the specific essential function and performance requirements for the product design or design change.

State Aircraft Maintenance Licence*

A categorized license which, dependent upon completion of all relevant approved training and examinations and the requisite levels of practical experience, permits an authorized individual to issue certificates of release to service or act as support staff for scheduled and/or unscheduled maintenance performed on an aircraft or aircraft systems as defined by MSTAR 66.

State Aircraft Operator*

The SAO are the military organisations or Government of Malaysia enforcement agencies that operate and maintain state-registered aircraft. SAOs that are currently under the ambit of the SAA are as follows:

a. Royal Malaysian Air Force (RMAF).

b. Malaysian Army Air Wing.

c. Royal Malaysian Navy (RMN) Air Wing.

d. Malaysian Fire and Rescue Department (Air Wing).

e. Malaysian Maritime Enforcement Agency (MMEA) Air Wing.

f. Malaysian Armed Forces Headquarters.

g. Malaysian Joint Forces Headquarters.

State Registered Aircraft*

State aircraft that are registered with MSAA through DGTA shall be known as state-registered aircraft.

Student*

This means a person who has been enrolled in the training organisation.

Supplemental Type Certificate*

A certificate issued by the Chief of Air Force for an aircraft that undergoes a major design change or role change that is beyond the type design defined in the original MSTC but is not substantial enough to require a complete re-investigation of compliance of the aircraft with the applicable airworthiness standards (ie does not require a new MSTC).

Support Staff*

Those staff holding MSTAR 66 SAML in category B1 and/or B2 with the appropriate extension and Military Aircraft Type Ratings are working in a base maintenance environment while not necessarily holding certification privileges.

Task Authorisation*

The legal authority allows a person to perform a specified maintenance task, recognising that the person has completed the prerequisite training relevant to the task and has demonstrated competency in the performance of the task. Task authorisations are recorded in the person's logbook (RMAF License Without Type Rating- RMAF LWTR) or equivalent document.

Technical Airworthiness*

A concept that defines the condition of an aircraft and supplies the basis for the judgment of its sustainability for flight in that it has been designed, constructed, and maintained to approved standards by competent and approved individuals who are acting as members of an approved organisation and whose work is certified as correct and accepted on behalf of the SAO.

Technical Airworthiness Regulator*

The person with delegated responsibility from the State Airworthiness Authority for technical airworthiness management of state aircraft and aircraft-related equipment.

Technical Data*

All recorded scientific, technical, and engineering nature relating to a weapon system. Includes specifications, standards, engineering drawings, instructions, reports, manuals, tabular data, test results, and software documentation used in the development, production, in-service operation, and logistics support (such as maintenance, provisioning, codification, testing, and modification), and disposal of a weapon system.

Technical Integrity*

Refers to the state of airworthiness of a platform, combat system, or ancillary item to fulfill its intended mission safely and effectively throughout its planned life. This requires evidenceto demonstrate that the material has been designed, constructed, and maintained to approved

standards by competent and formally approved personnel acting as members of an approved organisation and whose work is certified as correct and accepted on behalf of the SAO.

Technical Record*

A set of documents describing the airworthiness of a particular aeronautical product must be maintained throughout its life cycle. The documents in a technical record generally fall into one of the following sub-categories:

a. In-service product certification documentation, including Maintenance Release records, aircraft release records, Flight Authority records, and Certificates of Conformance; and

b. Product status documentation, including operating records, maintenance records, configuration status data, airworthiness directive records, and product-related deviations/waivers.

Terms of Reference*

This means the scope of work that a person is responsible for and authorised to carry out on behalf of the approved maintenance training organisation.

Tool Control*

A systematic means of controlling tool usage that intends to eliminate the risk of tools being inadvertently left in an aircraft or aircraft components/equipment.

Training Manager*

A person who leads and manages the training management team and is responsible for all training functions in the AMTO.

Training Support Manager*

A person shall be appointed to plan and administer training resources to fulfill the knowledge and practical training.

Training Support Network*

A collective term used to describe a group of agencies that provide training support to an AMTO.

Type Certification*

The process of:

a. Prescribing and revising minimum standards governing the design of aircraft, engines, propellers, and other aircraft equipment as may be required in the interests of safety.

b. Administering a program to determine compliance with those prescribed standards and maintain certification integrity with a higher level of oversight, specification, and compliance than the normal Design Acceptance process requires. Successful type certification activity leads to the issue of an MSTC.

Type Certification Basis

An agreed set of airworthiness requirements (including code, special condition, etc.) that a product must be compliant with in order to obtain a Type Certificate.

Type Certificate Holder

The organisation is responsible for the relevant Type Design and applying for, and then holding, the Type Certificate and accepting the rights and obligations for the product.

Type Design

The set of approved design information necessary to define the product type, as detailed in MSTAR 145.A.31.

Type Record*

A set of documents that describes the state of Airworthiness for a particular Aeronautical Product Approved Type Design and must be maintained throughout the life of the Type Design. It consists of a summary document that defines the (aircraft) type design at the time of acceptance by Malaysia by providing an index to the issue status of all type design data.

Unapproved Aeronautical Product*

Any part, component or material that has not been manufactured and certified as conforming with the technical data against which type certification is provided.

MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

PART 1 **CHAPTER 1**

MSTAR 145 REQUIREMENTS FOR MAINTENANCE ORGANISATIONS

SECTION A

Technical Requirement

145.A.10 Scope

This Section establishes the requirements to be met by a maintenance organisation to qualify for the issue or continuation of an approval for the maintenance of aircraft and components.

AMC GM

145.A.15 Application

An application for the issue or change of an approval shall be made to the Directorate General Technical Airworthiness (DGTA) in a form and manner established by such authority.

AMC

145.A.20 Terms of Approval

The maintenance organisation shall specify the scope of work deemed to constitute approval in its Maintenance Organisation Exposition (MOE). (Appendix II to this MSTAR contains a table of all classes and ratings.)

AMC

145.A.25 Facility requirements

The maintenance organisation shall ensure that:

(a) Facilities are provided appropriate for all planned work, ensuring in particular, protection from the weather elements. Specialised workshops and bays are segregated as appropriate, to ensure that environmental and work area contamination is unlikely to occur

AMC

1. For base maintenance of aircraft, aircraft hangars are both available and large enough to accommodate aircraft on planned base maintenance;

2. For component maintenance, component workshops are large enough to accommodate the components on planned maintenance.

(b) Office accommodation is provided for the management of the planned work referred to in paragraph (a), and certifying staff so that they can carry out their designated tasks in a manner that contributes to good aircraft maintenance standards.

AMC

(c) The working environment including aircraft hangars, component workshops and office accommodation is appropriate for the task carried out and in particular special requirements observed. Unless otherwise dictated by the particular task environment, the working environment shall be such that the effectiveness of personnel is not impaired:

AMC

1. Temperatures shall be maintained such that personnel can carry out required tasks without undue discomfort.

2. Dust and any other airborne contamination shall be kept to a minimum and not be permitted to reach a level in the work task area where visible aircraft/component surface contamination is evident. Where dust/other airborne contamination results in visible surface contamination, all susceptible systems are sealed until acceptable conditions are re-established.

3. Lighting shall be such as to ensure each inspection and maintenance task can be carried out in an effective manner.

4. Noise shall not distract personnel from carrying out inspection tasks. Where it is impractical to control the noise source, such personnel are provided with the necessary personal equipment to stop excessive noise causing distraction during inspection tasks.

5. Where a particular maintenance task requires the application of specific environmental conditions different to the foregoing, then such conditions shall be observed. Specific conditions are identified in the maintenance data.

6. The working environment for line maintenance shall be such that the particular maintenance or inspection task can be carried out without undue distraction. Therefore, where the working environment deteriorates to an unacceptable level in respect of temperature, moisture, hail, ice, snow, wind, light, dust/other airborne contamination, the particular maintenance or inspection tasks must be suspended until satisfactory conditions are re-established.

(d) Secure storage facilities shall be provided for components, equipment, tools and material. Storage conditions ensure segregation of serviceable components and material from unserviceable aircraft components, material, equipment and tools. The conditions of storage shall be in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items. Access to storage facilities shall be restricted to authorised personnel. AMC

145.A.30 Personnel requirements AMC

(a) The maintenance organisation shall appoint an Accountable Manager who has corporate authority for ensuring that all maintenance can be carried out to the standard required by MSTAR 145. The Accountable Manager shall: AMC

1. Ensure that all necessary resources are available to accomplish maintenance in accordance with MSTAR 145.A.65(b) to support the organisation approval.

2. Establish and promote the safety and quality policy specified in MSTAR 145.A.65(a).

3. Demonstrate a basic understanding of this MSTAR.

(b) The maintenance organisation shall nominate a person or group of persons, whose responsibilities include ensuring that the organisation complies with this MSTAR. Such person(s) shall ultimately be responsible to the Accountable Manager.

AMC

1. The person or persons nominated shall represent the maintenance management structure of the organisation and be responsible for all functions specified in this MSTAR.

2. The person or persons nominated shall be identified and their credentials submitted in form and manner established by the DGTA.

3. The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of MSTAR.

4. Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.

(c) The Accountable Manager under paragraph (a) shall appoint a person with responsibility for monitoring the quality system, including the associated feedback system as required by MSTAR 145.A.65(c). The appointed person shall have direct access to the Accountable Manager to ensure that the Accountable Manager is kept properly informed on quality and compliance matters.

AMC

(d) The maintenance organisation shall have a maintenance man-hour plan showing that the organisation has sufficient staff to plan, perform, supervise, inspect and quality monitor the organisation in accordance with the approval. In addition, the organisation shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period.

AMC

(e) The maintenance organisation shall establish and control the competence of personnel involved in any maintenance, management and/or quality audits in accordance with a procedure and to a standard defined through the MOE and approved by the DGTA. In addition to the necessary expertise related to the job function, competence shall include an understanding of the application of human factors and human performance issues appropriate to that person's function in the maintenanceorganisation.

AMC 1 AMC 2 AMC 3 AMC 4 GM 1 GM 2 GM 3

‘Human factors’ means principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance.

‘Human performance’ means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

(f) The maintenance organisation shall ensure that personnel who carry out and/or control a non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by the DGTA. Personnel who carry out any other specialised task shall be appropriately qualified in accordance with officially recognised Standards.

AMC AMC 1 AMC 2 GM

1. By way of exception to paragraph (f), a maintenance organisation may authorise those personnel specified in paragraphs (g) and (h)(1), qualified in Category B1 in accordance with MSTAR 66, to carry out and/or control colour contrast dye penetrant inspections/visible dye penetrant inspections which are to be detailed in the MOE .

(g) Any maintenance organisation maintaining aircraft, except where stated otherwise in paragraph (j), shall in the case of aircraft line maintenance, have appropriate Aircraft Type Rated certifying staff, qualified as category B1, B2 or national equivalent qualification in accordance with MSTAR 66 and MSTAR 145.A.35.

AMC

In addition such organisations may also use appropriately task trained certifying staff holding the previleges described in MSTAR 66.A.20(a)(1) or MSTAR 66.A.20(a)3(ii) or national equivalent qualification and qualified in accordnace with MSTAR 66 and MSTAR 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such certifying staff shall not replace the need for category B1, B2 qualification certifying staff as appropriate.

(h) Any maintenance organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:

AMC

1. In the case of base maintenance of aircraft, have appropriate aircraft type rated certifying staff qualified as category C or national equivalent qualification in accordance with MSTAR 66 or equivalent and MSTAR 145.A.35. In addition the organisation shall have sufficient aircraft type rated staff qualified as category B or national equivalent in accordance with MSTAR 66 or equivalent and MSTAR 145.A.35 to support the category C staff or national equivalent qualification.

(i) Category B1, B2 and B support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C or national equivalent qualification certifying staff issues the certificate of release to service.

(ii) The organisation shall maintain a register of any such B1, B2 and B support staff staff or national equivalent qualification.

(iii) The category C or national equivalent qualification certifying staff shall ensure that compliance with paragraph (i) has been met and that all work has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the appropriate Continuing Airworthiness Management Organisation (CAMO) to defer such work to another specified check or time limit.

2. NOT APPLICABLE

(i) Component certifying staff shall be authorised by the maintenance organisation on the basis of appropriate competence, training and experience in accordance with a procedure(s) contained in the MOE.

(j) By way of exception to paragraphs (g) and (h), in relation to the obligation to comply with MSTAR 66 or equivalent the maintenance organisation may use certifying staff qualified in accordance with the following provisions:

1. NOT APPLICABLE

2. NOT APPLICABLE

3. For a repetitive pre-flight Airworthiness Directive (AD) which specifically states that the flight crew may carry out such AD, the maintenance organisation may issue a limited certification authorisation to the aircraft commander and/or the flight engineer on the basis of the flight crew licence or national equivalent qualification held. However, the maintenance organisation shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander and/or flight engineer can accomplish the AD to the required standard.

4. In the case of aircraft operating away from a supported location the maintenance organisation may issue a limited certification authorisation to the aircraft commander and/or the flight engineer on the basis of the flight crew licence or national equivalent qualification held subject to being satisfied that sufficient practical training has been carried out to ensure that the aircraft commander and/or flight engineer can accomplish the specified task to the required standard. The provisions of this paragraph shall be detailed in a MOE procedure. AMC GM

5. In unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff are available, the maintenance organisation may issue a one-off certification authorisation: AMC

(i) to one of its employees holding equivalent authorisations on other aircraft types of similar technology, construction and systems; or AMC

(ii) to any person with not less than five years maintenance experience and holding a valid State Aircraft Maintenance Licence (SAML) rated for the aircraft, provided there is no maintenance organisation appropriately approved under MSTAR 145 at that location and the supporting maintenance organisation obtains and holds on file evidence of the experience and the SAML of that person. AMC

All such cases as specified in this subparagraph shall be reported to the DGTA within seven days of the issuance of such certification authorisation. The maintenance organisation issuing the one-off authorisation shall ensure that any such maintenance that could affect flight safety is re-checked by an appropriately approved maintenance organisation.

(k) To certify on-aircraft maintenance performed on armament, rescue and escape systems and other military-specific systems, any maintenance organisation maintaining aircraft shall have sufficient staff possessing the Category A, B1 or B2 SAML or national equivalent qualification with the appropriate extensions.

145.A.35 Certifying staff and support staff

(a) In addition to the appropriate requirements of MSTAR 145.A.30(g) and (h), the maintenance organisation shall ensure that certifying and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated maintenance organisation procedures. In the case of certifying staff, this shall be accomplished before the issue or re-issue of the certification authorisation. AMC

(i) 'Support staff' means those staff holding a MSTAR 66 SAML in Category B1 and/or B2 with the appropriate extensions and Aircraft Type Ratings, working in a base maintenance environment while not necessarily holding certification privileges.

(ii) 'Relevant aircraft and/or components', means those aircraft or components specified in the particular certification authorisation.

(iii) 'Certification authorisation' means the authorisation issued to certifying staff by the Approved Maintenance Organisation (AMO) and which specifies the fact that they may sign CRSs within the limitations stated in such authorisation on behalf of the AMO.

(b) Excepting those cases listed in MSTAR 145.A.30(j) and MSTAR 66.A.20(a)3(ii) the maintenance organisation may only issue a certification authorisation to certifying staff in relation to the basic categories or subcategories and any Aircraft Type Rating endorsed on the SAML, subject to the SAML remaining valid throughout the validity period of the authorisation and the certifying staff remaining in compliance with MSTAR 66. AMC

The maintenance organisation issues the certification authorisation when satisfied that compliance has been established with the appropriate paragraphs of MSTAR 145 and MSTAR 66. In granting the certification authorisation the maintenance organisation needs to be satisfied that the person holds a valid and applicable MSTAR 66 SAML and shall confirm such fact with DGTA.

(c) The maintenance organisation shall ensure that all certifying staff and support staff are involved in at least six months of actual relevant aircraft or component maintenance experience in any consecutive two year period. AMC 1 AMC 2

For the purpose of this paragraph 'involved in actual relevant aircraft or component maintenance' means that the person has worked in an aircraft or component maintenance environment and has either exercised the privileges of the certification authorisation and/or has actually carried out maintenance on at least some of the aircraft type or aircraft group systems specified in the particular certification authorisation.

(d) The maintenance organisation shall ensure that all certifying staff and support staff receive sufficient continuation training in each two year period to ensure that such staff have up-to-date knowledge of relevant technology, maintenance organisation procedures and human factor issues. AMC

(e) The maintenance organisation shall establish a programme for continuation training for certifying staff and support staff, including a procedure to ensure compliance with the relevant paragraphs of MSTAR 145.A.35 as the basis for issuing

certification authorisations under this MSTAR to certifying staff, and a procedure to ensure compliance with MSTAR 66. AMC

(f) Except where any of the unforeseen cases of MSTAR 145.A.30(j)(5) apply, the organisation shall assess all prospective certifying staff for their competence, qualification and capability to carry out their intended certifying duties in accordance with a procedure as specified in the exposition prior to the issue or re-issue of a certification authorisation under MSTAR 145. AMC

(g) When the conditions of paragraphs (a), (b), (d), (f) and, where applicable, paragraph (c) have been fulfilled by the certifying staff, the maintenance organisation shall issue a certification authorisation that clearly specifies the scope and limits of such authorisation. Continued validity of the certification authorisation is dependent upon continued compliance with paragraphs (a), (b), (d), and where applicable, paragraph (c).

(h) The certification authorisation shall be in a style that makes its scope clear to the certifying staff and any authorised person who may require to examine the authorisation. Where codes are used to define scope, the maintenance organisation shall make a code translation readily available.

'Authorised person' means the officials of the DGTA.

(i) The maintenance organisation shall nominate an individual who shall remain responsible on behalf of the maintenance organisation for issuing certification authorisations to certifying staff. Such person may nominate other persons to actually issue or revoke the certification authorisations in accordance with a procedure as specified in the MOE.

(j) The maintenance organisation shall maintain a record of all certifying staff and support staff which shall contain: AMC

1. Details of any aircraft maintenance licence held under MSTAR 66 and;

2. All relevant training completed; and

3. The scope of the certification authorisations issued, where relevant; and

4. Particulars of staff with limited or one-off certification authorisations.

The maintenance organisation shall retain the record for at least three years after the certifying staff or support staff have ceased employment with the maintenance organisation or as soon as the authorisation has been withdrawn. In addition, upon request, the maintenance organisation shall furnish certifying staff and support staff with a copy of their record on leaving the maintenance organisation.

The certifying staff and support staff shall be given access on request to their personal records as detailed above.

(k) The maintenance organisation shall provide certifying staff with a copy of their certification authorisation in either a documented or electronic format.

(l) Certifying staff shall produce their certification authorisation to any authorised person within 72 hours.

(m) The minimum age for certifying staff and support staff shall be 21 years.

(n) The holder of a Category A SAML may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant Category A aircraft task training carried out by an organisation appropriately approved in accordance with MSTAR 145 or MSTAR 147. This training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment carried out by the AMO or MSTAR 147 AMTO. AMC

(o) The holder of a Category B2 SAML may only exercise the certification privileges described in MSTAR 66.A.20(a)(3)(ii) following the satisfactory completion of: AMC GM

(i) the relevant Category A aircraft task training; and

(ii) 6 months of documented practical experience covering the scope of the authorisation that will be issued.

The task training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment. Task training and examination/assessment shall be carried out by the AMO issuing the certifying staff authorisation. The practical experience shall be also obtained within the same AMO unless approved otherwise by the DGTA.

145.A.40 Equipment, tools and material

(a) The maintenance organisation shall have available and use the necessary equipment, tools and material to perform the approved scope of work. AMC

1. Where the manufacturer specifies a particular tool or equipment, the maintenance organisation shall use that tool or equipment, unless the use of alternative tooling or equipment is agreed by the DGTA via procedures specified in the MOE.

2. Equipment and tools must be permanently available, except in the case of any tool or equipment that is so infrequently used that its permanent availability is not necessary. Such cases shall be detailed in the MOE.

3. A maintenance organisation approved for base maintenance shall have sufficient aircraft access equipment and inspection platforms/docking such that the aircraft can be properly inspected.

(b) The maintenance organisation shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognised standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the maintenance organisation. AMC

145.A.42 Acceptance of components

(a) All components shall be classified and appropriately segregated into the following categories: AMC GM

1. Components which are in a satisfactory condition, released on a MSTAR Form 1 or equivalent and marked in accordance with MSTAR 21 Section A Subpart Q.

2. Unserviceable components which shall be maintained in accordance with this section. A component shall be considered unserviceable in any one of the following circumstances: AMC

(i) expiry of the service life limit as defined in the Aircraft Maintenance Programme (AMP);

(ii) non-compliance with the applicable ADs and other continued or continuing airworthiness requirement mandated by the DGTA;

(iii) absence of the necessary information to determine the airworthiness status or eligibility for installation;

(iv) evidence of defects or malfunctions;

(v) involvement in an incident or accident likely to affect its serviceability.

Unserviceable components shall be identified and stored in a secure location under the control of a maintenance organisation until a decision is made on the future status of such component.

3. Unsalvageable components which are classified in accordance with MSTAR 145.A.42(d). A maintenance organisation in consultation with the CAMO/Operating Organisation shall, in the case of unsalvageable components: AMC

(i) retain such components in a secure location under the control of the maintenance organisation until a decision is made on the future status of such component; or AMC

(ii) arrange for the components to be mutilated in a manner that ensures they are beyond economic salvage or repair before relinquishing responsibility for such components. By the way of exception, a CAMO/Operating Organisation may transfer responsibility of components classified as unsalvageable to an organisation for training or research without mutilation. AMC

4. Standard parts used on an aircraft, engine, propeller or other aircraft component when specified in the manufacturer's illustrated parts catalogue and/or the maintenance data. These parts must be accompanied by a manufacturer‘s declaration of conformity. AMC

5. Material both raw and consumable used in the course of maintenance when the organisation is satisfied that the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source. AMC

6. NOT APPLICABLE.

(b) Prior to installation of a component, the maintenance organisation shall ensure that the particular component is eligible to be fitted when different modification and/or AD standards may be applicable. AMC

(c) The maintenance organisation may fabricate a restricted range of parts to be used in the course of undergoing work within its own facilities, or other facilities if this is approved by the DGTA, provided procedures are identified in the MOE. AMC

(d) Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system unless certified life limits have been extended or a repair solution has been approved according to MSTAR 21. AMC GM

(e) NOT APPLICABLE.

145.A.45 Maintenance Data

(a) The maintenance organisation shall have access to and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. 'Applicable' means relevant to any aircraft, component or process specified in the Maintenance Organisation Approval Schedule and in any associated capability list.

In the case of maintenance data provided by a CAMO/Operating Organisation, the maintenance organisation shall have access to such data when the work is in progress, with the exception of the need to comply with MSTAR 145.A.55(c).

(b) For the purposes of MSTAR 145, applicable maintenance data shall be any of the following: AMC

1. Any applicable requirement, procedure, operational directive or information issued by or provided by the DGTA;

2. Any applicable AD issued by the DGTA.

3. Instructions for Continuing Airworthiness, issued by (Military) Type Certificate (MTC) holders, (Military) Supplementary Type Certificate (MSTC) holders, any other organisation required to publish such data by MSTAR 21 and in the case of aircraft or components from third countries the airworthiness data mandated by the Authority responsible for the oversight of the aircraft or component and accepted by the DGTA;

4. Any applicable standard, such as but not limited to, maintenance standard practices recognised by the DGTA as a good standard for maintenance;

5. Any applicable data issued in accordance with paragraph (d).

(c) The maintenance organisation shall establish procedures to ensure that if found, any inaccurate, incomplete or ambiguous procedure, practice, information or maintenance instruction contained in the maintenance data used by maintenance personnel is recorded and notified to the author of the maintenance data. AMC

(d) The maintenance organisation may only modify maintenance instructions in accordance with a procedure specified in the MOE. With respect to those changes, the

AMC

maintenance organisation shall demonstrate that they result in equivalent or improved maintenance standards and shall inform the MTC holder/MSTC holder of such changes. Maintenance instructions for the purposes of this paragraph means instructions on how to carry out the particular maintenance task: they exclude the engineering design of repairs and modifications.

(e) The maintenance organisation shall provide a common work card or worksheet system to be used throughout relevant parts of the maintenance organisation. In addition, the maintenance organisation shall either transcribe accurately the maintenance data contained in paragraphs (b) and (d) onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data. Work cards and worksheets may be computer generated and held on an electronic database subject to both adequate safeguards against unauthorised alteration and a back-up electronic database which shall be updated within 24 hours of any entry made to the main electronic database. Complex maintenance tasks shall be transcribed onto the work cards or worksheets and subdivided into clear stages to ensure a record of the accomplishment of the complete maintenance task. AMC GM

Where the maintenance organisation provides a maintenance service to an Operating Organisation/CAMO who requires their work card or worksheet system to be used then such work card or worksheet system may be used. In this case, the maintenance organisation shall establish a procedure to ensure correct completion of the Operating Organisation's/CAMO's work cards or worksheets.

(f) The maintenance organisation shall ensure that all applicable maintenance data is readily available for use when required by maintenance personnel. AMC

(g) The maintenance organisation shall establish a procedure to ensure that maintenance data it controls is kept up to date. In the case of maintenance data controlled and provided by the Operating Organisation/CAMO, the maintenance organisation shall be able to show that either it has written confirmation from the Operating Organisation/CAMO that all such maintenance data is up to date or it has work orders specifying the amendment status of the maintenance data to be used or it can show that it is on the Operating Organisation's/CAMO's maintenance data amendment list. AMC

145.A.47 Maintenance planning

(a) The maintenance organisation shall have a system appropriate to the amount and complexity of work to plan the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities in order to ensure the safe completion of the maintenance work. AMC

(b) The planning of maintenance tasks, and the organising of shifts, shall take into account human performance limitations. AMC

(c) When it is required to hand over the continuation or completion of maintenance tasks for reasons of a shift or personnel changeover, relevant information shall be adequately communicated between outgoing and incoming personnel. AMC

145.A.48 Performance of maintenance

(a) All maintenance shall be performed by qualified personnel, following the methods, techniques, standards, and instructions specified in the MSTAR 145.A.45 maintenance data

(b) An independent inspection shall be carried out after any flight safety sensitive maintenance task unless otherwise specified in this MSTAR or agreed by the DGTA.

AMC

(c) Only the authorised certifying staff according to MSTAR 145.A.35 and in consultation with the CAMO as necessary, can decide, using MSTAR 145.A.45 maintenance data, whether an aircraft defect hazards seriously the flight safety and therefore decide when and which rectification action shall be taken before further flight and which defect rectification can be deferred. However, this does not apply when:

AMC

(1) the approved Minimum Equipment List as mandated by the DGTA is used; or

(2) aircraft defects are defined as being acceptable by the DGTA.

(d) After completion of all maintenance, a general verification shall be carried out to ensure the aircraft or component is clear of all tools, equipment, and any other extraneous parts and material, and that all access panels removed have been refitted.

145.A.50 Certification of Maintenance

(a) A CRS for aircraft and a CRS for components shall be issued by appropriately authorised certifying staff on behalf of the AMO when it has been verified that all maintenance ordered/tasked has been properly carried out in accordance with the procedures specified in MSTAR 145.A.70, taking into account the availability and use of the maintenance data specified in MSTAR 145.A.45 and that there are no non-compliances which are known to endanger flight safety.

AMC

(b) A CRS for aircraft shall be issued before flight at the completion of any maintenance.

AMC

(c) New defects or incomplete maintenance work orders identified during the above maintenance shall be brought to the attention of the Operating Organisation/CAMO for the specific purpose of obtaining agreement to rectify such defects or completing the missing elements of the maintenance work order. In the case where the Operating Organisation/CAMO declines to have such maintenance carried out under this paragraph, paragraph (e) is applicable.

(d) A CRS for components shall be issued at the completion of any maintenance on a component whilst off the aircraft. The authorised release certificate or airworthiness approval tag identified as MSTAR Form 1 constitutes the component CRS. When an AMO maintains a component for its own use, an MSTAR Form 1 may not be necessary depending upon the AMO's internal release procedures defined in the MOE.

AMC 1 AMC 2

(e) By the way of exception to paragraph (a), when the AMO is unable to complete all maintenance ordered/tasked, it may issue a CRS within the approved aircraft limitations. The AMO shall enter such fact in the aircraft CRS before the issue of such certificate. Details of any deferred maintenance are to be entered in the aircraft technical log by appropriately approved certifying staff. AMC

(f) By the way of exception to paragraphs (a) and MSTAR 145.A.42, when an aircraft is grounded at a location other than the Main Operation Base (MOB) due to the non-availability of a component with an appropriate release certificate, it is permissible to temporarily fit a component with another release certificate, subject to CAMO approval, which is in compliance with all the applicable technical and operational requirements. The fitment of such components shall be noted in the aircraft documentation, with a provision for the component to be removed at a time specified by the CAMO, unless an appropriate release certificate has been obtained in the meantime under paragraph (a) and MSTAR 145.A.42. AMC

145.A.55 Maintenance records

(a) The maintenance organisation shall record all details of maintenance work carried out. As a minimum, the AMO shall retain records necessary to prove that all requirements have been met for issuance of the CRS, including all release documents. GM

(b) The AMO shall provide a copy of each CRS to the CAMO, together with a copy of any specific repair/modification data used for repairs/modifications carried out.

(c) The AMO shall retain a copy of all detailed maintenance records and any associated maintenance data for three years from the date the aircraft or component to which the work relates was released from the AMO. AMC

1. Records under this paragraph shall be stored in a manner that ensures protection from damage, alteration and theft. The records shall remain readable and accessible for the duration of the storage period.

2. Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition.

3. Where an AMO terminates its operation, all retained maintenance records covering the last three years shall be distributed to the CAMO responsible for the respective aircraft or component or shall be stored as specified by the DGTA.

145.A.60 Occurrence reporting

(a) The maintenance organisation shall report to the DGTA and all further addressees as required by national regulations any condition of the aircraft or component identified by the maintenance organisation that has resulted or may result in an unsafe condition that hazards seriously the flight safety. AMC GM

(b) The maintenance organisation shall establish an internal occurrence reporting system as detailed in the MOE to enable the collection and evaluation of such reports, including the assessment and extraction of those occurrences to be reported under paragraph (a). This procedure shall identify adverse trends, corrective actions taken or

to be taken by the maintenance organisation to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary. AMC

(c) The maintenance organisation shall make such reports in a form and manner established by the DGTA, and ensure that they contain all pertinent information about the condition and evaluation results known to the maintenance organisation. GM

(d) The maintenance organisation shall report to the CAMO/Operating Organisation any such condition affecting the aircraft or component.

(e) The maintenance organisation shall produce and submit such reports within predefined DGTA timeframes, but in any case within 72 hours of the maintenance organisation identifying the condition to which the report relates.

145.A.65 Safety and quality policy, maintenance procedures and quality system

(a) The maintenance organisation shall establish a safety and quality policy for the maintenance organisation to be included in the MOE under MSTAR 145.A.70. AMC

(b) The maintenance organisation shall establish procedures agreed by the DGTA taking into account human factors and human performance to ensure good maintenance practices and compliance with MSTAR 145 which shall include a clear work order or contract such that aircraft and components may be released to service in accordance with MSTAR 145.A.50. AMC

1. The maintenance procedures under this paragraph apply to MSTAR 145.A.25 to MSTAR 145.A.95.

2. The maintenance procedures established or to be established by the maintenance organisation under this paragraph shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialised services and lay down the standards to which the maintenance organisation intends to work. AMC

3. With regard to aircraft line and base maintenance, the maintenance organisation shall establish procedures to minimise the risk of multiple errors and capture errors on critical systems, and to ensure that no person is required to carry out and inspect in relation to a maintenance task involving some element of disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check. However, when only one person is available to carry out these tasks then the maintenance organisation's work card or worksheet shall include an additional stage for re-inspection of the work by this person after completion of all the same tasks. AMC GM

4. Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data specified in MSTAR M.A.304.

(c) The maintenance organisation shall establish a quality system that includes the following:

1. Independent audits in order to monitor compliance with required aircraft/aircraft component standards and adequacy of the procedures to ensure that such procedures invoke good maintenance practices and airworthy aircraft/aircraft components; and

AMC GM

2. A quality feedback reporting system to the person or group of persons specified in MSTAR 145.A.30(b) and ultimately to the Accountable Manager that ensures proper and timely corrective action is taken in response to reports resulting from the independent audits established to meet paragraph (1).

AMC

(d) The maintenance organisation shall ensure that its personnel have access to quality system documentation and are knowledgeable of procedures relevant to their function.

(e) Where an organisation has several MSTAR approvals, the quality systems may be combined.

145.A.70 Maintenance Organisation Exposition (MOE)

(a) 'Maintenance Organisation Exposition' means the document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organisation intends to comply with MSTAR 145. The organisation shall provide the DGTA with a MOE containing the following information:

AMC GM

1. A statement signed by the Accountable Manager confirming that the MOE and any referenced associated manuals define the organisation's compliance with MSTAR 145 and will be complied with at all times. When the Accountable Manager is neither the Chief Executive Officer nor senior military commander of the Approved Maintenance Organisation then the latter shall countersign the statement;

2. The organisation's safety and quality policy as specified by MSTAR 145.A.65;

3. The title(s) and name(s) of the persons nominated under MSTAR 145.A.30(b);

4. The duties and responsibilities of the persons nominated under MSTAR 145.A.30(b), including matters on which they may deal directly with the DGTA on behalf of the organisation;

5. An organisation chart showing associated chains of responsibility between the persons nominated under MSTAR 145.A.30(b);

6. A list of certifying staff and support staff; and

7. A general description of manpower resources; and

8. A general description of the facilities located at each address specified in the maintenance organisation's approval certificate; and

9. A specification of the maintenance organisation's scope of work relevant to the extent of approval; and

10. The notification procedure of MSTAR 145.A.85 for organisation changes;

11. The MOE amendment procedure; and

12. The procedures and quality system established by the organisation under MSTAR 145.A.25 to MSTAR 145.A.90;

13. A list of Operating Organisations and CAMOs to which the maintenance organisation provides an aircraft maintenance service; and

14. A list of subcontracted organisations, where applicable, as specified in MSTAR 145.A.75(b);

15. A list of line stations, where applicable, as specified in MSTAR 145.A.75(d); and

16. A list of contracted/tasked organisations operating under their own MSTAR approval, where applicable.

(b) The MOE shall be amended as necessary to remain an up-to-date description of the maintenance organisation. The MOE and any subsequent amendment shall be approved by DGTA.

(c) Notwithstanding paragraph (b), minor amendments to the MOE may be approved through an MOE procedure (hereinafter called indirect approval).

(d) the EASA exposition shall be identified and the EASA exposition clause reference quoted. Where a maintenance organisation has an extant EASA Part 145 approval, those parts of the organisation‘s EASA Part 145 exposition that are equally applicable to satisfy the MSTAR 145 requirements will generally be accepted by the DGTA as equivalent in respect of the MSTAR 145 exposition. In this case it is permissible that only those regulations that are military specific need be addressed in the MSTAR 145 exposition; those regulations covered by read-across of the sections of the EASA exposition document must be identified and the EASA document clause reference quoted.

(e) Paragraph moved to MSTAR 145.A.65 (d)

145.A.75 Privileges of the AMO

In accordance with the MOE, the AMO shall be entitled to carry out the following tasks:

(a) Maintain any aircraft and/or component for which it is approved at the locations identified in the approval certificate and in the Maintenance Organisation Exposition;

(b) Arrange for the maintenance of any aircraft or component, listed on its approval certificate, to be carried out by another maintenance organisation that is working under

the quality system of the AMO. This refers to work being carried out by a maintenance organisation not itself appropriately approved to carry out such maintenance under this MSTAR and is limited to the work scope permitted under MSTAR 145.A.65(b) procedures. This work scope shall not include a base maintenance check of an aircraft or a complete workshop maintenance check or overhaul of an engine or engine module. The AMO that contracts/tasks such work retains responsibility for all these maintenance activities irrespective of who is undertaking them. All such maintenance organisations shall be listed in the MOE;

(c) Maintain any aircraft or any component listed on its approval certificate at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the MOE;

(d) Maintain any aircraft and/or component listed on its approval certificate at a location identified as a line maintenance location capable of supporting minor maintenance and only if the MOE both permits such activity and lists such locations;

(e) Issue certificates of release to service in respect of completion of maintenance in accordance with MSTAR 145.A.50.

145.A.80 Limitations on the AMO

The AMO shall only maintain an aircraft or component for which it is approved when all the necessary facilities, equipment, tooling, material, maintenance data and certifying staff are available.

AMC

145.A.85 Changes to the AMO

The organisation shall notify the DGTA of any proposal to carry out any of the following changes before such changes take place to enable the DGTA to determine continued compliance with MSTAR 145 and to amend, if necessary, the approval certificate, except that in the case of proposed changes in personnel not known to the management beforehand, these changes must be notified at the earliest opportunity.

AMC

1. The name of the AMO;

2. The main location of the AMO;

3. Additional locations of the AMO;

4. The Accountable Manager and all appointed deputies;

5. Any of the persons nominated under MSTAR 145.A.30(b) and their appointed deputies;

6. The facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval;

7. The ownership of the AMO or its parent company.

145.A.90 Continued validity of approval (MY)

(a) An approval shall be issued for valid up to three (3) years or until the contract to which it relates, expires. It shall remain valid subject to:

1. The AMO remaining in compliance with this MSTAR, in accordance with the provisions related to the handling of findings; and

2. The DGTA being granted access to the AMO to determine continued compliance with this MSTAR; and

3. The certificate not being surrendered or revoked.

(b) Upon surrender or revocation, the approval shall be returned to the DGTA

145.A.95 AMO Findings by the NMAA

(a) After receipt of notification of findings the AMO shall:

1. Identify the root cause of the non-compliance; and

2. Define a corrective action plan; and

3. Demonstrate corrective action implementation to the satisfaction of the DGTA within a period required by the DGTA.

(b) A level 1 finding is any significant non-compliance with MSTAR 145 requirements which lowers the safety standard and hazards seriously the flight safety. Depending upon the extent of the level 1 finding, it leads to an immediate full or partial revocation, limitation or suspension of the approval by the DGTA until successful corrective action has been taken by the AMO.

(c) A level 2 finding is any non-compliance with the MSTAR 145 requirements which could lower the safety standard and possibly hazards the flight safety.

(d) An AMO's non-compliance with the actions identified in MSTAR 145.A.95(a) leads to a full or partial suspension of the approval by the DGTA.

MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

PART 2 **CHAPTER 1**

MSTAR 145 REQUIREMENTS FOR MAINTENANCE ORGANISATIONS

Acceptable Means Compliance (AMC) / Guidance Material (GM)

AMC 145.A.10 Scope (MY)

1. Line maintenance should be understood as any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight.

(a) Line maintenance may include:

- Trouble shooting.
- Defect rectification.
- Component replacement with use of external test equipment if required. Component replacement may include components such as engines and propellers.
- Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in depth inspection.
- It may also include internal structure, systems and power plant items which are visible through quick opening access panels/doors.
- Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.

(b) For temporary or occasional cases (AD's, SB's) the Quality Manager may accept base maintenance tasks to be performed by a line maintenance organisation provided all requirements are fulfilled as defined by the DGTA.

(c) Maintenance tasks falling outside these criteria are considered to be base maintenance.

(d) Aircraft maintained in accordance with "progressive" type programmes should be individually assessed in relation to this paragraph. In principle, the decision to allow some "progressive" checks to be carried out should be determined by the assessment that all tasks within the particular check can be carried out safely to the required standards at the designated line maintenance station.

GM 145.A.10 Scope

NOT APPLICABLE

AMC 145.A.15 Application (MY)

In a form and manner established by the DGTA means (as agreed by SAO specified in the sponsor letter or a legally binding formal instrument document) that the application should be made by using an MSTAR Form 2.

AMC 145.A.20 Terms of approval

Table 1 in Appendix II of MSTAR 145 identifies the S1000D Chapter Reference for the Category C component rating. If the maintenance manual (or equivalent document) does not follow the S1000D Chapter reference, the corresponding subjects still apply to the applicable C rating.

AMC 145.A.25(a) Facility requirements

1. Where the hangar is not owned by the maintenance organisation, it may be necessary to establish proof of tenancy. In addition, sufficiency of hangar space to carry out planned base maintenance should be demonstrated by the preparation of a projected aircraft hangar visit plan relative to the maintenance programme. The aircraft hangar visit plan should be updated on a regular basis.

2. Protection from the weather elements relates to the normal prevailing local weather elements that are expected throughout any twelve month period. Aircraft hangar and component workshop structures should prevent the ingress of rain, hail, ice, snow, wind and dust etc. as far as is militarily practicable. Aircraft hangar and component workshop floors should be sealed to minimise dust generation.

3. For line maintenance of aircraft, hangars are not essential but it is recommended that access to hangar accommodation be demonstrated for usage during inclement weather for minor scheduled work and lengthy defect rectification.

4. Aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

AMC 145.A.25(b) Facility requirements

It is acceptable to combine any or all of the office accommodation requirements into one office subject to the staff having sufficient room to carry out the assigned tasks.

In addition, as part of the office accommodation, aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

AMC 145.A.25(c) Facility requirements

Military operational needs should be taken into account when establishing a suitable working environment. However, as far as is practicable, the requirements should be adhered to.

AMC 145.A.25(d) Facility requirements

1. Storage facilities for serviceable aircraft components should be clean, well ventilated and maintained at a constant dry temperature to minimise the effects of condensation. Manufacturer’s storage recommendations should be followed for those aircraft components identified in such published recommendations. With regards to deployed military operations these requirements should be met as far as practicable.

2. Storage racks should be strong enough to hold aircraft components and provide sufficient support for large aircraft components such that the component is not distorted during storage.

3. All aircraft components, wherever practicable, should remain packaged in protective material to minimise damage and corrosion during storage.

AMC 145.A.30 Management Personnel (MY)

Management Personnel are classified as follows:

The ACCOUNTABLE MANAGER (AM) (MSTAR 145.A.30(a)) is the person with the corporate authority to ensure that all maintenance required can be financed and carried out to the standard required by MSTAR 145.

The Nominated Personnel (MSTAR 145.A.30(b) and MSTAR 145.A.30(c))* shall be the group of personnel (or person) responsible for ensuring that the maintenance organisation complies with MSTAR 145. In any case these personnel should report to the Accountable Manager. This (ese) manager(s) may assign MSTAR 145 functions to other manager(s) working directly under their respective responsibility. In this case the nominated personnel (person) remains responsible for compliance with MSTAR 145.

The Deputy Nominated Personnel (MSTAR 145.A.30(b)(4) shall be the group of personnel (or persons) who are nominated via MSTAR Form 4 to deputise any particular nominated personnel in case of lengthy absence of the said person. The deputy nominated person is responsible for compliance with MSTAR 145 upon formal notification from the nominated person for the duration of the nominated persons absence.

Other Manager(s) (MSTAR AMC 145.A.30(b)(8) Depending either on the size of the maintenance organisation or on the decision of the Accountable Manager, the maintenance organisation may appoint additional managers for any MSTAR 145 function(s). This (ese) manager(s) shall report ultimately to the nominated personnel identified to be responsible for the related MSTAR 145 function(s) and therefore by definition are not to be considered themselves as nominated personnel. As a consequence a manager can be only assigned duties (not responsibilities) of the nominated personnel to whom they report.

The Responsible NDT Level III shall be the person designated by the maintenance organisation to ensure that personnel who carry out and/or control a continued airworthiness non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by DGTA.

Management personnel requiring a MSTAR Form 4. Based on the above definitions of management personnel, the following table summarises when a MSTAR Form 4 is required in order for the management personnel to be acceptable to DGTA.

MANAGEMENT PERSONNEL	MSTAR Form 4 Required	MSTAR Form 4 Not Required
Accountable Manager (MSTAR 145.A.30(a))		X
Nominated Personnel (Responsible and Quality Manager) (MSTAR 145.A.30(b) and MSTAR 145.A.30(c))*	X	
Safety Manager (MSTAR 145.A.65 and MSTAR SMS)		X
NDT Responsible Level III	X*	
Other Managers (MSTAR AMC 145.A.30(b)(8))		X
Deputy Nominated Personnel (MSTAR 145.A.30(b)(4))	X**	

* Form 4 not required when a member of the NMAA.

** The MOE procedure shall make clear who deputises for any particular nominated personnel in the case of lengthy absence of the said person. In any case it is the responsibility of the maintenance organisation to ensure that deputy personnel are nominated and approved by the NMAA via a MSTAR Form 4 prior to assuming the role of the nominated person.

AMC 145.A.30(a) Personnel requirements

With regard to the Accountable Manager, it is normally intended to mean the Chief Executive Officer or senior military commander of the maintenance organisation, who by virtue of position has overall (including in particular resource allocation) responsibility for running the maintenance organisation. The Accountable Manager may be the Accountable Manager for more than one organisation and is not required to be necessarily knowledgeable on technical matters as the Maintenance Organisation Exposition (MOE) defines the maintenance standards. When the Accountable Manager is not the Chief Executive Officer or senior military commander, the DGTA will need to be assured that such an Accountable Manager has direct access to the Chief Executive Officer or senior military commander and has a sufficiency of 'maintenance resources' allocation.

AMC 145.A.30(b) Personnel requirements (MY)

1. Dependent upon the size of the maintenance organisation, the MSTAR 145 functions may be subdivided under individual managers or combined in any number of ways. Where an AMO elects to have multiple Responsible Managers within their organisational structure, each managers responsibilities should be clearly defined with reference to the appropriate regulation to ensure there is no overlapping of responsibilities and that there is no dilution of responsibility or accountability by the number of Responsible Managers.

2. The maintenance organisation should have, dependent upon the extent of approval, a base maintenance manager, a line maintenance manager, a workshop manager and a quality manager, all of whom should report to the Accountable Manager.

3. The base maintenance manager is responsible for ensuring that all required base maintenance, plus any defect rectification carried out during base maintenance, is carried out to the design and quality standards specified in MSTAR 145.A.65(b). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of MSTAR 145.A.65(c).

4. The line maintenance manager is responsible for ensuring that all line maintenance required to be carried out including line defect rectification is carried out to the standards specified in MSTAR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of MSTAR 145.A.65(c).

5. The workshop manager is responsible for ensuring that all work on aircraft components is carried out to the standards specified in MSTAR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of MSTAR 145.A.65(c).

6. The quality manager's responsibility is specified in MSTAR 145.A.30(c).

7. Notwithstanding the example subparagraphs 2 – 6 titles, the maintenance organisation may adopt any title for the foregoing managerial positions but should identify to the DGTA the titles and persons chosen to carry out these functions.

8. Where an maintenance organisation chooses to appoint managers for all or any combination of the identified MSTAR 145 functions because of the size of the undertaking, it is necessary that these managers' report ultimately through either the base maintenance manager or line maintenance manager or workshop manager or quality manager, as appropriate, to the Accountable Manager.

Note: Certifying staff may report to any of the managers specified depending upon which type of control the maintenance organisation uses (for example licensed engineers/independent inspection/dual function supervisors etc.) as long as the quality compliance monitoring staff specified in MSTAR 145.A.65(c)(1) remain independent.

AMC 145.A.30(c) Personnel requirements

Monitoring the quality system includes requesting remedial action as necessary by the Accountable Manager and the nominated persons referred to in MSTAR 145.A.30(b).

AMC 145.A.30(d) Personnel requirements

1. 'Sufficient' means that the maintenance organisation employs or contracts/tasks competent staff, as detailed in the man-hour plan, of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organisational stability. For the purpose of meeting a specific operational necessity, a temporary increase of the proportion of contracted staff may be permitted to the maintenance organisation by the DGTA, in accordance with an approved procedure which should describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability. For the purpose of this subparagraph, employed means the person is directly employed as an individual by the maintenance organisation whereas contracted/tasked means the person is employed by another organisation or military unit and contracted/tasked by that organisation to the maintenance organisation. In the case of MOD/Industrial partnered

support arrangements, the MOD element of the maintenance organisation should be considered, for the purpose of this clause, as part of the industry workforce.

2. The maintenance man-hour plan should take into account all activities carried out outside the scope of the MSTAR 145 approval.

The planned absence (for training, vacations, etc.) should be considered when developing the man-hour plan.

3. The maintenance man-hour plan should relate to the anticipated maintenance work load except that when the maintenance organisation cannot predict such workload, due to the short term nature of its contracts/tasking or unpredictable variations in operational military tasking, then such a plan should be based upon the minimum maintenance workload needed for organisational viability. Maintenance work load includes all necessary work such as, but not limited to, planning, maintenance record checks, production of worksheets/cards in paper or electronic form, accomplishment of maintenance, inspection and the completion of maintenance records.

4. In the case of aircraft base maintenance, the maintenance man-hour plan should relate to the aircraft hangar visit plan as specified in AMC MSTAR 145.A.25(a).

5. In the case of aircraft component maintenance, the maintenance man-hour plan should relate to the aircraft component planned maintenance as specified in MSTAR 145.A.25(a)(2).

6. The quality monitoring compliance function man-hours should be sufficient to meet the requirement of MSTAR 145.A.65(c) which means taking into account AMC MSTAR 145.A.65(c). Where quality monitoring staff perform other functions, the time allocated to such functions needs to be taken into account in determining quality monitoring staff numbers.

7. The maintenance man-hour plan should be reviewed at least every 3 months and updated when necessary.

8. Significant deviation from the maintenance man-hour plan should be reported through the appropriate manager to the quality manager and the Accountable Manager for review. Significant deviation means more than a 25% shortfall in available man-hours during a calendar month for any one of the functions specified in MSTAR 145.A.30(d), or an inability to achieve military tasking due to personnel shortfalls.

AMC 1 145.A.30(e) Personnel requirements

Competence should be defined as a measurable skill or standard of performance, knowledge and understanding, taking into consideration attitude and behaviour.

The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors, certifying staff and support staff, whether employed or contracted, are assessed for competence before unsupervised work commences and competence is controlled on a continuous basis.

Competence should be assessed by evaluation of:

- on-the-job performance and/or testing of knowledge by appropriately qualified personnel; and
- records for basic, organisational, and/or product type and differences training; and
- experience records.

Validation of the above could include a confirmation check with the organisation(s) that issued such document(s). For that purpose, experience/training may be recorded in a document such as a log book or based on the suggested template in GM 3 to MSTAR 145.A.30(e).

As a result of this assessment, an individual's qualification should determine:

- which level of ongoing supervision would be required or whether unsupervised work could be permitted.

- whether there is a need for additional training.

A record of the qualification and competence assessment should be kept.

This should include copies of all documents that attest to qualification, such as the SAML and/or any authorisation held, as applicable.

For a proper competence assessment of its personnel, the maintenance organisation should consider that:

1. In accordance with the job function, adequate initial and recurrent training should be provided and recorded to ensure continued competence so that it is maintained throughout the duration of employment/contract.

2. All staff should be able to demonstrate knowledge of and compliance with the maintenance organisation's procedures, as applicable to their duties.

3. All staff should be able to demonstrate an understanding of human factors and human performance issues in relation with their job function and be trained as per AMC 2 to MSTAR 145.A.30(e).

4. To assist in the assessment of competence and to establish the training needs analysis, job descriptions are recommended for each job function in the maintenance organisation. Job descriptions should contain sufficient criteria to enable the required competence assessment.

5. Criteria should allow the assessment to establish that, among others (titles might be different in each organisation):

- Managers are able to properly manage the work output, processes, resources and priorities described in their assigned duties and responsibilities in a safe compliant manner in accordance with requirements and maintenance organisation procedures.

- Planners are able to interpret maintenance requirements into maintenance tasks, and have an understanding that they have no authority to deviate from the maintenance data.

- Supervisors are able to ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the approved maintenance data, then such problems should be reported to the MSTAR 145.A.30(c) person for appropriate action. In addition, for those supervisors, who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.

- Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and should notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.

- Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data. They should be able to communicate with supervisors and report accurately when necessary.

- Support staff are able to determine that relevant maintenance tasks have been carried out to the required standard.

- Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.

- Quality audit staff are able to monitor compliance with MSTAR 145 identifying noncompliance in an effective and timely manner so that the Approved Maintenance Organisation (AMO) may remain in compliance with MSTAR 145.

Competence assessment should be based upon the procedure specified in GM 2 to MSTAR 145.A.30(e).

AMC 2 145.A.30(e) Personnel requirements

In respect to the understanding of the application of human factors and human performance issues, all maintenance organisation personnel should have received an initial and continuation human factors training. This should concern to a minimum:

- Nominated persons, managers, supervisors;

- Certifying staff, support staff and mechanics;

- Technical support personnel such as planners, engineers, technical record staff;

- Quality control/assurance staff;

- Specialised services staff;

- Human factors staff/ human factors trainers;

- Store department staff, purchasing department staff;

- Ground equipment operators;

- Contracted/tasked staff in the above categories.

1. Initial human factors training should cover all the topics of the training syllabus specified in GM MSTAR 145.A.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the maintenance organisation. The syllabus may also be adjusted to meet the particular nature of work for each function within the maintenance organisation. For example:

- small maintenance organisations not working in shifts may cover in less depth subjects related to teamwork and communication;

- planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.

All personnel, including personnel being recruited from any other organisation should receive initial human factors training compliant with the maintenance organisation's training standards prior to commencing actual job function, unless their competence assessment justifies that there is no need for such training. Newly directly employed personnel working under direct supervision may receive training within 6 months after joining the maintenance organisation.

2. The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary.

Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information on human errors in maintenance available to the maintenance organisation.

3. Human factors training may be conducted by the maintenance organisation itself, or independent trainers, or any training organisations acceptable to the DGTA.

4. The human factors training procedures should be specified in the MOE.

AMC 3 145.A.30(e) Personnel requirements

Additional training in fuel tank safety as well as associated inspection standards and maintenance procedures should be required for maintenance organisations' technical personnel, especially technical personnel involved in the compliance of Critical Design Configuration Control Limitations (CDCCL) tasks (if applicable).

Guidance is provided for training to maintenance organisation personnel in Appendix IV to AMC MSTAR 145.A.30(e).

AMC 4 145.A.30(e) Personnel requirements

Competence assessment should include the verification for the need of additional EWIS training when relevant.

(**Note:** EASA guidance for an EWIS training programme to maintenance organisation personnel can be found in EASA AMC 20-22.)

GM 1 145.A.30(e) Personnel requirements (Training syllabus for initial human factors training)

The training syllabus below identifies the topics and subtopics to be addressed during the human factors training.

The maintenance organisation may combine, divide, change the order of any subject of the syllabus to suit its own needs, as long as all subjects are covered to a level of detail appropriate to the maintenance organisation and its personnel.

Some of the topics may be covered in separate training (health and safety, management, supervisory skills, etc.) in which case duplication of training is not necessary.

Where possible, practical illustrations and examples should be used, especially accident and incident reports.

Topics should be related to existing legislation, where relevant. Topics should be related to existing guidance/advisory material, where relevant (e.g. ICAO Human Factors (HF) Digests and Training Manual and appropriate military training).
Topics should be related to maintenance engineering where possible; too much unrelated theory should be avoided.

1. General/Introduction to human factors

    1.1 The need to take human factors into account;

    1.2 Statistics;

    1.3 Incidents attributable to human factors/human error;

    1.4 “Murphy’s Law”.

2. Safety Culture/Organisational factors

    2.1 “Culture” issues.

3. Human errors

    3.1 Error models and theories;

    3.2 Types of errors in maintenance tasks;

    3.3 Violations;

3.4 Implications of errors (i.e. accidents);

3.5 Avoiding and managing errors;

3.6 Human reliability.

4. Human performance & limitations

4.1 Vision;

4.2 Hearing;

4.3 Information-processing;

4.4 Attention and perception;

4.5 Situational awareness;

4.6 Memory;

4.7 Claustrophobia and physical access;

4.8 Motivation and de-motivation;

4.9 Fitness/Health;

4.10 Stress: domestic and work related;

4.11 Workload management (overload and underload);

4.12 Sleep and fatigue;

4.13 Alcohol, medication, drug abuse;

4.14 Physical work;

4.15 Repetitive tasks/complacency.

5. Environment

5.1 Peer pressure;

5.2 Stressors;

5.3 Time pressure and deadlines;

5.4 Workload;

5.5 Shift Work;

5.6 Noise and fumes;

5.7 Illumination;

5.8 Climate and temperature;

5.9 Motion and vibration;

5.10 Complex systems;

5.11 Hazards in the workplace, recognising and avoiding hazards, dealing with emergencies;

5.12 Lack of manpower;

5.13 Distractions and interruptions;

5.14 Military environment and other military factors/Operational pressures.

6. Procedures, information, tools and practices

6.1 Visual Inspection;

6.2 Work logging and recording;

6.3 Procedure — practice/mismatch/norms;

6.4 Technical documentation — access and quality.

7. Communication

7.1 Shift/Task handover;

7.2 Dissemination of information;

7.3 Cultural differences;

7.4 Within and between teams.

8. Teamwork

8.1 Responsibility: individual and group;

8.2 Management, supervision and leadership;

8.3 Decision making.

9. Professionalism and integrity

9.1 Keeping up to date; currency;

9.2 Error provoking behaviour;

9.3 Assertiveness.

10. Maintenance organisation's HF program

10.1 Reporting errors;

10.2 Disciplinary policy;

10.3 Error investigation;

10.4 Action to address problems;

10.5 Feedback.

GM 2 145.A.30(e) Competence assessment procedure

The maintenance organisation should develop a procedure describing the process of competence assessment of personnel. The procedure should specify:

- persons responsible for this process,
- when the assessment should take place,
- credits from previous assessments,
- validation of qualification records,
- means and methods for the initial assessment,
- means and methods for the continuous control of competence including feedback on personnel performance,
- competences to be observed during the assessment in relation with each job function,
- actions to be taken when assessment is not satisfactory,
- recording of assessment results.

For example, according to the job functions and the scope, size and complexity of the maintenance organisation, the assessment may consider the following (the table is not exhaustive):

	Manager	Planners	Supervisor	Certifying Staff And Support Staff	Mechanics	Specialised Service Staff	Quality Audit Staff
Knowledge of applicable officially recognised standards						X	X

	Manager	Planners	Supervisor	Certifying Staff And Support Staff	Mechanics	Specialised Service Staff	Quality Audit Staff
Knowledge of auditing techniques: planning, conducting and reporting							X
Knowledge of human factors, human performance and limitations	X	X	X	X	X	X	X
Knowledge of logistics processes	X	X	X				
Knowledge of maintenance organisation capabilities, privileges and limitations	X	X	X	X		X	X
Knowledge of MSTAR M, MSTAR 145 and any other relevant regulations	X	X	X	X			X
Knowledge of relevant parts of the MOE and procedures	X	X	X	X	X	X	X
Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects		X	X	X	X	X	
Knowledge of safety risks linked to the working environment	X	X	X	X	X	X	X
Knowledge on CDCCL when relevant	X	X	X	X	X	X	X
Knowledge on EWIS when relevant	X	X	X	X	X	X	X
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X
Understanding of his/her own human performance and limitations	X	X	X	X	X	X	X
Understanding of personnel authorisations and limitations	X	X	X	X	X	X	X
Understanding critical task		X	X	X	X		X
Ability to compile and control completed work cards		X	X	X			
Ability to consider human performance and limitations.	X	X	X	X			X

	Manager	Planners	Supervisor	Certifying Staff And Support Staff	Mechanics	Specialised Service Staff	Quality Audit Staff
Ability to determine required qualifications for task performance		X	X	X			
Ability to identify and rectify existing and potential unsafe conditions			X	X	X	X	X
Ability to manage third parties involved in maintenance activity		X	X				
Ability to confirm proper accomplishment of maintenance tasks			X	X	X	X	
Ability to identify and properly plan performance of critical task		X	X	X			
Ability to prioritise tasks and report discrepancies		X	X	X	X		
Ability to process the work requested by the operator		X	X	X			
Ability to promote the safety and quality policy	X		X				
Ability to properly process removed, uninstalled and rejected parts			X	X	X	X	
Ability to properly record and sign for work accomplished			X	X	X	X	
Ability to recognise the acceptability of parts to be installed prior to fitment				X	X		
Ability to split complex maintenance tasks into clear stages		X					
Ability to understand work orders, work cards and refer to and use applicable maintenance data		X	X	X	X	X	X
Ability to use information systems	X	X	X	X	X	X	X
Ability to use, control and be familiar with required tooling and/or equipment			X	X	X	X	
Adequate communication and literacy skills	X	X	X	X	X	X	X
Analytical and proven auditing skills (for example, objectivity, fairness, open-mindedness, determination, …)							X

	Manager	Planners	Supervisor	Certifying Staff And Support Staff	Mechanics	Specialised Service Staff	Quality Audit Staff
Maintenance error investigation skills							X
Resources management and production planning skills	X	X	X				
Teamwork, decision-making and leadership skills	X		X				

GM 3 145.A.30(e) Template for recording experience/training

The following template may be used to record the professional experience gained in an maintenance organisation and the training received and be considered during the competence assessment of the individual in another maintenance organisation.

Aviation Maintenance personnel experience credential		
Name Given name Address Telephone E-mail		
Independent worker □ Trade Group: airframe □ engine □ electric □avionics □ other (specify) □.....		
Employer's details (when applicable) Name Address Telephone		
Maintenance organisation details Name Address Telephone Approval Number Period of employment From: To:		
Domain of employment		
□ Planning	□ Engineering	□ Technical records
□ Store department	□ Purchasing	

Mechanics/Technician

☐ Line Maintenance ☐ Base Maintenance ☐ Component Maintenance
☐ Servicing ☐ Removal/Installation ☐ Testing/inspection
☐ Scheduled Maintenance ☐ Inspection ☐ Repair
☐ Trouble-shooting ☐ Trouble-shooting ☐ Overhaul
☐ Repair ☐ Re-treatment
☐ Reassembly

A/C type A/C type Component type

Certifying Staff and support staff

☐ Cat. A ☐ Cat. B1 ☐ Cat. B2 ☐ Cat. C ☐ Component Type ☐ Other

(e.g. NDT) A/C Type A/C Type A/C Type A/C Type Component Type
Specify

Certification Privileges: Yes ☐ / No ☐

☐ Specialised Services Speciality *(NDT, composites, welding, etc.)*:

☐ Skilled personnel Speciality *(sheet metal, structures, wireman, upholstery, etc.)*:

☐ Ground equipment operation

☐ Quality control ☐ Quality assurance ☐ Training

Total number of check boxes ticked:	

Details of employment

Training received from the contracting organisation Date Nature of training

Certified by:

Name: Date:
Position: Signature:
Contact details:

Advisory note: A copy of the present credential should be kept for at least 3 years from its issuance by the maintenance organisation.

AMC 145.A.30(f) Personnel requirements

1. NOT APPLICABLE.

2. Appropriately qualified means to levels of qualification and certification as defined by the European Standard EN 4179 (or national equivalent qualification) dependent upon the non-destructive testing function to be carried out.

Note: Although EN4179 is the primary standard referenced for NDT qualification and certification, NAS410, ASTM and PCN are also accepted standards for the performance of NDT activities.

3. Notwithstanding the fact that Level 3 personnel (or national equivalent qualification) may be qualified via EN 4179 to establish and authorise methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the (Military) Type Certificate Holder/manufacturer or DGTA in the form of continued airworthiness data, such as in non-destructive test manuals or Service Bulletins, unless the manual or Service Bulletin expressly permits such deviation.

4. Notwithstanding the general references in EN 4179 to a national aerospace non-destructive testing (NDT) board, all examinations should be conducted by personnel or organisations under the general control of such a board or as specified by the DGTA. In the absence of a national aerospace NDT board, the aerospace NDT board of another pMS should be used, as defined by the DGTA.

By way of exception to paragraph 4, the conduct and/or oversight of NDT examinations can be performed by an Authority approved (MSTAR Form 4) NDT Responsible Level 3 appointment holder, without being under the general control of a national aerospace NDT board.

5. Moved to GM 145.A.30(f) Personnel requirements.

6. It should be noted that new methods are being and will be developed, which are not specifically addressed by EN 4179. Until the time this agreed standard is established, such methods should be carried out in accordance with the particular equipment manufacturer’s recommendations including any training and examination process to ensure competence of the personnel in the process.

7. Any maintenance organisation that carries out NDT should establish NDT specialist qualification procedures detailed in the MOE and accepted by the DGTA.

8. Boroscoping and other techniques such as manual tap testing are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organisation should establish an MOE procedure accepted by the DGTA to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by MSTAR 145 are not listed in MSTAR 145 Appendix II under class rating D1.

9. The referenced standards, methods, training and procedures should be specified in the MOE.

10. Any such personnel who intend to carry out and/or control a non-destructive test for which they were not qualified prior to the effective date of MSTAR 145 should qualify for such nondestructive test in accordance with EN 4179 (or national equivalent qualification).

11. In this context officially recognised standard means those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the DGTA.

GM 145.A.30(f) Personnel requirements

Particular non-destructive test means any one or more of the following; Penetrant Testing (PT), Magnetic Testing (MT), Eddy current Testing (ET), Ultrasonic Testing (UT), Radiographic Testing (RT), Thermographic Testing (TT) and Shearographic Testing (ST) methods.

AMC1 145.A.30(f) Personnel requirements (MY)

For the performance of composite repairs, SAE AIR4938 is an accepted standard for qualifying personnel to carry out repairs.

AMC2 145.A.30(f) Personnel requirements (MY)

For the performance of aircraft manual welding repairs, a CASA welding authority granted in accordance with CAAP 33-1(1) is an appropriate qualification.

AMC 145.A.30(g) Personnel requirements

1. For the purposes of MSTAR 66.A.20(a)(1) and MSTAR 66.A.20(a)(3)(ii) personnel, minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the Aircraft Maintenance Programme (AMP). For AMPs that do not specify a weekly check, the DGTA should determine the most significant check that is considered equivalent to a weekly check.

2. Typical tasks permitted after appropriate task training to be carried out by the MSTAR 66.A.20(a)1) and the MSTAR 66.A.20(a)(3)(ii) personnel for the purpose of these personnel issuing an aircraft Certificate of Release to Service (CRS) as specified in MSTAR 145.A.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:

a. Replacement of wheel assemblies.

b. Replacement of wheel brake units.

c. Replacement of emergency equipment.

d. Replacement of ovens, boilers and beverage makers.

e. Replacement of internal and external lights, filaments and flash tubes.

f. Replacement of windscreen wiper blades.

g. Replacement of passenger and cabin crew seats, seat belts and harnesses.

h. Closing of cowlings and refitment of quick access inspection panels.

i. Replacement of toilet system components but excluding gate valves.

j. Simple repairs and replacement of internal compartment doors and placards but excluding doors forming part of a pressure structure.

k. Simple repairs and replacement of overhead storage compartment doors and cabin furnishing items.

l. Replacement of static wicks.

m. Replacement of aircraft main and APU aircraft batteries.

n. NOT APPLICABLE.

o. Routine lubrication and replenishment of all system fluids and gases.

p. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's Minimum Equipment List (MEL) where relevant or national equivalent procedure, where such de-activation is agreed by the DGTA as a simple task.

q. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers or the use of special tools.

r. Removal and installation of simple internal medical equipment.

s. Any other task agreed by the DGTA as a simple task for a particular aircraft type. This may include defect deferment when all the following conditions are met:

- There is no need for troubleshooting; and
- The task is in the MEL; and
- The maintenance action required by the MEL is agreed by the DGTA to be simple.

In the particular case of helicopters, and in addition to the items above, the following:

t. Removal and installation of external cargo provisions (i.e. external hook, mirrors) other than the hoist.

u. Removal and installation of quick release external cameras and search lights.

v. Removal and installation of emergency float bags, not including the bottles.

w. Removal and installation of external doors fitted with quick release attachments.

x. Removal and installation of snow pads/skid wear shoes/slump protection pads.

Any task on a military specific system agreed by the DGTA as a simple task for a particular aircraft type.

No task which requires troubleshooting should be part of the authorised maintenance actions. Release to service after rectification of deferred defects should be permitted as long as the task is listed above.

3. The requirement of having appropriate aircraft rated certifying staff qualified as Category B1 or B2 as appropriate, in the case of aircraft line maintenance does not imply that the maintenance organisation must have B1 or B2 personnel at every line station. The MOE should have a procedure on how to deal with defects requiring B1 or B2 certifying staff.

4. The DGTA may accept that in the case of aircraft line maintenance a maintenance organisation has only B1 or B2 certifying staff, as appropriate, provided that the DGTA is satisfied that the scope of work, as defined in the MOE, does not need the availability of all B1 or B2 certifying staff. Special attention should be taken to clearly limit the scope of scheduled and nonscheduled line maintenance (defect rectification) to only those tasks that can be certified by the available certifying staff Category.

AMC 145.A.30(h) Personnel requirements

In accordance with MSTAR 145.A.30(h) and MSTAR 145.A.35, the qualification requirements (SAML, Military Aircraft Type Ratings, recent experience and continuation training) are identical for certifying staff and for support staff. The only difference is that support staff cannot hold certification privileges when performing this role since during base maintenance the release to service will be issued by Category C certifying staff. Nevertheless, the maintenance organisation may use as support staff (for base maintenance) persons who already hold certification privileges for line maintenance.

AMC 145.A.30(j)(4) Personnel requirements

1. For the issue of a limited certification authorisation the aircraft commander or flight engineer should hold either a valid pilot or flight engineer licence/national military qualification (or civilian equivalent) acceptable to the DGTA on the aircraft type. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of MSTAR 145.A.30(e) and associated AMC and GM. Such procedures should include as a minimum:

a. Completion of adequate national military airworthiness regulations training; and

b. Completion of adequate task training for the specific task on the aircraft. The task training should be of sufficient duration to ensure that the individual has a thorough understanding of the task to be completed and should involve training in the use of associated maintenance data; and

c. Completion of the procedural training as specified in MSTAR 145.

The above procedures should be specified in the MOE and be accepted by the DGTA.

2. (i) Typical tasks that may be certified and/or carried out by the aircraft commander holding a valid licence/national military pilot qualification (or civilian equivalent) acceptable to the DGTA on the aircraft type are minor maintenance or simple checks included in the following list:

a. Replacement of internal lights, filaments and flash tubes.

b. Closing of cowlings and refitment of quick access inspection panels.

c. Simple configuration changes (e.g. stretcher fit, FLIR, doors, photographic equipment
etc.)

d. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers that are easily accessible but not requiring the use of special tools.

e. Any check/replacement involving simple techniques consistent with this AMC and as agreed by the DGTA.

(ii) Holders of a valid national military flight engineer licence/qualification, or equivalent, acceptable to the DGTA, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.

In addition to paragraph 2(i)(a) to (e), other typical minor maintenance or simple defect rectification tasks that may be carried out are included in the following list:

a. Replacement of wheel assemblies.

b. Replacement of simple emergency equipment that is easily accessible.

c. Replacement of ovens, boilers and beverage makers.

d. Replacement of external lights.

e. Replacement of passenger and cabin crew seats, seat belts and harnesses.

f. Simple replacement of overhead storage compartment doors and cabin furnishing items.

g. Replacement of static wicks.

h. Replacement of aircraft main and APU aircraft batteries.

i. NOT APPLICABLE.

j. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's MEL where relevant or a national equivalent procedure, where such de-activation is agreed by the DGTA as a simple task.

k. Re-setting of tripped circuit breakers under the guidance of maintenance control.

l. Any other task agreed by the DGTA as a simple task for a particular aircraft type.

3. The authorisation should have a finite life of twelve months subject to satisfactory re-current training on the applicable aircraft type.

GM 145.A.30(j)(4) Personnel requirements (Flight crew)

For military aircrew, the theoretical knowledge is covered throughout flying training and, for specific aircraft types, during operational conversion training for the relevant aircraft type. Thereafter, the individual's level of knowledge is monitored by the pMS' aircrew standards organisation for that specific type.

AMC 145.A.30(j)(5) Personnel requirements

1. For the purposes of this subparagraph "unforeseen" means that the aircraft grounding could not reasonably have been predicted by the Operating Organisation because the defect was unexpected due to being part of a hitherto reliable system.

2. A one-off authorisation should only be considered for issue by the maintenance organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The maintenance organisation should assess each situation individually prior to the issuance of a one-off authorisation. The maintenance organisation that issues this one-off authorisation retains responsibility for all work performed.

3. A one-off authorisation should not be issued where the level of certification required could exceed the knowledge and experience level of the person it is issued to. In all cases, due consideration should be given to the complexity of the work involved and the availability of required tooling and/or test equipment needed to complete the work.

AMC 145.A.30(j)(5)(i) Personnel requirements

In those situations where the requirement for a one-off authorisation to issue a CRS for a task on an aircraft type for which certifying staff does not hold a type-rated authorisation has been identified, the following procedure is recommended:

1. Flight crew should communicate full details of the defect to their maintenance organisation. If necessary, the maintenance organisation should consider the issue of a one-off authorisation.

2. When issuing a one-off authorisation, the maintenance organisation should verify that:

a. Full technical details relating to the work required to be carried out have been established and passed on to the certifying staff; and

b. The maintenance organisation has an approved procedure in place for coordinating and controlling the total maintenance activity undertaken at the location under the authority of the one-off authorisation; and

c. The person to whom a one-off authorisation is issued has been provided with all the necessary information and guidance relating to maintenance data and any special technical instructions associated with the specific task undertaken. A detailed step by step worksheet has been defined by the maintenance organisation, communicated to the oneoff authorisation holder; and

d. The person holds authorisations of equivalent level and scope on other aircraft type of similar technology, construction and systems.

3. The one-off authorisation holder should sign-off the detailed step by step worksheet when completing the work steps. The completed tasks should be verified by visual examination and/or normal system operation upon return to an appropriately approved MSTAR 145 maintenance facility.

AMC 145.A.30(j)(5)(ii) Personnel requirements

This paragraph addresses staff not employed by the maintenance organisation who meet the requirements of MSTAR 145.A.30(j)(5). In addition to the items listed in AMC MSTAR 145.A.30(j)(5)(i), paragraph 1, 2(a), (b) and (c) and 3 the maintenance organisation may issue such a one-off authorisation subject to full qualification details relating to the proposed certifying personnel being verified by the maintenance organisation and made available at the location.

AMC 145.A.35(a) Certifying staff and support staff

1. Holding a SAML with the relevant Military Aircraft Type/Group Rating, or a national qualification in the case of components, does not mean by itself that the holder is qualified to be authorised as certifying staff and/or support staff. The maintenance organisation is responsible to assess the competence of the holder for the scope of maintenance to be authorised.

2. The sentence *"the maintenance organisation shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated maintenance organisation procedures"* means that the person has received training and has been successfully assessed on:

- the type of aircraft or component;
- the differences on:
  - the particular model/variant;
  - the particular configuration.

The maintenance organisation should specifically ensure that the individual competencies have been established with regard to:

- relevant knowledge, skills and experience in the product type and configuration to be maintained, taking into account the differences between the generic Military Aircraft Type Rating training that the person received and the specific configuration of the aircraft to be maintained;

- appropriate attitude towards safety and observance of procedures;

- knowledge of the associated maintenance organisation and Operating Organisation procedures (i.e. handling and identification of components, MEL use, Aircraft Technical Log use, independent checks, etc.).

3. Some special maintenance tasks may require additional specific training and experience, including but not limited to:

- in-depth troubleshooting;

- very specific adjustment or test procedures;

- rigging;

- engine run-up, starting and operating the engines, checking engine performance characteristics, normal and emergency engine operation, associated safety precautions and procedures;

- extensive structural/system inspection and repair;

- other specialised maintenance required by the AMP.

For engine run-up training, simulators and/or real aircraft should be used.

4. The satisfactory assessment of the competence should be conducted in accordance with a procedure approved by the DGTA (item 3.4 of the MOE, as described in AMC MSTAR
145.A.70(a)).

5. The maintenance organisation should hold copies of all documents that attest the competence and recent experience for the period described in MSTAR 145.A.35(j).

Additional information is provided in AMC MSTAR 66.A.20(b)3.

AMC 145.A.35(b) Certifying staff and support staff

Moved to MSTAR 145.A.35(b).

AMC 1 145.A.35(c) Certifying staff and support staff

For the interpretation of *"6 months of actual relevant aircraft maintenance experience in any consecutive 2-year period"*, the provisions of AMC MSTAR 66.A.20(b)2 are applicable.

AMC 2 145.A.35(c) Certifying staff and support staff

Where unpredictable variations in operational military tasking require the use of personnel not meeting the six-month experience requirement, this should be approved by the Accountable Manager on a temporary basis only with the necessary precaution/mitigation put in place and both the Operating Organisation/CAMO for which work is being conducted and the DGTA should be informed.

AMC 145.A.35(d) Certifying staff and support staff

1. Continuation training is a two way process to ensure that certifying staff and support staff remain current in terms of procedures, human factors and technical knowledge and that the maintenance organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, the maintenance organisation should consider the involvement of the quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.

2. Continuation training should cover changes in relevant requirements such as MSTAR 145, changes in maintenance organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training should reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the maintenance organisation in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.

3. Continuation training should be of sufficient duration in each 2 year period to meet the intent of MSTAR 145.A.35(d) and may be split into a number of separate elements. MSTAR 145.A.35(d) requires such training to keep certifying staff and support staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring quality. Therefore sufficient duration should be related to relevant quality audit findings and other internal/external sources of information available to the maintenance organisation on human errors in maintenance. This means that in the case of a maintenance organisation that maintains aircraft with few relevant quality audit findings, continuation training could be limited to days rather than weeks, whereas a similar maintenance organisation with a number of relevant quality audit findings, such training may take several weeks. For an maintenance organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engines may require a few days of such training. The content of continuation training should be related to relevant quality audit findings and it is recommended that such training is reviewed at least once in every 24 month period.

4. The method of training is intended to be a flexible process and could, for example, include an MSTAR 147 continuation training course, aeronautical college courses, internal short duration courses, seminars, etc. The elements, general content and length of such training should be specified in the MOE unless such training is undertaken by an MSTAR 147 Maintenance Training Organisation (MTO) when such details may be specified under the approval and cross referenced in the MOE.

AMC 145.A.35(e) Certifying staff and support staff

The programme for continuation training should list all certifying staff and support staff and when training will take place, the elements of such training and an indication that it was carried out reasonably on time as planned. Such information should subsequently be transferred to the certifying staff and support staff record as required by MSTAR 145.A.35(j).

AMC 145.A.35(f) Certifying staff and support staff

As stated in MSTAR 145.A.35(f), except where any of the unforeseen cases of MSTAR 145.A.30(j)(5) applies, all prospective certifying staff and support staff should be assessed for competence related to their intended duties in accordance with AMCs 1, 2, 3 and 4 to MSTAR 145.A.30(e), as applicable.

AMC 145.A.35(j) Certifying staff and support staff

1. The following minimum information as applicable should be kept on record in respect of each certifying staff and support staff:

a. Name

b. Rank/Grade and Service Number (if applicable)

c. Date of Birth

d. Basic Training

e. Military Aircraft Type Training/Task Training

f. Continuation Training

g. Experience

h. Qualifications relevant to the authorisation

i. Scope of the authorisation

j. Date of first issue of the authorisation

k. If appropriate – expiry date of the authorisation

l. Identification Number of the authorisation

m. Security clearance (where applicable).

2. The record may be kept in any format and should be controlled by the maintenance organisation.

3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.

4. The DGTA or qualified entity acting on behalf of the DGTA is to be considered as an
'authorised person' when investigating the records system for initial and continued approval or when the DGTA has cause to doubt the competence of a particular person.

AMC 145.A.35(n) Certifying staff and support staff

1. It is the responsibility of the AMO issuing the Category A certifying staff authorisation to ensure that the task training received by this person covers all the tasks to be authorised. This is particularly important in those cases where the task training has been provided by an MSTAR 147 MTO or by an AMO different from the one issuing the authorisation.

2. "Appropriately approved in accordance with MSTAR 147" means an MTO holding an approval to provide Category A task training for the corresponding aircraft type.

3. "Appropriately approved in accordance with MSTAR 145" means an AMO holding a maintenance organisation approval for the corresponding aircraft type.

AMC 145.A.35(o) Certifying staff and support staff

1. The privilege for a Category B2 SAML holder to release minor scheduled line maintenance and simple defect rectification in accordance with MSTAR 66.A.20(a)(3)(ii) can only be granted by the AMO where the SAML holder is employed/contracted after meeting all the requirements specified in MSTAR 145.A.35(o). This privilege cannot be transferred to another maintenance organisation.

2. When a Category B2 SAML holder already holds a certifying staff authorisation containing minor scheduled line maintenance and simple defect rectification for a particular aircraft type, new tasks relevant to Category A can be added to that type without requiring another 6 months of experience. However, task training (theoretical plus practical hands-on) and examination/assessment for these additional tasks is still required.

3. When the certifying staff authorisation intends to cover several aircraft types, the experience may be combined within a single 6-month period.
For the addition of new aircraft types to the certifying staff authorisation, another 6 months should be required unless the aircraft is considered similar per AMC MSTAR 66.A.20(b)2 to the one already held.

4. The term "6 months of experience" can include either full-time employment or part-time employment. The important aspect is that the person has been involved during a period of 6 months (not necessarily every day) in those tasks which are going to be part of the authorisation.

GM 145.A.35(o) Certifying staff and support staff

'Unless approved otherwise by the DGTA' in this context means that the requirement can be waived by the DGTA in the case of military personnel that already hold this privilege when they are posted from one AMO to another.

AMC 145.A.40(a) Equipment, tools and material

Once the applicant for approval has determined the intended scope of approval for consideration by the DGTA, it should be necessary to show that all tools and equipment, as specified in the maintenance data, can be made available when needed. All such tools and equipment that require to be controlled in terms of servicing or calibration by virtue of being necessary to measure specified dimensions and torque figures etc, should be clearly identified and listed in a control register including any personal tools and equipment that the maintenance organisation agrees can be used.

AMC 145.A.40(b) Equipment, tools and material

1. The control of these tools and equipment requires that the maintenance organisation has a procedure to inspect/service and, where appropriate, calibrate such items on a regular basis and indicate to users that the item is within any inspection or service or calibration time-limit. A clear system of labelling all tooling, equipment and test equipment is therefore necessary giving information on when the next inspection or service or calibration is due and if the item is unserviceable for any other reason where it may not be obvious. A register should be maintained for all precision tooling and equipment, together with a record of calibrations and standards used.

2. Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions unless approved otherwise by the DGTA.

3. In this context, officially recognised standard means those standards established or published by an official body, whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the DGTA.

AMC 145.A.42(a) Acceptance of components

1. A document equivalent to an MSTAR Form 1 may be:

   a. NOT APPLICABLE.

   b. NOT APPLICABLE.

   c. NOT APPLICABLE.

   d. NOT APPLICABLE.

   e. NOT APPLICABLE.

   f. A Form 1 (or acceptable through Recognition by the DGTA).

g. A national equivalent document recognized by the DGTA as declaring an item's serviceability and airworthiness.

h. A release document issued by an organisation accepted by the DGTA.

2. See AMC MSTAR 145.A.42(a)4 and AMC MSTAR 145.A.42(a)5.

GM 145.A.42(a) Acceptance of components

The reason that the EASA Form 1 must be issued by an EASA Part 145 maintenance organisation, not an EASA Part M Subpart F approved organisation is that a Subpart F organisation should not issue parts for 'complex motor-powered' or 'CAT' aircraft. Military aircraft are considered equivalent to 'complex motor-powered' aircraft and 'CAT' aircraft.

AMC 145.A.42(a)2 Acceptance of components (MY)

The maintenance organisation performing maintenance should ensure proper identification of any unserviceable components.

The unserviceable status of the component should be clearly declared on a tag or other suitable means together with the component identification data and any information useful to define actions necessary to be taken. Such information should state, as applicable, in-service times, maintenance status, preservation status, failures, defects or malfunctions reported or detected, exposure to adverse environmental conditions or if the component has been involved in or affected by an accident/incident. Means should be provided to prevent unwanted separation of this tag from the component.

Procedures shall be defined by the organisation describing the decision process for the status of unserviceable components. This procedure shall identify at least the following:

a. role and responsibilities of the persons managing the decision process;

b. description of the decision process to choose between maintaining, storing or mutilating a component;

c. traceability of decision.

AMC 145.A.42(a)3 Acceptance of components

A maintenance organisation may choose, in consultation with the CAMO/Operating Organisation, to release an unsalvageable component for legitimate non-flight uses, such as for training and education, research and development. In such instances, mutilation may not be appropriate. The following methods should be used to prevent the component re-entering the aviation supply system:

a. permanently marking or stamping the component, as "NOT SERVICEABLE." (ink stamping is not an acceptable method);

b. removing original part number identification;

c. removing data plate identification;

d. maintaining a tracking or accountability system, by serial number or other individualised data, to record transferred unsalvageable aircraft component;

e. including written procedures concerning disposal of such components in any agreement or contract transferring such components.

Note: Unsalvageable components should not be released to any person or organisation that is known to return unsalvageable components back into the aviation supply system, due to the potential safety threat. Information about such organisations can be found, for example, in FAA Unapproved Parts Notifications, FAA Special Airworthiness Bulletins or EASA Safety Information Bulletins.

AMC 145.A.42(a)3(i) Acceptance of components (MY)

Once components or materials have been identified as unsalvageable, the organisation should establish secure areas in which to segregate such items and to prevent unauthorised access. Unsalvageable components should be managed through a procedure to ensure that these components receive the appropriate final disposal. The person responsible for the implementation of this procedure should be identified.

AMC 145.A.42(a)3(ii) Acceptance of components

1. Mutilation should be accomplished in such a manner that the components become permanently unusable for their original intended use. Mutilated components should not be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and re-threading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

2. Mutilation may be accomplished by one or a combination of the following procedures:

a. grinding,

b. burning,

c. removal of a major lug or other integral feature,

d. permanent distortion of parts,

e. cutting a hole with a cutting torch or saw,

f. melting,

g. sawing into many small pieces,

h. any other method accepted by the DGTA on a case-by-case basis.

3. The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:

a. stamping or vibro-etching,

b. spraying with paint,

c. small distortions, incisions or hammer marks,

d. identification by tag or markings,

e. drilling small holes,

f. sawing in two pieces only.

4. Since manufacturers producing approved aircraft components should maintain records of serial numbers for 'retired' certified life-limited or other critical components, the organisation that mutilates a component should inform the original manufacturer unless directed otherwise by the DGTA.

AMC 145.A.42(a)4 Acceptance of components

STANDARD PARTS

1. For a definition of 'Standard Parts' see glossary.

2. Documentation accompanying standard parts should clearly relate to the particular parts and contain a conformity statement plus both the manufacturing and supplier source (a Certificate of Conformity is sufficient). Some material is subject to special conditions such as storage conditions or life limitations, etc., and this should be included in the documentation and/or material packaging.

3. An EASA/MSTAR Form 1 or equivalent is not normally issued, and therefore, none should be expected.

AMC 145.A.42(a)5 Acceptance of components

a. Consumable material is any material which is only used once, such as lubricants, cements, compounds, paints, chemicals, dyes, and sealants, etc.

b. Raw material is any material that requires further work to make it into a component part of the aircraft such as metals, plastics, fabric, etc.

c. Material, both raw and consumable, should only be accepted when satisfied that it is to the required specification. To be satisfied, the material and/or its packaging should be marked with the specification and, where appropriate, the batch number.

d. Documentation accompanying all material should clearly relate to the particular material and contain a conformity statement plus the manufacturing and supplier source. Some materials are subject to special conditions such as storage conditions, life limitations, etc., and this should be included in the documentation and/or material packaging.

e. The material specification is normally identified in the M(S)TC holder's data except in cases where the DGTA has agreed otherwise. An EASA/MSTAR Form 1 or equivalent should not be issued for such material, and, therefore, none should be expected.

f. Items purchased in batches (fasteners, etc.) should be supplied in a package. The packaging should state the applicable specification/standard, P/N, batch number, and the quantity of the items. The documentation accompanying the material should contain the applicable specification/standard, P/N, batch number, supplied quantity, and manufacturing sources. If the material is acquired from different batches, acceptance documentation for each batch should be supplied.

AMC 145.A.42(b) Acceptance of components

a. The MSTAR Form 1 (or other equivalent forms detailed at AMC MSTAR 145.A.42(a)) identifies the status of an aircraft component. Block 12 'RMSTARks' on the MSTAR Form 1, in some cases, contains vital airworthiness-related information which may need appropriate and necessary actions. The receiving maintenance organisation should be satisfied that the component in question is in satisfactory condition and has been appropriately released to service. In addition, the maintenance organisation should ensure that the component meets the approved data/standard, such as the required design and modification standard. This may be accomplished by reference to the manufacturer's parts catalogue or other approved data (i.e. Service Bulletin). Care should also be taken in ensuring compliance with applicable ADs, the status of any lifelimited parts fitted to the aircraft component as well as CDCCLs (if applicable).

b. To ensure a component is in a satisfactory condition, the maintenance organisation should perform checks and verifications.

c. Performance of the above checks and verifications should take place before the component is installed on the aircraft.

d. The following list, though not exhaustive, contains typical checks to be performed:

i. verify the general condition of components and their packaging in relation to damages that could affect the integrity of the components;

ii. verify that the shelf life of the component has not expired;

iii. verify that items are received in the appropriate package in respect of the type of component: e.g. correct ATA 300 or electrostatic sensitive devices packaging, when necessary;

iv. verify that the component has all plugs and caps appropriately installed in accordance with approved data to prevent damage or internal contamination.

AMC 145.A.42(c) Acceptance of components

1. The agreement by the DGTA for the fabrication of parts by the maintenance organisation should be formalised through the approval of a detailed procedure in the

MOE. This AMC contains principles and conditions to be taken into account for the preparation of an acceptable procedure.

2. Fabrication, inspection, assembly and test should be clearly within the technical and procedural capability of the maintenance organisation.

3. All necessary data to fabricate the part should be approved either by the DGTA or the (Military) Type Certificate (TC) holder or MSTAR 21 Design Organisation Approval holder, or (Military) Supplemental Type Certificate (STC) holder.

4. Items fabricated by a maintenance organisation may only be used by that maintenance organisation in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The fabrication of parts for other facilities may only take place if approved by the DGTA. The permission to fabricate does not constitute approval for manufacture, and the parts do not qualify for certification on MSTAR Form 1. This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification. Fabricated parts are to be clearly labelled in a manner identified by the DGTA.

5. Fabrication of parts, modification kits, etc, for onward supply may not be conducted by a maintenance organisation unless otherwise approved by the DGTA.

6. The data specified in paragraph 3 may include repair procedures involving the fabrication of parts. Where the data on such parts is sufficient to facilitate fabrication, the parts may be fabricated by an maintenance organisation. Care should be taken to ensure that the data includes details of part numbering, dimensions, materials, processes, and any special manufacturing techniques, special raw material specification or/and incoming inspection requirement and that the maintenance organisation has the necessary capability. That capability should be defined by way of MOE content. Where special processes or inspection procedures are defined in the approved data which are not available at the maintenance organisation, the maintenance organisation cannot fabricate the part unless the (Military) TC/STC-holder or MSTAR 21 Design Organisation Approval holder gives an approved alternative.

7. Examples of fabrication under the scope of an MSTAR 145 approval can include but are not limited to the following:

a. Fabrication of bushes, sleeves and shims.

b. Fabrication of secondary structural elements and skin panels.

c. Fabrication of control cables.

d. Fabrication of flexible and rigid pipes.

e. Fabrication of electrical cable looms and assemblies.

f. Formed or machined sheet metal panels for repairs.

All the above fabricated parts should be in accordance with data provided in overhaul or repair manuals, modification schemes and service bulletins, drawings or otherwise approved by the DGTA.

Note: It is not acceptable to fabricate any item to pattern unless an engineering drawing of the item is produced which includes any necessary fabrication processes and which is acceptable to the DGTA.

8. Where a (Military) TC/STC holder or an MSTAR 21 Approved Production Organisation is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the DGTA in accordance with a procedure specified in the MOE.

9. Inspection and Identification.

Any locally fabricated part should be subjected to an inspection stage before, separately, and preferably independently from, any inspection of its installation. The inspection should establish full compliance with the relevant manufacturing data, and the part should be unambiguously identified as fit for use by stating conformity to the approved data. Adequate records should be maintained of all such fabrication processes including heat treatment and the final inspections. Fabricated parts are to be clearly labelled in a manner identified by the DGTA. All parts, except those having not enough space, should carry a part number which clearly relates it to the manufacturing/inspection data. Additional to the part-number the maintenance organisation's identity should be marked on the part for traceability purposes.

AMC 145.A.42(d) Acceptance of components

1. The following types of components should typically be classified as unsalvageable:

a. Components with non-repairable defects, whether visible or not to the naked eye;

b. Components that do not meet design specifications, and cannot be brought into conformity with such specifications;

c. Components subjected to unacceptable modification, repair or rework that is irreversible;

d. Certified life-limited parts that have reached or exceeded their certified life limits, or have missing or incomplete records;

e. Components that cannot be returned to an airworthy condition due to exposure to extreme forces, heat or adverse environment;

f. Components for which conformity with an applicable AD cannot be accomplished;

g. Components for which maintenance records and/or traceability to the manufacturer/maintenance organisation cannot be retrieved.

2. Caution should be exercised to ensure that unsalvageable components are disposed of in a manner that does not allow them to be returned to service.

GM 145.A.42(d) Acceptance of components

It is common practice for possessors of aircraft components to dispose of unsalvageable components by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale and in the active parts inventories of the aviation community. Misrepresentation of the status of components and the practice of making such items appear serviceable have resulted in the use of unsalvageable non-conforming components. Therefore organisations disposing of unsalvageable aircraft components should consider the possibility of such components later being misrepresented and sold as serviceable components.

AMC 145.A.45(b) Maintenance data

1. Except as specified in subparagraph 5, each AMO should have access to and use the following minimum maintenance data relevant to the AMO's approval class rating: all maintenance-related requirements and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by a DGTA requirement, procedure or directive and all applicable ADs as well as CDCCLs (if applicable).

2. In addition to subparagraph 1, an AMO with an approval class rating in Category A – Aircraft, should have access to and use the following maintenance data where published: the appropriate sections of the Aircraft Maintenance Programme, Aircraft Maintenance Manual, repair manual, supplementary structural inspection document, corrosion control document, Service Bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, (Military) TC data sheet and any other specific document issued by the (Military) TC/STC holder or DGTA as maintenance data.

3. In addition to subparagraph 1, an AMO with an approval class rating in Category B — Engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the engine/APU maintenance and repair manual, Service Bulletins, service letters, modification leaflets, non-destructive testing (NDT) manual, parts catalogue, (Military) Type Certificate data sheet and any other specific document issued by the (Military) TC/STC holder or DGTA as maintenance data.

4. In addition to subparagraph 1, an AMO with an approval class rating in Category C – Components other than complete engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the component maintenance and repair manual, Service Bulletins and service letters plus any document issued by the (Military) TC/STC holder or DGTA as maintenance data on whose product the component may be fitted when applicable.

5. Appropriate sections of subparagraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have access to almost complete set(s) of maintenance data, whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.

6. An AMO only approved in class rating Category D – Specialised services, should hold and use all applicable specialised service(s) process specifications.

AMC 145.A.45(c) Maintenance data

1. The referenced procedure should ensure that when maintenance personnel discover inaccurate, incomplete or ambiguous information in the maintenance data they should record the details. The procedure should then ensure that the maintenance organisation notifies the author of the maintenance data of the problem in a timely manner. A record of such communications to the author of the maintenance data should be retained by the maintenance organisation until such time as the (Military) TC/STC holder, MSTAR 21 Design Organisation Approval holder or DGTA has clarified the issue by e.g. amending the maintenance data.

2. The referenced procedure should be specified in the MOE.

AMC 145.A.45(d) Maintenance data

The referenced procedure should address the need for a practical demonstration by the maintenance personnel to the quality personnel of the proposed modified maintenance instruction. When satisfied the quality personnel should approve the modified maintenance instruction and ensure that the (Military) TC/STC holder, MSTAR 21 Design Organisation Approval holder or DGTA is informed of the modified maintenance instruction. The procedure should include a paper/electronic traceability of the complete process from start to finish and ensure that the relevant maintenance instruction clearly identifies the modification. Modified maintenance instructions should only be used in the following circumstances:

a. Where the (Military) TC/STC holder, MSTAR 21 Design Organisation Approval holder or DGTA's original intent can be carried out in a more practical or more efficient manner.

b. Where the (Military) TC/STC holder, MSTAR 21 Design Organisation Approval holder or DGTA's original intent cannot be achieved by following the maintenance instructions. For example, where a component cannot be replaced following the original maintenance instructions.

c. For the use of alternative tools/equipment.

Important Note: CDCCLs are airworthiness limitations. Any modification of the maintenance instructions linked to CDCCLs constitutes an aircraft modification that should be approved in accordance with MSTAR 21.

AMC 145.A.45(e) Maintenance data

1. The maintenance organisation should:

a. Transcribe accurately the maintenance data onto such work cards or worksheets, or

b. Make precise reference to the particular maintenance task(s) contained in such maintenance data, which already identifies the task as a CDCCL where applicable.

2. Relevant parts of the maintenance organisation means with regard to aircraft base maintenance, aircraft line maintenance, engine workshops, mechanical

workshops and avionic workshops. Therefore, engine workshops for example should have a common system throughout such engine workshops that may be different to that in the aircraft base maintenance.

3. The work cards should differentiate and specify, when relevant, disassembly, accomplishment of task, reassembly and testing. In the case of a lengthy maintenance task involving a succession of personnel to complete such a task, it may be necessary to use supplementary work cards or worksheets to indicate what was actually accomplished by each individual person.

GM 145.A.45(e) Maintenance Data

'Complex maintenance tasks' are neither minor scheduled line maintenance tasks nor simple defect rectification tasks. They, therefore, cannot be certified by a Category A SAML holder.

AMC 145.A.45(f) Maintenance data

1. Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors, mechanics, certifying and support staff to study.

2. Where computer systems are used, the number of computer terminals or maintenance data access points should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.

AMC 145.A.45(g) Maintenance data

1. To keep data up-to-date, a procedure should be set up to monitor the amendment status of all data and maintain a check that all amendments are being received by being a subscriber to any document amendment scheme. Special attention should be given to (Military) TC/STC related data such as certification life-limited parts, airworthiness limitations and Airworthiness Limitation Items (ALI), etc.

2. If paper copies are printed from computer systems, a procedure should be in place to ensure the control or destruction of such copies after use.

AMC 145.A.47(a) Maintenance planning

1. Depending on the amount and complexity of work generally performed by the maintenance organisation, the planning system may range from a very simple procedure to a complex organisational set-up, including a dedicated planning function in support of the maintenance function.

2. For the purpose of MSTAR 145, the maintenance planning function should include two complementary elements:

- scheduling the maintenance work ahead, to ensure that it will not adversely interfere with other work as regards the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities.

- during maintenance work, organising maintenance teams and shifts and provide all necessary support to ensure the completion of maintenance without undue time pressure.

3. When establishing the maintenance planning procedure, consideration should be given to the following:

- logistics,
- inventory control,
- square meters of accommodation,
- man-hours estimation,
- man-hours availability,
- preparation of work,
- hangar availability,
- environmental conditions (access, lighting standards and cleanliness),
- co-ordination with contracted/tasked maintenance organisations, internal and external suppliers, etc.
- scheduling of safety-critical tasks during periods when staff are likely to be most alert,
- military operational commitments,
- location (e.g. Main Operating Base, Deployed Operating Base).

AMC 145.A.47(b) Maintenance planning

Limitations of human performance, in the context of planning safety-related tasks, refer to the upper and lower limits and variations of certain aspects of human performance (Circadian rhythm / 24-hour body cycle), which personnel should be aware of when planning work and shifts.

AMC 145.A.47(c) Maintenance planning

The primary objective of the changeover/handover information is to ensure effective communication at the point of handing over the continuation or completion of maintenance actions. Effective task and shift handover depends on three basic elements:

a. The outgoing person’s ability to understand and communicate the important elements of the job or task being passed over to the incoming person.

b. The incoming person's ability to understand and assimilate the information being provided by the outgoing person.

c. A formalised process for exchanging information between outgoing and incoming persons and a planned shift overlap and a place for such exchanges to take place.

AMC 145.A.48(b) Performance of maintenance

a. The manufacturer's Instructions for Continuing Airworthiness should be followed when determining the need for an independent inspection.

b. In the absence of maintenance and inspection standards published by the organisation responsible for the type design, maintenance tasks that involve the assembly or any disturbance of a control system and that, if errors occurred, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft should be considered as flight safety-sensitive maintenance tasks needing an independent inspection. A control system is an aircraft system by which the flight path, attitude, or propulsive force of the aircraft is changed, including the flight, engine and propeller controls (but not limited to these systems), the related system controls and the associated operating mechanisms. Maintenance tasks associated with the crew escape, and safety systems should also be considered flight safety-sensitive maintenance tasks.

c. A maintenance task requiring an independent inspection consists of an authorised person signing the maintenance task/release, who assumes full responsibility for the satisfactory completion of the work, before being subsequently inspected by an independent competent and authorised person who attests to the satisfactory completion of the work recorded and that no deficiencies have been found.

1. A maintenance task requiring an independent inspection should therefore involve at least two persons, to ensure correct assembly, locking and sense of operation. A technical record of the inspection should contain the signatures of both persons before the relevant certificate of release to service is issued.

2. The independent, competent, and authorised person is not issuing a maintenance release and, therefore, is not required to hold certification privileges. However, they should be suitably qualified to carry out the inspection and must not have been involved in the work.

d. The maintenance organisation should have procedures to demonstrate that independent signatories have been trained, and have gained experience on the specific systems being inspected.

e. The following maintenance tasks should primarily be considered when inspecting aircraft control and crew escape and safety systems that have been disturbed:

1. installation, rigging, and adjustment of flight controls;

2. installation of aircraft engines, propellers; and rotors; and

3. overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes; and

4. installation and maintenance carried out on ejection seats.

Consideration should also be given to:

1. previous experience of maintenance errors, depending on the consequences of the failure; and

2. information arising from an ‘occurrence reporting system’; and

3. information arising from the Operating Organisation/CAMO.

f. When inspecting control systems and crew escape and safety systems that have undergone maintenance, the person signing the maintenance release and the person performing the independent inspection should consider the following points independently:

1. all those parts of the system that have actually been disconnected or disturbed, should be inspected for correct assembly and locking;

2. the system as a whole should be inspected for full and free movement over the complete range;

3. cables should be tensioned correctly with adequate clearance at secondary stops;

4. the operation of the system as a whole should be observed to ensure that the controls are operating in the correct sense;

5. if the system is duplicated to provide redundancy, each system should be inspected separately; and

6. if different systems are interconnected so that they affect each other, all interactions should be inspected through the full range of the applicable controls.

AMC 145.A.48(c) Performance of maintenance

An assessment of both the cause and any potentially hazardous effect of any defect or combination of defects that could affect flight safety should be made in order to initiate any necessary further investigation and analysis necessary to identify the root cause of the defect and reported to the CAMO/Operating Organisation.

AMC 145.A.50(a) Certification of maintenance

’Endanger flight safety’ means any instance where safe operation could not be assured or which could lead to an unsafe condition. It typically includes, but is not limited to, significant cracking, deformation, corrosion or failure of primary structure, any evidence of burning (including overheating), electrical arcing, significant hydraulic fluid or fuel leakage and any emergency system or total system failure. An AD overdue for compliance is also considered a hazard to flight safety.

AMC 145.A.50(b) Certification of maintenance

1. The CRS for aircraft should contain the following statement:

'Certifies that the work specified, except as otherwise specified, was carried out in accordance with MSTAR 145 and in respect to that work the aircraft/aircraft component is considered ready for release to service'.

Reference should also be made to the MSTAR 145 approval number.

2. It is acceptable to use an alternate abbreviated CRS for aircraft consisting of the following statement 'MSTAR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated CRS is used, the introductory section of the aircraft technical log should include an example of the full certification statement from paragraph 1.

3. The CRS should relate to the task specified in the (Military) TC/STC holder's or Operating Organisation's/CAMO's instructions or the Aircraft Maintenance Programme which itself may cross-refer to maintenance data.

4. The date such maintenance was carried out should include when the maintenance took place relative to any life or overhaul limitation in terms of date/flying hours/cycles/landings etc., as appropriate.

5. When extensive maintenance has been carried out, it is acceptable for the CRS to summarise the maintenance as long as there is a unique cross-reference to the work package containing full details of maintenance carried out. Dimensional information should be retained in the work-pack record.

AMC 1 145.A.50(d) Certification of maintenance

1. The purpose of the CRS is to release assemblies/items/components/parts (hereafter referred to as 'item(s)') after maintenance and to release maintenance work carried out on such items under the approval of a DGTA and to allow items removed from one aircraft/aircraft component to be fitted to another aircraft/aircraft component.

2. The CRS is to be used for export/import purposes, the transfer of items between pMS as well as for domestic purposes, and serves as an official certificate for items from the manufacturer/AMO to users.

3. It can only be issued by AMOs within the scope of their approval.

4. The CRS may be used as a rotable tag (if using MSTAR Form 1 – national equivalents may be able to be used this way also) by utilising the available space on the reverse side of the certificate for any additional information and dispatching the item with two copies of the certificate so that one copy may be eventually returned with the item to the AMO. The alternative solution is to use existing rotable tags and also supply a copy of the certificate.

5. A CRS should not be issued for any item when it is known that the item is unserviceable except in the case of an item undergoing a series of maintenance processes at several AMOs and the item needs a certificate for the previous

maintenance process carried out for the next AMO to accept the item for subsequent maintenance processes. In such a case, a clear statement of limitation should be endorsed in Block 12 of MSTAR Form 1 (or equivalent).

AMC 2 145.A.50(d) Certification of maintenance

1. A component which has been maintained off the aircraft needs the issuance of a CRS for such maintenance and another CRS in regard to being installed properly on the aircraft when such action occurs.

2. In the case of the issue of MSTAR Form 1 (or equivalent) for components in storage before MSTAR 145 and MSTAR 21 became effective and not released on an MSTAR Form 1 or equivalent in accordance with MSTAR 145.A.42(a) or removed serviceable from a serviceable aircraft or an aircraft which has been withdrawn from service the following applies:

2.1 An MSTAR Form 1 (or equivalent) may be issued for an aircraft component which has been:

2.1.1 Maintained before MSTAR 145 became effective or manufactured before MSTAR 21 became effective.

2.1.2 Used on an aircraft and removed in a serviceable condition. Examples include leased and loaned aircraft components, or “cannibalised” components.

2.1.3 Removed from aircraft which have been withdrawn from service, or from aircraft which have been involved in abnormal occurrences such as accidents, incidents, heavy landings or lightning strikes.

2.1.4 Maintained by an unapproved maintenance organisation.

2.2 An appropriately rated AMO may issue an MSTAR Form 1 (or equivalent) as detailed in this AMC subparagraph 2.5 to 2.9, as appropriate, in accordance with procedures detailed in the MOE as approved by the DGTA. The appropriately rated AMO is responsible for ensuring that all reasonable measures have been taken to ensure that only approved and serviceable aircraft components are issued an MSTAR Form 1 (or equivalent) under this paragraph.

2.3 For the purposes of this AMC 2 only, ’appropriately rated’ means an AMO with an approval class rating for the type of component or for the product in which it may be installed.

2.4 An MSTAR Form 1 (or equivalent) issued in accordance with this paragraph 2 should be issued by signing in Block 14b and stating ‘Inspected’ in Block 11. In addition, Block 12 should specify:

2.4.1 When the last maintenance was carried out and by whom.

2.4.2 If the component is unused, when the component was manufactured and by whom with a cross-reference to any original documentation which should be included with the Form.

2.4.3 A list of all ADs, repairs and modifications known to have been incorporated. If no ADs or repairs or modifications are known to be incorporated, then this should be so stated.

2.4.4 Detail of life used for service life-limited parts being any combination of fatigue, overhaul or storage life.

2.4.5 For any aircraft component having its own maintenance history record, reference to the particular maintenance history record as long as the record contains the details that would otherwise be required in Block 12. The maintenance history record and acceptance test report or statement, if applicable, should be attached to the MSTAR Form 1 (or equivalent).

2.5 New/unused aircraft components.

2.5.1 Any unused aircraft component in storage without an MSTAR Form 1 (or equivalent) up to the effective date(s) for MSTAR 21 that was manufactured by an organisation acceptable to the DGTA at that time may be issued with an MSTAR Form 1 (or equivalent) by an appropriately rated AMO. The MSTAR Form 1 (or equivalent) should be issued in accordance with the following subparagraphs which should be included in a procedure within the MOE.

Note: It should be understood that the release of a stored but unused aircraft component in accordance with this paragraph represents a maintenance release under MSTAR 145 and not a production release under MSTAR 21. It is not intended to by-pass the production release procedure agreed by the pMS for parts and subassemblies intended for fitment on the manufacturer's own production line.

(a) An acceptance test report or statement should be available for all used and unused aircraft components that are subjected to acceptance testing after manufacturing or maintenance as appropriate.

(b) The aircraft component should be inspected for compliance with the manufacturer’s instructions and limitations for storage and condition including any requirement for limited storage life, inhibitors, controlled climate and special storage containers. In addition or in the absence of specific storage instructions, the aircraft component should be inspected for damage, corrosion and leakage to ensure good condition. Where military operational circumstances have prevented storage in accordance with the manufacturer’s instructions, a procedure approved by the DGTA should be defined and adhered to.

(c) The storage life used of any storage life-limited parts should be established.

2.5.2 If it is not possible to establish satisfactory compliance with all applicable conditions specified in subparagraph 2.5.1 (a) to (c)

inclusive, the aircraft component should be disassembled by an appropriately rated AMO and subjected to a check for incorporated ADs, repairs and modifications and inspected/tested in accordance with the maintenance data to establish satisfactory condition and, if relevant, all seals, lubricants and life-limited parts should be replaced. Upon satisfactory completion after reassembly, an MSTAR Form 1 (or equivalent) may be issued stating what was carried out and the reference of the maintenance data included.

2.6 Used aircraft components removed from a serviceable aircraft.

2.6.1 Serviceable aircraft components removed from a pMS registered aircraft may be issued with an MSTAR Form 1 (or equivalent) by an appropriately rated AMO subject to compliance with this subparagraph.

(a) The AMO should ensure that the component was removed from the aircraft by an appropriately qualified person.

(b) The aircraft component may only be deemed serviceable if the last flight operation with the component fitted revealed no faults on that component/related system.

(c) The aircraft component should be inspected for satisfactory condition including in particular damage, corrosion or leakage and compliance with any additional maintenance data.

(d) The aircraft record should be researched for any unusual events that could affect the serviceability of the aircraft component such as involvement in accidents, incidents, heavy landings or lightning strikes. Under no circumstances may an MSTAR Form 1 (or equivalent) be issued in accordance with this paragraph 2.6 if it is suspected that the aircraft component has been subjected to extremes of stress, temperatures or immersion which could affect its operation.

(e) A maintenance history record should be available for all used serialised aircraft components.

(f) Compliance with known modifications and repairs should be established.

(g) The flight hours/cycles/landings as applicable of any service life-limited parts including time since overhaul should be established.

(h) Compliance with known applicable ADs should be established.

(i) Subject to satisfactory compliance with this subparagraph 2.6.1, an MSTAR Form 1 (or equivalent) may be issued and should contain the information as specified in

paragraph 2.3 including the aircraft from which the aircraft component was removed.

2.6.2 NOT APPLICABLE.

2.7 Used aircraft components removed from an aircraft withdrawn from service.

Serviceable aircraft components removed from an aircraft withdrawn from service may be issued with an MSTAR Form 1 (or equivalent) by an AMO subject to compliance with this subparagraph.

(a) Aircraft withdrawn from service are sometimes dismantled for spares. This is considered to be a maintenance activity and should be accomplished under the control of an AMO, employing procedures approved by the DGTA.

(b) To be eligible for installation, components removed from such aircraft may be issued with an MSTAR Form 1 (or equivalent) by an appropriately rated AMO following a satisfactory assessment.

As a minimum, the assessment will need to satisfy the standards set out in paragraphs 2.5 and 2.6 as appropriate. This should, where known, include the possible need for the alignment of scheduled maintenance that may be necessary to comply with the maintenance programme applicable to the aircraft on which the component is to be installed.

(c) Irrespective of whether the aircraft holds a Military Certificate of Airworthiness or not, the AMO responsible for certifying any removed component should ensure that the manner in which the components were removed and stored are compatible with the standards required by MSTAR 145.

(d) A structured plan should be formulated to control the aircraft disassembly process. The disassembly is to be carried out by an appropriately rated AMO under the supervision of certifying staff who will ensure that the aircraft components are removed and documented in a structured manner in accordance with the appropriate maintenance data and disassembly plan.

(e) All recorded aircraft defects should be reviewed and the possible effects these may have on both normal and standby functions of removed components are to be considered.

(f) Dedicated control documentation is to be used as detailed by the disassembly plan, to facilitate the recording of all maintenance actions and component removals performed during the disassembly process. Components found to be unserviceable are to be identified as such and quarantined pending a decision on the actions to be taken. Records of the maintenance accomplished to establish serviceability are to form part of the component maintenance history.

(g) Suitable MSTAR 145 facilities for the removal and storage of removed components are to be used which include suitable environmental conditions, lighting, access equipment, aircraft tooling and storage facilities for the work to be undertaken. While it may be acceptable for components to be removed, given local environmental conditions, without the benefit of an enclosed facility, subsequent disassembly (if required) and storage of the components should be in accordance with the manufacturer's recommendations.

2.8 Used aircraft components maintained by maintenance organisations not approved in accordance with MSTAR 145.

For used components maintained by a maintenance organisation not approved under MSTAR 145, due care should be taken before acceptance of such components. In such cases an appropriately rated AMO should establish satisfactory conditions by:

(a) dismantling the component for sufficient inspection in accordance with the appropriate maintenance data;

(b) replacing all service life-limit components when no satisfactory evidence of life used is available and/or the components are in an unsatisfactory condition;

(c) reassembling and testing as necessary the component;

(d) completing all certification requirements as specified in MSTAR 145.A.50.

2.9 Used aircraft components removed from an aircraft involved in an accident or incident.

Such components should only be issued with an MSTAR Form 1 (or equivalent) when processed in accordance with paragraph 2.7 and a specific work order including all additional necessary tests and inspections deemed necessary by the accident or incident. Such a work order may require input from the DGTA/ (Military) TC/STC holder or original manufacturer as appropriate. This work order should be referenced in Block 12.

AMC 145.A.50(e) Certification of maintenance

1. Being unable to establish full compliance with subparagraph MSTAR 145.A.50(a) means that the maintenance required by the CAMO could not be completed due either to running out of available aircraft maintenance downtime for the scheduled check or by virtue of the condition of the aircraft requiring additional maintenance downtime.

2. The CAMO is responsible for ensuring that all required maintenance has been carried out before flight and therefore MSTAR 145.A.50(e) requires the CAMO to be informed in the case where full compliance with MSTAR 145.A.50(a) cannot be achieved. If the CAMO agrees to the deferment of full compliance, then the 'CRS for aircraft' may be issued subject to details of the deferment, including the CAMO's authority, being endorsed on the certificate.

Note: Whether or not the CAMO does have the authority to defer maintenance is an issue between the CAMO and the DGTA. In case of doubt concerning such a decision of the CAMO, the AMO should inform its DGTA on such doubt, before issuing the CRS. This should allow the DGTA to investigate the matter as appropriate.

3. The procedure should draw attention to the fact that MSTAR 145.A.50(a) does not normally permit the issue of a 'CRS for aircraft' in the case of non-compliance and should state what action the mechanic, supervisor and certifying staff should take to bring the matter to the attention of the relevant department or person responsible for technical co-ordination with the CAMO so that the issue may be discussed and resolved. In addition, the appropriate person(s) as specified in MSTAR 145.A.30(b) should be kept informed in writing of such possible noncompliance situations and this should be included in the procedure.

AMC 145.A.50(f) Certification of maintenance

1. 'Appropriate release certificate' means a certificate which clearly states that the aircraft component is serviceable and clearly specifies the AMO releasing this component together with details of the authority under whose approval the AMO works including the approval or authorisation reference.

2. 'Compliance with all other technical and operational requirements' means making an appropriate entry in the aircraft technical log, checking for compliance with type design standards, modifications, repairs, ADs, life limitations and condition of the aircraft component plus information on where, when and why the aircraft was grounded.

GM 145.A.55(a) Maintenance records

1. Properly executed and retained records provide CAMOs and maintenance personnel with information essential in controlling unscheduled and scheduled maintenance, and troubleshooting to eliminate the need for re-inspection and rework to establish airworthiness.

The prime objective is to have secure and easily retrievable records with comprehensive and legible contents. The aircraft record should contain basic details of all serialised aircraft components and all other significant aircraft components installed, to ensure traceability to such installed aircraft component documentation and associated maintenance data as specified in MSTAR 145.A.45.

2. Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When CAMOs wish to take advantage of the modular design, then total time in service and maintenance records for each module are to be maintained. The maintenance records as specified are to be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

3. Reconstruction of lost or destroyed records can be done by reference to other records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics etc. When these things have been done and the record is still incomplete, the CAMO may make a statement in the new record describing the loss and establishing the time in service

based on the research and the best estimate of time in service. The reconstructed records should be submitted to the DGTA for acceptance.

Note: Additional maintenance may be required.

4. The maintenance record can be either a paper or computer system or any combination of both.

5. Paper systems should use robust material which can withstand normal handling and filing. The record should remain legible throughout the required retention period.

6. Computer systems may be used to control maintenance and/or record details of maintenance work carried out. Computer systems used for maintenance should have at least one backup system which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorised personnel to alter the database.

Note: An AMO's responsibility for recording all details of the maintenance work carried out ends with the completion of the CRS. It is the CAMO's responsibility to enter the information given in the CRS into the aircraft continuing airworthiness record system.

AMC 145.A.55(c) Maintenance records

Associated maintenance data is specific information such as repair and modification data. This does not necessarily require the retention of all Aircraft Maintenance Manual, Component Maintenance Manual, Illustrated Parts Catalogue etc. issued by the (Military) TC/ STC holder. Maintenance records should refer to the revision status of the data used.

AMC 145.A.60(a) Occurrence reporting

TO BE DEVELOPED IF REQUIRED.

GM 145.A.60(a) Occurrence reporting

TO BE DEVELOPED IF REQUIRED.

AMC 145.A.60(b) Occurrence reporting

1. The aim of occurrence reporting is to identify the factors contributing to incidents and to make the system resistant to similar errors.

2. An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This should be facilitated by the establishment of a "just culture". A maintenance organisation should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.

3. The internal reporting process should be closed-loop, ensuring that actions are taken internally to address safety hazards.

4. Feedback to reportees, both on an individual and more general basis, is important to ensure their continued support for the scheme.

GM 145.A.60(c) Occurrence reporting

Each report should contain at least the following information:

i. Maintenance organisation name and approval reference.

ii. Information necessary to identify the subject aircraft and / or component.

iii. Date and time relative to any life or overhaul limitation in terms of flying hours/cycles/landings etc. as appropriate.

iv. Details of the condition as required by MSTAR 145.A.60(b).

v. Any other relevant information found during the evaluation or rectification of the condition.

AMC 145.A.65(a) Safety and quality policy, maintenance procedures and quality system

The safety and quality policy should as a minimum include a statement committing the maintenance organisation to:

- Recognise safety as a prime consideration at all times;

- Apply Human factors principles;

- Encourage personnel to report maintenance related errors/incidents;

- Recognise that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel;

- Recognise the need for all personnel to cooperate with the quality auditors;

- Ensure that safety standards are not reduced by commercial/operational imperatives;

- Train all maintenance organisation staff to be aware of human factors and set a continuous training programme in this field.

AMC 145.A.65(b) Safety and quality policy, maintenance procedures and quality system

1. Maintenance procedures should be held current such that they reflect best practice within the maintenance organisation. It is the responsibility of all the maintenance organisation’s personnel to report any differences via their maintenance organisation’s internal occurrence reporting mechanisms.

2. All procedures, and changes to those procedures, should be verified and validated before use where practicable.

3. All technical procedures should be designed and presented in accordance with good human factors principles.

AMC 145.A.65(b)(2) Safety and quality policy, maintenance procedures and quality system

Specialised services include any specialised activity, such as but not limited to non-destructive testing requiring particular skills and/or qualification. MSTAR 145.A.30(f) covers the qualification of personnel but, in addition, maintenance procedures should be established that cover the control of any specialised process.

AMC 145.A.65(b)(3) Safety and quality policy, maintenance procedures and quality system

1. See MSTAR GM 145.A.65(b)(3)

2. Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly (‘Safety-Critical’ tasks). These procedures should identify the method for capturing errors, and the maintenance tasks or processes concerned. In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety:

- Installation, rigging and adjustments of flight controls;

- Installation of aircraft engines, propellers and rotors;

- Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes;

- installation and maintenance carried out on ejection seats but additional information should also be processed, such as:

- Previous experiences of maintenance errors, depending on the consequence of the failure;

- Information arising from the ‘occurrence reporting system’ required by MSTAR 145.A.60;

- DGTA requirements for error capturing, if applicable.

3. In order to prevent omissions, every maintenance task or group of tasks should be signed-off. To ensure the task or group of tasks is completed, it should only be signed-off after completion. Work by unauthorised personnel (i.e. temporary staff, trainee,..) should be checked by authorised personnel before they sign-off. The grouping of tasks for the purpose of signing-off should allow critical steps to be clearly identified.

Note: A “sign-off” is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different to the release to service of the aircraft. “Authorised personnel” means personnel formally authorised

by the maintenance organisation to sign-off tasks. “Authorised personnel” are not necessarily “certifying staff”.

4. The maintenance organisation should ensure that when carrying out a modification, repair or maintenance, CDCCL (if applicable) are not compromised; this should require the development of appropriate procedures where necessary by the maintenance organisation. The maintenance organisation should pay particular attention to possible adverse effects of any wiring change to the aircraft, even a change not specifically associated with the fuel tank system. For example, it should be common practice to identify segregation of fuel gauging system wiring as a CDCCL (if applicable). Maintenance organisations can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to prevent indiscriminate routing and splicing of wires and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a CDCCL (if applicable). AMC is provided for training to maintenance organisation personnel in Appendix IV to AMC MSTAR 145.A.30(e).

GM 145.A.65(b)(3) Safety and quality policy, maintenance procedures and quality system

1. Critical Tasks might not jeopardise safety on their own, but there could be a cumulative effect if the same maintainer reproduces the same error when he does the same tasks on several systems. The purpose of this procedure is therefore to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines. Another example is the case of removal and refitment of multiple oil filler caps on one aircraft/engine or component, which could require a re-inspection of all oil filler caps on that particular aircraft/engine or component after the last oil filler cap has supposedly been refitted.

2. The maintenance of ignition prevention features is necessary for the inherent safety and reliability of an aircraft’s fuel tank system. The aircraft cannot be operated indefinitely with the failure of an ignition prevention feature. The failure will have a direct adverse effect on operational safety. It could prevent the continued safe flight and landing of the aircraft or cause serious or fatal injury to the occupants. The fuel system review required will identify ignition prevention features of the design. The failure of any of these features may not immediately result in an unsafe condition, but it may warrant certain maintenance to support continued airworthiness.

AMC 145.A.65(c)(1) Safety and quality policy, maintenance procedures and quality system.

1. The primary objectives of the quality system are to enable the maintenance organisation to ensure that it can deliver a safe product and that the maintenance organisation remains in compliance with the requirements.

2. An essential element of the quality system is the independent audit.

3. The independent audit is an objective process of routine sample checks of all aspects of the maintenance organisation’s ability to carry out all maintenance to the

required standards and includes some product sampling as this is the end result of the maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the MSTAR 145.A.50(a) requirement for certifying staff to be satisfied that all required maintenance has been properly carried out before issue of the CRS for aircraft and components. Independent audits should include a percentage of random audits carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those maintenance organisations that work at night, and some audits while in an operational environment (if appropriate).

4. Except as specified in subparagraph 9, the independent audit should ensure that all aspects of MSTAR 145 compliance are checked every 12 months and may be carried out as a complete single exercise or subdivided over the 12 month period in accordance with a scheduled plan. The independent audit does not require each procedure to be checked against each product line when it can be shown that the particular procedure is common to more than one product line and the procedure has been checked every 12 months without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other product lines until the findings have been rectified after which the independent audit procedure may revert back to 12 monthly for the particular procedure.

5. The independent audit should sample check one product on each product line every 12 months as a demonstration of the effectiveness of maintenance procedures compliance. It is recommended that procedures and product audits be combined by selecting a specific product example, such as an aircraft or engine or instrument and sample checking all the procedures and requirements associated with the specific product example to ensure that the end result should be an airworthy product.

a. For the purpose of the independent audit, a product line includes any product under an MSTAR 145 Appendix II approval class rating as specified in the approval schedule issued to the particular AMO.

b. It therefore follows, for example, that a maintenance organisation with the capability to maintain aircraft, repair engines, brakes and autopilots would need to carry out four complete audit sample checks each year except as specified otherwise in subparagraphs 5 or 9.

6. The sample check of a product means to witness any relevant testing and visually inspect the product and associated documentation. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action.

7. NOT APPLICABLE

8. Except as specified otherwise in subparagraph 9, where the maintenance organisation has line stations (such as but not limited to “out of area” locations, embarked operations if appropriate) listed as per MSTAR 145.A.75(d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight and maintenance activity at the particular line station. Except as specified otherwise in subparagraph 9 the maximum period between audits of a particular line station should not exceed 24 months.

9. Except as specified otherwise in subparagraph 5, the DGTA may agree to increase any of the audit time periods specified in AMC MSTAR 145.A.65(c)(1) by up to 100% provided that there are no safety related findings and subject to being satisfied that the maintenance organisation has a good record of rectifying findings in a timely manner.

10. A report should be raised each time an audit is carried out describing what was checked and the resulting findings against applicable requirements, procedures and products.

11. The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked.

It therefore follows that a large maintenance organisation, being a maintenance organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified.

For the medium sized maintenance organisation, being a maintenance organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the maintenance function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager.

Maintenance organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract or delegate the independent audit element of the quality system to another organisation or a qualified and competent person, in both cases approved by the DGTA.

GM 145.A.65(c)(1) Safety and quality policy, maintenance procedures and quality system

1. The purpose of this GM is to give guidance on just one acceptable working audit plan to meet part of the needs of MSTAR 145.A.65(c)1. There is any number of other acceptable working audit plans.

2. The proposed plan lists the subject matter that should be covered by the audit and attempts to indicate applicability in the various types of workshops and aircraft facilities. The list should therefore be tailored for the particular situation and more than one list may be necessary. Each list should be shown against a timetable to indicate when the particular item is scheduled for audit and when the audit was completed.

PARA	Comment	HANGAR	ENGINE Workshop	MECH Workshop	AVIONIC Workshop
145.A.25		Yes	Yes	Yes	Yes
145.A.30		Yes	Yes	Yes	Yes
145.A.35		Yes	Yes	Yes	Yes
145.A.40		Yes	Yes	Yes	Yes
145.A.42		Yes	Yes	Yes	Yes
145.A.45		Yes	Yes	Yes	Yes
145.A.47		Yes	Yes	Yes	Yes

145.A.48		Yes	Yes	Yes	Yes
145.A.50		Yes	Yes	Yes	Yes
145.A.55		Yes	Yes	Yes	Yes
145.A.60		Yes	Yes	Yes	Yes
145.A.65		Yes	Yes	Yes	Yes
2.1	MOE	Yes	Yes	Yes	Yes
2.2	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.5	MOE	Yes	Yes	Yes	Yes
2.6	MOE	Yes	Yes	Yes	Yes
2.7	MOE	Yes	Yes	Yes	Yes
2.8	MOE	Yes	Yes	Yes	Yes
2.9	MOE	Yes	Yes	Yes	Yes
2.10	MOE	Yes	No	No	No
2.11	MOE	Yes	Yes	Yes	Yes
2.12	MOE	Yes	Yes	Yes	Yes
2.13	MOE	Yes	Yes	Yes	Yes
2.14	MOE	Yes	Yes	Yes	Yes
2.15	MOE	Yes	No	No	No
2.16	MOE	Yes	Yes	Yes	Yes
2.17	MOE	if appl	if appl	if appl	if appl
2.18	MOE	Yes	Yes	Yes	Yes
2.19	MOE	Yes	Yes	Yes	Yes
2.20	MOE	Yes	Yes	Yes	Yes
2.21	MOE	if appl	if appl	if appl	if appl
2.22	MOE	Yes	Yes	No	No
2.23	MOE	Yes	No	No	No
2.24	MOE	Yes	Yes	Yes	Yes
2.25	MOE	Yes	Yes	Yes	Yes
2.26	MOE	Yes	Yes	Yes	Yes
2.27	MOE	Yes	Yes	Yes	Yes
2.28	MOE	Yes	Yes	Yes	Yes
L2.1	MOE	If appl	No	No	No
L2.2	MOE	If appl	No	No	No
L2.3	MOE	If appl	No	No	No
L2.3	MOE	If appl	No	No	No
L2.5	MOE	If appl	No	No	No
L2.6	MOE	If appl	No	No	No
L2.7	MOE	If appl	No	No	No
3.9	MOE	if appl	if appl	if appl	if appl
3.10	MOE	if appl	if appl	if appl	if appl
3.11	MOE	if appl	if appl	if appl	if appl
3.12	MOE	Yes	Yes	No	No
3.13	MOE	Yes	Yes	Yes	Yes
3.14	MOE	Yes	Yes	Yes	Yes
145.A.70		Yes	Yes	Yes	Yes
145.A.75		Yes	Yes	Yes	Yes

145.A.80		Yes	Yes	Yes	Yes
145.A.85		Yes	Yes	Yes	Yes
145.A.95		if appl	if appl	if appl	if appl

Note 1: 'if appl' means if applicable or relevant.

Note 2: In the line station case all line stations should be audited at the frequency agreed with the DGTA within the limits of AMC MSTAR 145.A.65(c)(1).

AMC 145.A.65(c)(2) Safety and quality policy, maintenance procedures and quality system

1. An essential element of the quality system is the quality feedback system.

2. The quality feedback system should not be contracted to outside persons. The principal function of the quality feedback system is to ensure that all findings resulting from the independent quality audits of the maintenance organisation are properly investigated and corrected in a timely manner and to enable the Accountable Manager to be kept informed of any safety issues and the extent of compliance with MSTAR 145.

3. The independent quality audit reports referenced in AMC MSTAR 145.A.65(c)(1) subparagraph 10 should be sent to the relevant department(s) for rectification action giving target rectification dates. Rectification dates should be discussed with such department(s) before the quality department or nominated quality auditor confirms such dates in the report. The relevant department(s) are required by MSTAR 145.A.65(c)(2) to rectify findings and inform the quality department or nominated quality auditor of such rectification.

4. The Accountable Manager should hold regular meetings with staff to check progress on rectification except that in the large maintenance organisations such meetings may be delegated on a day to day basis to the quality manager subject to the Accountable Manager meeting at least twice per year with the senior staff involved to review the overall performance and receiving at least a half yearly summary report on findings of noncompliance.

5. All records pertaining to the independent quality audit and the quality feedback system should be retained for at least 2 years after the date of clearance of the finding(s) to which they refer or for such periods as to support changes to the AMC MSTAR 145.A.65(c)(1) subparagraph 9 audit time periods, whichever is the longer.

AMC 145.A.70(a) Maintenance Organisation Exposition (MOE)

1. The information specified in MSTAR 145.A.70(a) subparagraphs (6) and (12) to (16) inclusive, whilst a part of the MOE, may be kept as separate documents or on separate electronic data files subject to the management part of this MOE containing a clear cross-reference to such documents or electronic data files.

2. The MOE should contain the information, as applicable, specified in this AMC and in the appendix V to AMC 145.A.70. The information may be presented in any subject order as long as all applicable subjects are covered. The MOE should contain a cross-reference list with an explanation as to where each MSTAR 145 Section A requirement is addressed in the MOE.

3. The MOE should contain information, as applicable, on how the maintenance organisation complies with CDCCL instructions (if applicable).

4. NOT APPLICABLE.

5. The maintenance organisation may use electronic data processing (EDP) for publication of the MOE. The MOE should be made available to the approving DGTA in a form acceptable to the DGTA. Attention should be paid to the compatibility of EDP publication systems with the necessary dissemination of the MOE, both internally and externally.

6. The following information should be included in the MOE:

GENERAL ORGANISATION

0.1 List of effective pages
0.2 List of issues / amendments / record of revisions
0.3 Distribution list
0.4 MSTAR 145 requirements cross-reference list
0.5 General information

PART 1 MANAGEMENT

1.1 Corporate commitment by the Accountable Manager
1.2 Safety and quality policy
1.3 Management personnel
1.4 Duties and responsibilities of the management personnel
1.5 Management organisation chart
1.6 List of certifying staff and support staff
1.7 Manpower resources
1.8 General description of the facilities at each address intended to be approved
1.9 Organisations intended scope of work
1.10 Notification procedure to the DGTA regarding changes to the maintenance organisation's activities / approval / location / personnel
1.11 MOE amendment procedures including, if applicable, delegated procedures

PART 2 MAINTENANCE PROCEDURES

2.1 Supplier evaluation and contract/tasking control procedure
2.2 Acceptance/inspection of aircraft components and material
2.3 Storage, tagging and release of aircraft components and material to aircraft maintenance
2.4 Acceptance of tools and equipment
2.5 Calibration of tools and equipment
2.6 Use of tooling and equipment by staff (including alternative tools)
2.7 Cleanliness standards of maintenance facilities
2.8 Maintenance instructions and relationship to aircraft/aircraft component manufacturers' instructions including updating and availability to staff
2.9 Repair procedures

2.10 Aircraft Maintenance Programme compliance
2.11 Airworthiness Directives procedure
2.12 Optional modification procedure
2.13 Maintenance documentation in use and completion of same
2.14 Technical records control
2.15 Rectification of defects arising during base maintenance
2.16 Release to service procedure
2.17 Records for the CAMO
2.18 Reporting of defects
2.19 Return of defective aircraft components to store
2.20 Management of defective components with outside contractors/organisations
2.21 Control of computer maintenance records system
2.22 Control of manhour planning versus scheduled maintenance work
2.23 Control of critical maintenance tasks
2.24 Reference to specific maintenance procedures
2.25 Procedures to detect and rectify maintenance errors
2.26 Shift/task handover procedures
2.27 Procedures for notification of maintenance data inaccuracies and ambiguities to the author of the maintenance data
2.28 Maintenance planning procedures

PART L2 ADDITIONAL LINE MAINTENANCE PROCEDURES

L2.1 Line maintenance control of aircraft components, tools, equipment, etc.
L2.2 Line maintenance procedure related to servicing/fuelling/de-icing including inspection for/removal of de-icing/anti-icing fluid residues, etc.
L2.3 Line maintenance control of defects and repetitive defects
L2.3 Line procedure for completion of aircraft technical log
L2.5 Line procedure for pooled parts and loan parts
L2.6 Line procedure for return of defective parts removed from aircraft
L2.7 Line procedure control of critical maintenance tasks

PART 3 QUALITY SYSTEM PROCEDURES

3.A Safety Management Systems (SMS) (MY)
3.1 Quality audit of maintenance organisation procedures
3.2 Quality audit remedial action procedure
3.3 Quality audit of aircraft and/or components
3.4 Certifying staff and support staff qualification and training procedures
3.5 Certifying staff and support staff records
3.6 Procedures for qualifying of quality audit personnel
3.7 Procedures for qualifying of inspectors
3.8 Procedures for qualifying of maintenance personnel
3.9 Aircraft or aircraft component maintenance tasks exemption process control
3.10 Concession control for deviation from the maintenance organisations' procedures
3.11 Qualification procedure for specialised activities such as NDT, welding, etc.
3.12 Control of manufacturers' and other maintenance working teams
3.13 Human factors training procedure
3.14 Competence assessment of personnel

3.15 Training procedures for On-the-Job Training as per Section 6 of Appendix III to MSTAR 66
3.16 Procedure for the issue of a recommendation to the DGTA for the issue of an MSTAR 66 licence in accordance with MSTAR 66.B.105.

PART 4

This section is reserved for describing the procedures, paperwork and records associated with the CAMOs that place tasks on the maintenance organisation.

4.1 Contracting / tasking CAMO
4.2 CAMO procedures and paperwork
4.3 CAMO record completion

PART 5

5.1 Sample of documents
5.2 List of contracted/tasked maintenance organisations as per MSTAR 145.A.75(b).
5.3 List of Line maintenance locations as per MSTAR 145.A.75(d)
5.4 List of contracted/tasked maintenance organisations as per MSTAR 145.A.70(a)(16).

PART 6 OPERATING ORGANISATION'S MAINTENANCE PROCEDURES

This section is reserved for those maintenance organisations who are also part of Operating Organisations.

PART 7 NOT APPLICABLE

PART 8 NOT APPLICABLE

GM 145.A.70(a) Maintenance Organisation Exposition (MOE)

1. The purpose of the MOE is to detail the procedures, means and methods of the maintenance organisation.

2. Compliance with its contents will assure compliance with the requirements of MSTAR 145, which is a prerequisite to obtaining and retaining a maintenance organisation approval certificate.

3. MSTAR 145.A.70(a)(1) to (a)(11) constitutes the 'management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under MSTAR 145.A.30(b) who should be reasonably familiar with its contents. MSTAR 145.A.70(a)(6) list of certifying staff and support staff may be produced as a separate document.

4. MSTAR 145.A.70(a)(12) constitutes the working procedures of the maintenance organisation and therefore as stated in the requirement may be produced as any number of separate procedures manuals. It should be remembered that these documents should be cross-referenced from the management MOE.

5. Personnel are expected to be familiar with those parts of the MOE/manuals that are relevant to the maintenance work they carry out.

6. The maintenance organisation should specify in the MOE who should amend the MOE/manuals particularly in the case where there are several parts.

7. The quality manager should be responsible for monitoring the amendment of the MOE, unless otherwise agreed by the DGTA, including associated procedures manuals and submission of the proposed amendments to the DGTA. However, the DGTA may agree via a procedure stated in the amendment section of the MOE that some defined class of amendments may be incorporated without prior approval by the DGTA.

8. The MOE should cover four main parts:

a. The management MOE covering the parts specified earlier.

b. The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft, engines and or components will be maintained to the required standard.

c. The quality system procedures including the methods of qualifying mechanics, inspection, certifying staff, support staff and quality audit personnel.

d. Contracting/tasking procedures and paperwork.

9. The Accountable Manager's MOE statement as specified under MSTAR 145.A.70(a)(1) should embrace the intent of the following paragraph and this statement may be used without amendment. Any modification to the statement should not alter the intent.

"This MOE and any associated referenced manuals define the organisation and procedures upon which the (DGTA –*see note below) MSTAR 145 approval is based as required by MSTAR 145.A.70. These procedures are approved by the undersigned and should be complied with, as applicable, when work orders are being progressed under the terms of the MSTAR 145 approval.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the (DGTA*) from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the (DGTA*) will approve this maintenance organisation whilst the (DGTA*) is satisfied that the procedures are being followed and work standards maintained. It is further understood that the (DGTA*) reserves the right to suspend, limit or revoke the approval of the maintenance organisation if the (DGTA*) has evidence that procedures are not followed or standards not upheld."

Signed .....

Dated .....

Accountable Manager and ..... (quote position) ..... For and on behalf of .....(quote maintenance organisation's name) .....

Note: Where it states (NMAA*) please insert the actual name of the pMS' NMAA, for example, MAA, DSAE, etc.
Whenever the Accountable Manager changes, it is important to ensure that the new Accountable Manager signs the paragraph 9 statement at the earliest opportunity.

Failure to carry out this action could invalidate the MSTAR 145 approval.
10. When an organisation is approved against any other MSTAR (or EASA equivalent Regulation) containing a requirement for an Exposition, an MSTAR 145 MOE covering the differences will suffice to meet the requirements except that the MSTAR 145 MOE should reference where those parts missing from this MOE are covered.

AMC 145.A.75(b) Privileges of the AMO

1. Working under the quality system of the AMO refers to the case of one maintenance organisation, not itself appropriately approved to MSTAR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a contractor/tasked maintenance organisation for a maintenance organisation appropriately approved under MSTAR 145. To be appropriately approved to contract/task with a non-approved maintenance organisation, the AMO should have a procedure for the control of such contractors/tasked maintenance organisations as described below.

2. Maintenance of engines or engine modules other than a complete workshop maintenance check or overhaul is intended to mean any maintenance that can be carried out without disassembly of the core engine or, in the case of modular engines, without disassembly of any core module.

3. Fundamentals of contracting/tasking a non-approved maintenance organisation under MSTAR 145.

3.1 The fundamental reasons for allowing an AMO to contract/task a non-approved maintenance organisation certain maintenance tasks are:

a. To permit the acceptance of specialised maintenance services, such as, but not limited to, plating, heat treatment, plasma spray, fabrication of specified parts for minor repairs / modifications, etc., without the need for direct approval by the DGTA in such cases.

b. To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in MSTAR 145.A.75(b) by maintenance organisations not appropriately approved under MSTAR 145 when it is unrealistic to expect direct approval by the DGTA. The DGTA should determine when it is unrealistic but in general it is considered unrealistic if only one or two AMOs intend to use the contracted/tasked maintenance organisation.

c. To permit the acceptance of component maintenance.

d. To permit the acceptance of engine maintenance up to but not including a workshop maintenance check or overhaul of an engine or engine module as specified in MSTAR 145.A.75(b) by maintenance organisations not appropriately approved under MSTAR 145 when it is

unrealistic to expect direct approval by the DGTA. The determination of unrealistic is as per subparagraph (b).

3.2 When maintenance is carried out under the 'contract/task with a non-approved maintenance organisation' control system it means that for the duration of such maintenance, the MSTAR 145 approval has been temporarily extended to include the nonapproved contractor/tasked maintenance organisation. Consequently those parts of the non-approved contractor`s/tasked maintenance organisation's facilities, personnel and procedures involved with the AMO's products undergoing maintenance should meet MSTAR 145 requirements for the duration of that maintenance and it remains the AMO's responsibility to ensure such requirements are satisfied.

3.3 For the criteria specified in subparagraph 3.1, the AMO is not required to have complete facilities for maintenance that it needs to contract/task. Nevertheless, it should have its own expertise to determine that the non-approved contractor/tasked maintenance organisation meets the necessary standards. However, a maintenance organisation cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.

3.4 The AMO may find it necessary to include several specialist non-approved contractors/tasked maintenance organisations to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting etc. To authorise the use of such non-approved contractors/tasked maintenance organisations, the DGTA should be satisfied that the AMO has the necessary expertise and procedures to control such non-approved contractors/tasked maintenance organisations.

3.5 An AMO working outside the scope of its approval schedule is deemed to be not approved for this work. Such an AMO should in this circumstance operate only under the contracted/tasked control of another AMO.

3.6 Authorisation to contract/task non-approved maintenance organisations is indicated by the DGTA accepting the MOE containing a specific procedure on the control of nonapproved contractors/tasked maintenance organisations.

4. Principal MSTAR 145 procedures for the control of contractors/tasked maintenance organisations not approved under MSTAR 145.

4.1 A pre-audit procedure should be established whereby the AMO's 'contract/task a nonapproved maintenance organisation' control section, which may also be the MSTAR 145.A.65(c) quality system independent audit section, should audit a prospective nonapproved contractor/tasked maintenance organisation to determine whether those services of the non-approved contractor/tasked maintenance organisation that it wishes to use meet the intent of MSTAR 145.

4.2 The AMO should assess to what extent it will use the non-approved contractor`s/tasked maintenance organisation's facilities. As a general rule the AMO should require its own paperwork, approved data and material/spare

parts to be used, but it could permit the use of tools, equipment and personnel from the non-approved contractor/tasked maintenance organisation as long as such tools, equipment and personnel meet the requirements of MSTAR 145. In the case of non-approved contractors/tasked maintenance organisations who provide specialised services it may, for practical reasons, be necessary to use their specialised services personnel, approved data and material subject to acceptance by the AMO.

4.3 Unless the contracted/tasked maintenance work can be fully inspected on receipt by the AMO, the AMO should supervise the inspection and release from the non-approved contractor/tasked maintenance organisation. Such activities should be fully described in the MOE. The AMO should consider whether to use its own staff or authorise the nonapproved contractor's/tasked maintenance organisation's staff.

4.4 The CRS for components may be issued either at the non-approved contractor/tasked maintenance organisation or at the AMO facility by staff holding a certification authorisation in accordance with MSTAR 145.A.30 as appropriate. Such staff would normally come from the AMO but may otherwise be a person from the non-approved contractor/tasked maintenance organisation who meets the AMO certifying staff standard which itself is approved by the DGTA via the MOE. The CRS for components and/or the MSTAR Form 1 should always be issued under the AMO approval reference.

4.5 The 'contract/task a non-approved maintenance organisation' control procedure should record audits of the non-approved contractor/tasked maintenance organisation, to have a corrective action follow-up plan and to know when non-approved contractors/tasked maintenance organisations are being used. The procedure should include a clear revocation process for non-approved contractors/tasked maintenance organisations who do not meet the AMO's requirements.

4.6 The AMO's quality audit staff should audit the 'non-approved maintenance organisation contract/tasking control section' and sample audit non-approved contractors/tasked maintenance organisations unless this task is already carried out by the quality audit staff as stated in subparagraph 4.1.

4.7 The contract between the AMO and the non-approved contractor/tasked maintenance organisation should contain a provision for the DGTA or a qualified entity acting on behalf of the DGTA to have right of access to the non-approved contractor/tasked maintenance organisation.

AMC 145.A.80 Limitations on the AMO

This paragraph is intended to cover the situation where an AMO may temporarily not hold all the necessary tools, equipment etc., for an aircraft type or variant specified in the AMO's approval. This paragraph means that the DGTA need not amend the approval to delete the aircraft type or variants on the basis that it is a temporary situation and there is a commitment from the AMO to re-acquire tools, equipment etc. before maintenance on the type may recommence.

AMC 145.A.85 Changes to the AMO (MY)

The AMO should notify the DGTA of any changes using MSTAR Form 2.

MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

PART 3 **CHAPTER 1**

MSTAR 145 REQUIREMENTS FOR MAINTENANCE ORGANISATIONS

Appendices

Appendix II - Class and Ratings System used for the Approval of Maintenance Organisations

1. Table 1 outlines the full extent of approval possible under MSTAR 145 in a standardised form. A maintenance organisation must be granted an approval ranging from a single class and rating with limitations to all classes and ratings with limitations.

2. In addition to the table referred to in point 13, the approved maintenance organisation is required to indicate its scope of work in its maintenance organisation manual/exposition. See also point 11.

3. Within the approval class(es) and rating(s) granted by the competent authority, the scope of work specified in the maintenance organisation exposition defines the exact limits of approval. It is therefore essential that the approval class(es) and rating(s) and the organisations scope of work are matching.

4. A Category A class rating means that the approved maintenance organisation may carry out maintenance on the aircraft and any component (including engines and/or Auxiliary Power Units (APUs), in accordance with aircraft maintenance data or, if agreed by the competent authority, in accordance with component maintenance data, only whilst such components are fitted to the aircraft. Nevertheless, such A-rated approved maintenance organisation may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not eligible for the provisions of this point. This will be subject to a control procedure in the maintenance organisation exposition to be approved by the competent authority. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval.

5. A Category B class rating means that the approved maintenance organisation may carry out maintenance on the uninstalled engine and/or APU and engine and/or APU components, in accordance with engine and/or APU maintenance data or, if agreed by the competent authority, in accordance with component maintenance data, only whilst such components are fitted to the engine and/or APU. Nevertheless, such B-rated approved maintenance organisation may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not eligible for the provisions of this point. The limitation and level section will specify the scope of such maintenance thereby indicating the extent of approval. A maintenance organisation approved with a Category B class rating may also carry out maintenance on an installed engine during ‘base’ and ‘line’ maintenance subject to a control procedure in the maintenance organisation exposition to be approved by the competent

authority. The maintenance organisation exposition scope of work shall reflect such activity were permitted by the competent authority.

6. A Category C class rating means that the approved maintenance organisation may carry out maintenance on uninstalled components (excluding engines and APUs) intended for fitment to the aircraft or engine/APU. The limitation and level section will specify the scope of such maintenance thereby indicating the extent of approval. A maintenance organisation approved with a Category C class rating may also carry out maintenance on an installed component during base and line maintenance or at an engine/APU maintenance facility subject to a control procedure in the maintenance organisation exposition to be approved by the competent authority. The maintenance organisation exposition scope of work shall reflect such activity were permitted by the competent authority.

7. A Category D class rating is a self-contained class rating not necessarily related to a specific aircraft, engine or other component. The D1 - Non-Destructive Testing (NDT) rating is only necessary for an approved maintenance organisation that carries out NDT as a particular task for another organisation. A maintenance organisation approved with a class rating in A or B or C Category may carry out NDT on products it is maintaining subject to the maintenance organisation exposition containing NDT procedures, without the need for a D1 class rating.

8. A Category E class rating means that an approved maintenance organisation may carry out maintenance on equipment intended for aircraft airborne equipment. These are equipment that interfaces with aircraft systems during flight for specific operational or technical requirements. This category of equipment includes software loadable systems, condition monitoring system, role support equipment, life support equipment and explosive ordnance.

9. A Category F class rating means that an approved maintenance organization may carry out maintenance on equipment intended for aircraft non-airborne equipment. These are equipment not fitted on the aircraft but are required to support aircraft flying operations or ground maintenance such as precision measuring equipment, aerospace ground equipment (to provide aircraft with electricity, fuel, hydraulic and gas), engine test stand, training simulation, life monitoring system and aircraft maintenance software.

10. A Category G class rating means that an approved maintenance organization may carry out maintenance on equipment intended for Ground Based Radar. These are equipment not fitted on the aircraft but are required to support aircraft flying operations/ SAO operation.

11. The limitation and level section are intended to give the competent authorities the flexibility to customise the approval to any particular organisation. Ratings shall be mentioned on the approval only when appropriately limited. The table referred to in point 13 specifies the types of limitation and level possible. Whilst maintenance is listed last in each class rating it is acceptable to stress the maintenance task rather than the aircraft or engine type or manufacturer, if this is more appropriate to the organisation (an example could be avionic systems installations and related maintenance). Such mention in the limitation and level section indicates that the maintenance organisation is approved to carry out maintenance up to and including this particular type/task.

12. When a lengthy capability list is used which could be subject to frequent amendment, then such amendment shall be in accordance with a procedure acceptable to the DGTA and

included in the MOE. The procedure shall address the issues of who is responsible for capability list amendment control and the actions that need to be taken for amendment. Such actions include ensuring compliance with MSTAR 145 for products or services added to the list.

13. An organization may be further limited by the competent authority in the scope of approval depending on the expertise and capabilities of the particular organization. The table below is the class and rating system for approved maintenance organizations:

CLASS	RATING	LIMITATION	BASE	LINE
Aircraft	A1 Aeroplanes above 5 700 kg	[Shall state aeroplane manufacturer or group or series or type and/or the maintenance tasks] Example: Airbus A320 Series	[YES/NO] (*)	[YES/NO] (*)
	A2 Aeroplanes 5700 kg and below	[Shall state aeroplane manufacturer or group or series or type and/or the maintenance tasks] Example: DHC-6 Twin Otter Series	[YES/NO] (*)	[YES/NO] (*)
	A3 Helicopters	[Shall state helicopter manufacturer or group or series or type and/or the maintenance task(s)] Example: Robinson R44	[YES/NO] (*)	[YES/NO] (*)
	A4 Aircraft other than A1, A2 and A3 (*) Delete as appropriate	[Shall state aircraft category (sailplane, balloon, airship, etc.), manufacturer or	[YES/NO] (*)	[YES/NO] (*)

		group or series or type and/or the maintenance task(s)]		
		LIMITATION		
Engines	B1 Turbine	[Shall state engine series or type and/or the maintenance task(s)] Example: PT6A Series	[Shall state the level maintenance task(s)] Example: Maintenance Overhauls	
	B2 Piston	[Shall state engine manufacturer or group or series or type and/or the maintenance task(s)]	[Shall state the level maintenance task(s)]	
	B3 APU	[Shall state engine manufacturer or series or type and/or the maintenance task(s)]	[Shall state the level maintenance task(s)]	
Components Other Than Complete Engines or APUs	C1 Air Cond & Press C2 Auto Flight C3 Comms and Nav C4 Doors - Hatches C5 Electrical Power & Lights C6 Equipment C7 Engine - APU C8 Flight Controls C9 Fuel C10 Helicopter - Rotors C11 Helicopter - Trans	[Shall state aircraft type or aircraft manufacturer or component manufacturer or the particular component and/or the maintenance task(s).] Example: PT6A Fuel Control	[Shall state the level maintenance task(s)]	LIMITATIONS (aircraft type, component, manufacturer

	C12 Hydraulic Power			
	C13 Indicating - recording system			
	C14 Landing Gear			
	C15 Oxygen			
	C16 Propellers			
	C17 Pneumatic & Vacuum			
	C18 Protection ice/rain/fire			
	C19 Windows			
	C20 Structural			
	C21 Water ballast			
	C22 Propulsion Augmentation			
	C51 Attack systems			
	C52 Radar/ Surveillance			
	C53 Weapons System			
	C54 Crew Escape & Safety			
	C55 Drones/ Telemetry			
	C56 Reconnaissance			
	C57 Electronic warfare			
Specialised Services	D1 Non-Destructive Testing	[State particular NDT method(s)]		
	D1 Arms, Munitions and Pyrotechnic Systems Specific	[State arms type and maintained pyrotechnic system]		
Aircraft Airborne Equipment	E1 Software loadable system			
	E2 Condition monitoring system			
	E3 Role support equipment			
	E4 Life support / survival equipment			
	E5 Safety equipment			

	E6 Explosive ordnance			
	E6 Drag Chute			
Aircraft Non-Airborne Equipment	F1 Precision measuring equipment			
	F2 Aerospace ground equipment - Electrical			
	F3 Aerospace ground equipment - Fuel			
	F4b Aerospace ground equipment - Hydraulic			
	F5 Aerospace ground equipment - Gas			
	F6 Engine test stand			
	F7 Training simulation			
	F8 Life monitoring system			
	F9 Aircraft maintenance software			
	F10 Barrier Net			
	F11 Arrester Cable			
Ground Based Radar and Equipment	G1 Air Defense Control			
	G2 Air Traffic Control			
	G3 Surveillance System			

Appendix IV to MSTAR AMC 145.A.30(e) - Fuel Tank Safety training

This Appendix includes general instructions for providing training on Fuel Tank Safety (FTS) issues.

A) Applicability:

As nationally defined by the DGTA.

B) Affected organisations:

AMOs involved in the maintenance of aircraft specified in paragraph A) and fuel system components installed on such aircraft when the maintenance data are affected by CDCCL (if applicable).

CAMO's involved in the continuing airworthiness management of aeroplanes specified in paragraph A).

C) Persons from affected organisations who should receive training:

Phase 1 only:

The group of persons representing the maintenance management structure of the AMO, the quality manager and the staff required to quality monitor the AMO.

Phase 1 + Phase 2 + Continuation training:

Personnel of the AMO required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components specified in paragraph A).

Personnel of the CAMO involved in the management and review of the continuing airworthiness of aircraft specified in paragraph A).

D) General requirements of the training courses

Phase 1 – Awareness

The training should be carried out before the person starts to work without supervision but not later than 6 months after joining the AMO.
Type: Should be an awareness course with the principal elements of the subject. It may take the form of a training bulletin, or other self-study or informative session. Signature of the reader is required to ensure that the person has passed the training.

Level: It should be a course at the level of familiarisation with the principal elements of the subject.
Objectives:

The trainee should, after the completion of the training:

1. Be familiar with the basic elements of the fuel tank safety issues.

2. Be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non-conformities.

3. Be able to use typical terms.

Content: The course should include:

- a short background showing examples of FTS accidents or incidents,

- the description of concept of fuel tank safety (and CDCCL if applicable),

- some examples of manufacturers documents showing CDCCL items (if applicable),

- typical examples of FTS defects,

- some examples of (Military) TC/ STC holders repair data,

- some examples of maintenance instructions for inspection.

Phase 2 – Detailed training

Type: Should be a more in-depth internal or external course. It should not take the form of a training bulletin, or other self-study. An examination should be required at the end, which should be in the form of a multi choice questionnaire, and the pass mark of the examination should be 75%.

Level: It should be a detailed course on the theoretical and practical elements of the subject.

The training may be made either:

- in appropriate facilities containing examples of components, systems and parts affected by FTS issues. The use of films, pictures and practical examples on FTS is recommended; or

- by attending a distance course (e-learning or computer based training) including a film when such film meets the intent of the objectives and content here below. An e-learning or computer based training should meet the following criteria:

- A continuous evaluation process should ensure the effectiveness of the training and its relevance;

- Some questions at intermediate steps of the training should be proposed to ensure that the trainee is authorized to move to the next step;

- The content and results of examinations should be recorded;

- Access to an instructor in person or at distance should be possible in case support is needed.

A duration of 8 hours for phase 2 is an acceptable compliance.

When the course is provided in a classroom, the instructor should be very familiar with the data in Objectives and Guidelines. To be familiar, an instructor should have attended himself a similar course in a classroom and made additionally some lecture of related subjects.

Objectives:

The attendant should, after the completion of the training:

- have knowledge of the history of events related to FTS issues and the theoretical and practical elements of the subject, have an overview of all relevant requirements and/or regulations as defined by the DGTA, be able to give a detailed description of the concept of fuel tank system Airworthiness Limitation Instructions (ALI) (including CDCCL if applicable), and using theoretical fundamentals and specific examples;

- have the capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner;

- have knowledge on how the above items affect the aircraft;

- be able to identify the components or parts or the aircraft subject to FTS from the manufacturer's documentation,

- be able to plan the action or apply a Service Bulletin, an AD or national equivalent.

Content: Following the guidelines described in paragraph E.

Continuation training

The AMO/CAMO should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the MOE or 0.3(e) of the CAME should include the additional syllabus for this continuation training.

The continuation training may be combined with the phase 2 training in a classroom or at distance.

The continuing training should be updated when new instructions are issued which are related to the material, tools, documentation and manufacturer's or DGTA's directives.

E) Guidelines for preparing the content of Phase 2 courses.

The following guidelines should be taken into consideration when the phase 2 training programme is being established:

a) understanding of the background and the concept of FTS;

b) how the mechanics can recognise, interpret and handle the improvements in the instruction for continuing airworthiness that have been made or are being made regarding the fuel tank system maintenance;

c) awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System (FRS) using nitrogen is installed.

Paragraphs a) b) and c) above should be introduced in the training programme addressing the following issues:

i) The theoretical background behind the risk of FTS: the explosions of mixtures of fuel and air, the behaviour of those mixtures in an aviation environment, the effects of temperature and pressure, energy needed for ignition etc, the 'fire triangle'. Explain 2 concepts to prevent explosions:

(1) ignition source prevention and
(2) flammability reduction.

ii) The major accidents related to fuel tank systems, the accident investigations and their conclusions.

iii) ignition prevention program initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance.

iv) Explain briefly the concepts that are being used: the results of Special Federal Aviation Regulation 88 (SFAR 88) of the Federal Aviation Administration (FAA), Joint Aviation Authorities Temporary Guidance Leaflet 47(JAA TGL 47), Joint Aviation Authorities Interim Policy Letter 25/12 (JAA INT/POL 25/12) and any other unique DGTA initiatives: modifications, airworthiness limitations items and CDCCL (if applicable).

v) Where relevant information can be found and how to use and interpret this information in the instructions for continuing airworthiness (aircraft maintenance manuals, component maintenance manuals, Service Bulletins…).

vi) FTS during maintenance: fuel tank entry and exit procedures, clean working environment, what is meant by configuration control, wire separation, bonding of components etc.

vii) FRS when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS.

viii) Recording maintenance actions, recording measures and results of inspections.

The training should include a representative number of examples of defects and the associated repairs as required by the (Military) TC/ STC holder's maintenance data.

F) Approval of training

For AMOs/CAMOs, the approval of the initial and continuation training programme and the content of the examination can be achieved through the MOE/CAME.

Appendix V to AMC 145.A.70 - Maintenance Organisation Exposition (MOE)

Note: To facilitate the reading and understanding of this Appendix, the following writing conventions are being used which applies to each MOE chapter:

- **Expected content of the maintenance organisation's MOE**:

This Appendix is developed in a "check list format" to facilitate compliance check of the minimum expected content of the MOE. In particular the check boxes ( ) are indicating the "expected content" of each chapter/paragraph. The expected content is identified with normal font. It has to be considered however, that this Appendix applies to any maintenance organisation with any scope of approval, therefore it is the maintenance organisation responsibility to identify the "expected content" applicable to the maintenance organisation. When an "MOE paragraph" is identified in this Appendix, the same paragraphs structure is expected to be found in the MOE.

- **Comments:**

Comments and supporting information are inserted in "italics" font. They are only intended to provide additional clarifications.

TABLE OF CONTENT

1.6.1 Content of the list(s)

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1.8 General description of the facilities at each address intended to be approved

1.8.1 Maintenance organisation principal place of business /Headquarters

1.8.2 Postal (surface mail and e-mail) address

1.8.3 Base maintenance facilities

1.8.4 Line maintenance facilities (at each location) as appropriate

1.8.5 Engines / APU and Component maintenance facilities

1.8.6 Layout of premises

1.9 Organisations intended scope of work

1.9.1 Aircraft maintenance

1.9.2 Engine maintenance

1.9.3 Component maintenance

1.9.4 Specialised services maintenance

1.10 Notification procedure to the DGTA regarding changes to the maintenance organisation's activities / approval / location / personnel

1.10.1 Notification

1.10.2 Management of the change with the DGTA

1.11 MOE amendment procedures including, if applicable, delegated procedures

1.11.1 MOE amendment

1.11.2 Associated procedures, lists and Forms

1.11.3 Approval process

1.11.4 List of applicable regulations and user guides

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2.18.2 Reportable occurrences as per MSTAR 145.A.60

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2.22 Control of man-hour planning versus scheduled maintenance work

2.23 Control of critical maintenance tasks

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2.25 Procedures to detect and rectify maintenance errors

2.26 Shift / task handover procedures

2.27 Procedures for notification of maintenance data inaccuracies and ambiguities to the author of the maintenance data

2.28 Maintenance planning procedures

PART L2 – ADDITIONAL LINE MAINTENANCE PROCEDURES

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L2.2 Line maintenance procedure related to servicing / fuelling / de-icing / including inspection for removal of de-icing / anti-icing fluid residues, etc

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PART 4

4.1 Contracting / tasking CAMO

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PART 6 – OPERATING ORGANISATION'S MAINTENANCE PROCEDURES

GENERAL ORGANISATION

List of effective pages

Example:

Page	Revision
1	Original
2	Original

Page	Revision
3	Original
4	Original

Page	Revision
5	Original
.....	.....

List of issues / amendments / record of revisions

Example:

Issue number	Revision number	Date	Reason for change
1	0	19/12/06	n/a
2	0	01/01/12	Extension of the A1 scope of approval
	1	01/01/14	New procedure for cleaning

Distribution list

The document should include a distribution list to ensure proper distribution of the MOE and to demonstrate to the DGTA that all personnel involved in maintenance have access to the relevant information. This does not mean that all personnel have to be in receipt of a MOE but that a reasonable number of copies are distributed within the organisation(s) so that all personnel may have quick and easy access to it. Reference should also be made to the location of any e-copies of the MOE.

Accordingly, the MOE should be distributed to:

- *the Operating Organisation's management personnel (if the AMO is part of an Operating Organisation),*

- *the AMO's management personnel and any person at a lower level as necessary;*

and, - the MSTAR M contracting/tasking CAMO(s); and, - the DGTA.

MSTAR 145 requirements cross-reference list

The MOE should contain a cross-reference list with an explanation as to where each MSTAR 145 Section A requirement is addressed in the MOE.

General information

This chapter should illustrate how the maintenance organisation will be independent from other organisational functions (e.g. production tasks, operations). It should describe broadly how the whole organisation (i.e. including the Operating Organisation or OEM) is organised under the management of the Accountable Manager and should refer to the organisation charts of paragraph 1.5.).

PART 1 – MANAGEMENT.

1.1 Corporate commitment by the Accountable Manager.

(The Accountable Manager's MOE statement should embrace the intent of the following paragraph and this statement may be used without amendment. Any modification to the statement should not alter the intent.)

"This MOE and any associated referenced manuals define the organisation and procedures upon which the (DGTA* see note below) MSTAR 145 approval is based as required by MSTAR 145.A.70. These procedures are approved by the undersigned and should be complied with, as applicable, when work orders are being progressed under the terms of the MSTAR 145 approval.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the (DGTA*) from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the (DGTA*) will approve this maintenance organisation whilst the (DGTA*) is satisfied that the procedures are being followed and work standards maintained. It is further understood that the (DGTA*) reserves the right to suspend, limit or revoke the approval of the maintenance organisation if the (DGTA*) has evidence that procedures are not followed or standards not upheld."

Signed .....

Dated .....

Accountable Manager and ..... (quote position) ..... For and on behalf of .....(quote maintenance organisation's name) .....

Note: Where it states (NMAA) please insert the actual name of the pMS' NMAA, for example, MAA, DSAE, etc.*

1.2 Safety and quality policy.

The safety and quality policy shall, as a minimum, include a statement committing the maintenance organisation to:

- ☐ Apply human factors principles.
- ☐ Encourage personnel to report maintenance related errors/incidents to meet MSTAR 145 requirements.
- ☐ Recognise safety as a prime consideration at all times for all the staff.
- ☐ Recognise that compliance with procedures, quality standards and regulations is the duty of all personnel.
- ☐ Recognise the need for all personnel to cooperate with the quality auditors.
- ☐ Ensure that safety standards are not reduced by commercial/operational imperatives.
- ☐ Train all maintenance organisation staff to be aware of human factors and set a continuous training programme in this field.

1.3 Management personnel.

This chapter shall identify the maintenance management personnel of the maintenance organisation by listing, as minimum, the title and names of the Accountable manager plus all the persons nominated to hold a position as required by MSTAR 145.A.30 (b). Their respective deputies have also to be identified. The group of "nominated persons" shall be chosen/identified so that all the MSTAR 145 functions are covered under their respective responsibilities and their credentials shall be submitted to the DGTA using an MSTAR Form 4.

1.3.1 Accountable Manager and Deputy;

1.3.2 Nominated Persons:

- base maintenance manager
- line maintenance manager
- workshop manager
- quality manager

Other posts may be added if desired but it should be clearly shown whether or not they are considered as part of the 'maintenance management structure' for MSTAR Form 4 purposes. A marked separation (dividing line) would suffice with the text "No MSTAR Form 4 required".

1.3.3 Deputy Nominated Personnel

1.3.4 Responsible NDT Level 3 (if applicable).

1.4 Duties and responsibilities of the management personnel.

The duties and responsibilities of all management personnel identified in the *MOE chapter 1.3* must *be detailed in this chapter. It shall be ensured that all MSTAR 145 functions are addressed, as applicable to the maintenance organisation.*

Any MSTAR 145 function, which is applicable to the maintenance organisation (e.g. to perform the independent audit, to issue the MSTAR 145 Certifying staff/Support staff individual authorisation*, to have available appropriate facilities, tools and equipment, to issue a certificate of release to service, etc.) shall be under the responsibility of a Nominated Person as listed in MOE chapter 1.3* who shall *ensure compliance of that function with the relevant MSTAR 145 requirements.*

The responsibilities of a Nominated person cannot be delegated to other Manager(s) unless such Manager(s) is/are identified as "Deputy Nominated Person" for the related function (i.e. Deputy Maintenance Manager).

The duties of any Nominated Person may be delegated to other Manager(s) who are reporting to him/her.

1.4.1 Accountable Manager.

- ☐ The Accountable Manager is responsible for ensuring that maintenance carried out by the AMO meets the standards required by the DGTA;
- ☐ He/she is responsible for establishing and promoting the safety and quality policy specified in MSTAR 145.A.65 (a);
- ☐ He/she is responsible for nominating the management staff;
- ☐ He/she is responsible for ensuring that the necessary resources and facilities are available to enable the organisation to perform the maintenance to which it is tasked/contracted and any additional work which may be undertaken;
- ☐ He/she is responsible for the supervision of the progress of the corrective actions/review of the overall results in terms of quality;
- ☐ He/she is responsible for ensuring the competence of all personnel including management personnel has been assessed;
- ☐ He/she is responsible to return the approval to the DGTA in case of surrender or revocation.

Any additional duties and responsibilities may be added provided that they do not conflict with those of the other management personnel. Depending on the structure of the maintenance organisation some duties may be distributed differently.

1.4.2 Quality Manager

Duties and Responsibilities. The following list is not exhaustive.

- ☐ The Quality Manager is responsible for establishing an independent quality assurance system to monitor compliance of the maintenance organisation with MSTAR 145 requirements;
- ☐ He/she shall have direct access to the Accountable Manager on matters concerning the quality system;
- ☐ Defining the human factors principles to be implemented within the maintenance organisation;
- ☐ He/she is responsible for implementing a quality audit programme in which compliance with all maintenance procedures is reviewed at regular intervals in relation to each type of aircraft (or component) maintained (including the management and completion of audits and production of audit reports). He/she should ensure that any observed noncompliance or poor standards are brought to the attention of the person concerned via his/her manager;
- ☐ He/she is responsible for follow up and closure of any non-conformance;
- ☐ The Quality Manager should establish regular meetings with the Accountable Manager to appraise the effectiveness of the quality system. This will include details of any reported discrepancy not being adequately addressed by the relevant person or in respect of any disagreement concerning the nature of a discrepancy;
- ☐ He/she is responsible for preparing standard practices and procedures (MOE, including the associated procedure(s) for use within the maintenance organisation and ensuring their adequacy regarding MSTAR 145 and any amendments to the requirements;
- ☐ He/she is responsible for submission of the MOE and any associated amendments, to the DGTA for approval (which includes completion of and submission of MSTAR Form(s) 2, MSTAR Form(s) 4 or equivalent);
- ☐ He/she is responsible for assessing contractors/tasked organisations and suppliers for satisfactory product quality in relation to the airworthiness needs of the maintenance organisation;
- ☐ He/she is responsible for issue /renewal/cancellation of MSTAR 145 Certifying Staff/Support Staff individual authorisations;
- ☐ He/she is responsible for co-ordinating action on airworthiness occurrences and for initiating any necessary further investigation and follow-up activity;
- ☐ He/she is responsible for establishing feedback from maintenance incidents/issues and feeding these back into the continuation training programme;
- ☐ He/she is responsible for assessing non-approved contractors/tasked organisation working under the quality system and maintaining the expertise necessary to be able to do so, to the satisfaction of the DGTA. He/she is also responsible for assessing external specialist services required to be used by the organisation in the performance of maintenance;

It must be reminded that the quality system is required to be "independent" which normally means that the Quality Manager and the Quality Monitoring Staff are not directly involved in the MSTAR 145 function being audited.

Depending on the organisation structure, some of the quality system duties may be delegated to one or several managers who report to the Quality manager and are therefore not subject to an MSTAR Form 4.

1.4.3 Maintenance Manager (may be Base Maintenance Manager and / or Line Maintenance Manager and / or Workshop Maintenance Manager).

Duties and Responsibilities. The following list is not exhaustive.

- ☐ He/she is responsible for the satisfactory completion and certification of all work for which the maintenance organisation has been contracted/tasked in accordance with the work specification (Work Order and approved MOE procedures);
- ☐ He/she is responsible for ensuring that the maintenance organisation's procedures and standards are complied with when carrying out maintenance;
- ☐ He/she is responsible for ensuring the competence of all personnel engaged in maintenance;
- ☐ He/she is responsible for establishing a programme of training and continuation training using internal and/or external sources (this responsibility may be also under the Quality Manager);
- ☐ He/she is responsible for ensuring that all contracts/taskings are correctly detailed and that the requirements of the contract/task are fulfilled in respect of inspection and quality control;
- ☐ He/she is responsible for providing feedback to the Quality System about the services provided by contracted/tasked organisations;
- ☐ He/she is responsible for responding to quality deficiencies in the area of activity for which he/she is responsible, which arise from independent quality audits;
- ☐ He/she is responsible for ensuring, through the workforce under his/her control, that the quality of workmanship in the final product is to a standard acceptable to the maintenance organisation and the DGTA;
- ☐ He/she is responsible for the implementation of the safety policy and human factor issues;
- ☐ He/she is responsible for availability of facilities appropriate to the planned work including hangars, workshops office accommodation, stores, etc as applicable for the planned work;
- ☐ He/she is responsible for availability of a working environment appropriate to the tasks being undertaken;
- ☐ He/she is responsible for the incoming inspection of components, parts, materials, tools and equipment, the related classification, segregation and storage according to the manufacturer’s recommendations (where practicable see AMC MSTAR 145.A.25(d)1);
- ☐ He/she is responsible to develop a production planning system appropriate to the amount and complexity of the maintenance scope of work;
- ☐ He/she is responsible for availability of tools, equipment and materials to perform the planned tasks;
- ☐ He/she is responsible for availability of sufficient competent personnel to plan, perform, supervise, inspect and certify the work being performed;
- ☐ He/she is responsible for availability of all necessary maintenance data as required by MSTAR 145.A.45;

- ☐ He/she is responsible for recording and notifying any inaccurate, incomplete or ambiguous procedure, practice information or maintenance instruction contained in the maintenance data used by maintenance personnel to the author of the maintenance data;
- ☐ He/she is responsible for providing a common work card or worksheet system to be used throughout relevant parts of the maintenance organisation and ensure such documents comply with MSTAR 145.A.45 (e);
- ☐ He/she is responsible for notifying the Accountable Manager whenever deficiencies emerge which require his/her attention in respect of finance and the acceptability of standards (Accountable Manager and Quality Manager to be officially informed of any lack of 25% of available man-hours over a calendar month);
- ☐ He/she is responsible for supplying the necessary technical documents and storage of the maintenance organisation's technical records.

Any additional duties and responsibilities may be added provided they do not conflict with those of other management personnel.

Depending on the organisation structure, some of the maintenance duties may be delegated to one or several managers who report to the Maintenance Manager and are therefore not subject to an MSTAR Form 4.

1.4.4 Other posts

This section can be continued with the terms of reference of additional management personnel, who report to the upper level of management, as necessary to fully describe the maintenance organisation.

These personnel would not normally be required to complete an MSTAR Form 4.

1.4.5 Responsible NDT level 3

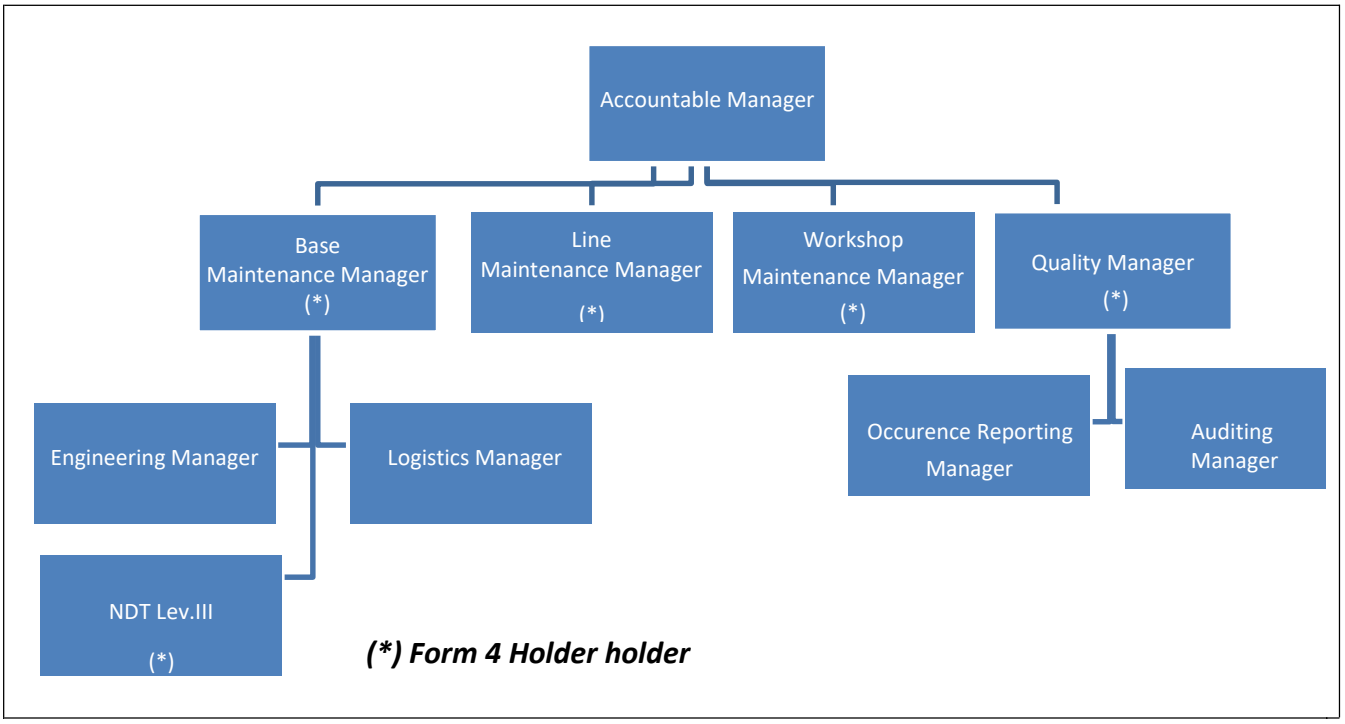
Duties and Responsibilities. The following list is not exhaustive.

- ☐ He/she is responsible for ensuring that the applicable NDT requirements (e.g. MSTAR 145.A.30 (e), EN 4179, etc.) are met and to act on behalf of the maintenance organisation in this area;

1.5 Management organisation chart.

The maintenance organisation chart shall show the associated chains of responsibility of the "nominated persons" identified in Chapter 1.3. When other "Managers" are identified in chapter 1.3 they need also to be reflected in the maintenance organisation chart to show that they report ultimately through a "nominated person" to the Accountable Manager.

The following is an example of an MSTAR 145 AMO structure:



The MSTAR Form 4 positions shall be clearly identified in the chart. The names of the management personnel may be included in the boxes of the maintenance organisation chart but this is optional.

Quality Assurance personnel (i.e. quality auditor) must be shown to be independent from the Maintenance Managers.

Certifying staff may report to any of the managers specified depending upon which type of control the approved maintenance organisation uses.

1.6 List of certifying staff and support staff.

1.6.1 Content of the list(s).

This chapter should contain a list of all certifying staff authorised within the maintenance organisation. This paragraph may be cross referenced from another record (including a computer record) where the list of the names is kept. The intention of this chapter is that the maintenance organisation maintains a complete up-to-date record of all certifying staff and that it be provided to the DGTA with the MOE when requesting initial or amended approval or on request by DGTA staff.

a) Base Maintenance:

- Category C Certifying Staff
- Category B1/B2 Support Staff

b) Line Maintenance:

- Category B1 Certifying Staff
- Category B2 Certifying Staff
- Category A Certifying Staff

c) Component Certifying Staff

d) Specialised Services Certifying Staff

Where this list is cross referenced from a separate record, the source of the record should be identified/referenced. The list should include at least the following information:

a) Name

b) Rank/Grade and Service Number (if applicable)

c) Date of Birth

d) Basic Training

e) Military Aircraft Type Training/Task Training

f) Continuation Training

g) Experience

h) Qualifications relevant to the authorisation

i) Scope of the authorisation

j) Date of first issue of the authorisation

k) If appropriate – expiry date of the authorisation

l) Identification Number of the authorisation

m) Security clearance (where applicable).

1.7 Manpower resources.

The numbers of personnel shall be provided so that a clear picture of the adequacy of staffing levels can be demonstrated without the need for amendment as a result of routine fluctuations. The system must however, be able to highlight any significant re-deployment or loss of staff. The system shall also address the numbers of specialist staff in each department (as applicable).

1.7.1 Base Maintenance / Component Maintenance.

- Maintenance - Aircraft / Workshops
- Engineering
- Technical Services
- Planning • Administration
- Quality Dept.
- Quality Audit
- etc

1.7.2 Line Maintenance.

- Maintenance
- Engineering
- Technical Services

1.7.3 Specialised Activities.

- Technical Services

1.7.4 Contracted / Tasked Services.

- Full Time
- Part Time

The maintenance organisation must be able to demonstrate that they have adequate resources to justify the grant of an approval as defined in chapter 1.8 (facilities to be approved) and 1.9 (scope of work). The system used must be presented in sufficient detail to explain the support at each site and for each function as required by MSTAR 145.A.30 (d). The maintenance organisation shall not declare a percentage of staff used under this approval but the number of staff needed to comply with MSTAR 145 requirements.

In any case the maintenance organisation shall ensure the number of staff declared in this MOE and the latest application Form 2 remains consistent.

1.8 General description of the facilities at each address intended to be approved.

This section shall describe each of the facilities, in some detail, at which the maintenance organisation intends to carry out maintenance. This shall provide a clear picture of what the DGTA is being asked to approve. All sites shall be covered; however, a different emphasis can be placed on sites dependent on the level of work undertaken.

The system of protection against weather, dust and other airborne contaminants (paint, smoke...), ground water protection, heating/air conditioning, lighting, noise protection, safety system (limited accesses, fire, staff security...) should be described either in the diagram or in the associated text.

1.8.1 Maintenance organisation principal place of business /Headquarters.

This is the head office/registered office/Headquarters of the maintenance organisation within which the principal financial/resource functions and operational control of the activities referred to in MSTAR 145 are exercised.

It is the address which will be included in the MSTAR Form 3 approval certificate together with the main base sites address(es).

1.8.2 Postal (surface mail and e-mail) address.

The postal address of the maintenance organisation to be used by the DGTA for formal mail communication needs to be clearly identified. This should be the same as that used on the MSTAR Form 2.

In addition, to ensure an efficient and stable communication channel between the DGTA and the maintenance organisation, the organisation shall create a “generic” email address (without reference to a family name) to be used regardless any future personnel changes.

1.8.3 Base maintenance facilities.

- ☐ Hangar accommodation
- ☐ Aircraft access equipment / platforms / docking
- ☐ Specialised workshops
- ☐ Environmental provisions
- ☐ Office accommodation for: (planning, technical records, Quality, technical reference area, etc)
- ☐ Storage

1.8.4 Line maintenance facilities (at each location) as appropriate.

1.8.5 Engines / APU and Component maintenance facilities.

1.8.6 Layout of premises.

Where the accommodation is not owned by the maintenance organisation, as in the case of a hangar where space is rented or shared, proof of tenancy/access may be required, and the DGTA may wish to have this included in an Appendix or Supplement to the MOE.

In accordance with AMC MSTAR 145.A.25 (a), for line maintenance of aircraft, access to hangars may be required. In this case access to a suitable hangar shall be demonstrated, particularly in the case of inclement weather for minor scheduled work and lengthy defect rectification.

Note: Hangar utilisation is expected to be in the MOE chapter 2.22, due to relation with the man-hour plan.

1.9 Organisations intended scope of work.

This chapter must show the range of work carried out at each approved site. When a maintenance organisation is performing maintenance in multiple locations the corresponding scope of work shall additionally be detailed for each site. This shall also relate to chapters 1.8 & 5.3 in such a way that it can be clearly seen which specific tasks are performed at each location.

MSTAR 145 Appendix II Table 1 should be used as a guide for the information required for each location for which approval is being sought.

1.9.1 Aircraft maintenance.

Example:

CLASS	RATING	LIMITATION	BASE	LINE
AIRCRAFT	A1 Aeroplanes/ above 5 700 kg	[State aeroplane manufacturer or group or series or type and/or the maintenance task(s)] e.g. A400M-180, C130J,…	*[YES/ NO]**	*[YES/ NO]**

	A2 Aeroplanes/ 5 700 kg and below	[State aeroplane manufacturer or group or series or type and/or the maintenance tasks]	*[YES/ NO]**	*[YES/ NO]**
	A3 Helicopters	[State helicopter manufacturer or group or series or type and/or the maintenance task(s)] e.g. EC 665 HAP Tiger, NH90-NFRS,…	*[YES/ NO]**	*[YES/ NO]**
	A4 Aircraft other than A1, A2 and A3	[State aircraft series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**

Note: If information on Type/Model/Series exists on an aircraft (M)TC, then this information is to be used in the column ‘limitation’.

1.9.2 Engine maintenance.

Example:

CLASS	RATING	LIMITATION
ENGINES/APU	B1 Turbine	[State engine series or type and/or the maintenance task(s)] e.g. TURMO III C4, TURBOMECA RTM 322-01/9,…
	B2 Piston	[State engine manufacturer or group or series or type and/or the maintenance task(s)]
	B3 APU	[State engine manufacturer or series or type and/or the maintenance task(s)] e.g. Noëlle 180 (Mirage 2000)

Note: ‘Limitations’ should state the engine Type/Model/Series (as stated on engine (M) TC if applicable), together with the maintenance tasks. The mention of the aircraft on which the engine/APU is fitted should be precised.

1.9.3 Component maintenance.

This section shall specify the component manufacturer or the particular component and/or cross refer to a referenced capability list. The part number and the level of work performed shall be included.

Example:

CLASS	**RATING**	**S1000D CHAPTER REFERENCE [1]**	**LIMITATIONS** (aircraft type, component, manufacturer)
COMPONENTS other than complete engines or APU's	C1 Air Cond & Press	21	
	C2 Auto Flight	*22*	
	C3 Comms and Nav	*23-34-43*	
	C4 Doors — Hatches	*52*	
	C5 Electrical Power & Lights	*24-33-91*	
	C6 Equipment	*25-38-45-50*	
	C7 Engine — APU	*49-71-72-73-74-75-76-77-78-79-80-81-82-83-86*	
	C8 Flight Controls	*27-55-57.40-57.50-57.60-57.70*	
	C9 Fuel — Airframe	*28-48*	
	C10 Helicopter — Rotors	*62-64-66-67*	
	C11 Helicopter — Trans	*63-65*	
	C12 Hydraulic Power	*29*	
	C13 Indicating - recording system	*31-46*	
	C14 Landing Gear	*32-90*	
	C15 Oxygen	*35-47*	

[1] S1000D Chapter Reference: in conformity with “S1000D Main System Breakdown”

	C16 Propellers	*61*	
	C17 Pneumatic & Vacuum	*36-37*	
	C18 Protection ice/ rain/fire	*26-30*	
	C19 Windows	*56*	
	C 20 Structural	*53-54-57.10-57.20-57.30*	
	C 21 Water Ballast	*41*	
	C 22 Propulsion Augmentation	*84*	
	C 51 Attack systems	*39-40-42*	
	C 52 Radar / Surveillance	*92-93*	
	C 53 Weapons systems	*94*	
	C 54 Crew escape & Safety	*95*	
	C 55 Drones/Telemetry	*96-00, 96-30, 96-40*	
	C 56 Reconnaissance	*97-98*	
	C 57 Electronic warfare	*99*	

Note: ‘Limitations’ should state the component and its part number, together with the maintenance tasks. When a maintenance organisation is managing a separate “capability list” the information addressed above shall be mentioned in this list. In this case the chapter 1.9 shall only address the rating, the S1000D and shall refer to the capability list reference (see example below).

CLASS	**RATING**	**S1000D CHAPTER REFERENCE[2]**	**LIMITATIONS** (aircraft type, component, manufacturer**)**
COMPONENTS other than complete engines or APU's	C1 Air Cond & Press	21	Components in accordance with the capability list reference XXXX
	C2 Auto Flight	*22*	
	C3 Comms and Nav	*23-34-43*	
	C4 Doors — Hatches	*52*	

This list, whatever included to or separated from the basic MOE, is an integral part of the approval.

1.9.4 Specialised services maintenance.

1.9.4.1 NDT with D1 Rating.

When the maintenance organisation intends to perform NDT tasks and release such tasks using an MSTAR Form, the rating D1 is necessary. Under the D1 rating, the capability to perform maintenance is determined by the "NDT method" listed in the approval schedule, regardless the specific aircraft, engine or component which is subject to the inspection method.

Example:

CLASS	**RATING**	**LIMITATION** [State particular NDT method(s)]
SPECIALISED SERVICES	D1 Non-Destructive Testing	Penetrant testing (PT)
		Magnetic testing (MT)
		Eddy current testing (ET)
		Ultrasonic testing (UT)
		Radiographic testing (RT)
		Thermographic testing (TT)
		Shearographic testing (ST)

1.9.4.2 NDT without D1 Rating ("in the course of maintenance").

When the maintenance organisation intends to perform NDT tasks under another approved rating (e.g. as part of the maintenance carried out on aircraft under rating A1, engines under rating B1, components under a C rating) the NDT tasks are considered done in the "course of maintenance".

[2] S1000D Chapter Reference: in conformity with "S1000D Main System Breakdown"

In this case, even if the maintenance organisation does not need to hold a D1 rating, the various NDT methods applied during maintenance shall be listed in this paragraph for each approved location.

It has to be noted that the same MSTAR 145 Requirements in place for being approved under the D1 rating remain applicable.

1.9.4.3 Arms, Munitions and Pyrotechnic Systems with D5 Rating.

When the maintenance organisation intends to perform maintenance on arms, munitions and pyrotechnic systems and release such tasks using an MSTAR Form 1, the rating D5 is necessary. These specialised services maintenance tasks shall be detailed for each approved location.

Example:

SPECIALISED SERVICES	**RATING**	**LIMITATION** [State arms type and maintained pyrotechnic systems]
	D5 Arms, Munitions and Pyrotechnic Systems Specific	

1.9.4.4 Other specialised activities.

- Each specialised maintenance task such as, but not limited to, composite repairs, painting, welding, machining, NDI, shall be detailed in this paragraph.
- These specialised services maintenance tasks shall be detailed for each approved location.

It has to be noted that those specialised maintenance tasks may need to be carried out under specific conditions (e.g. aircraft painting is considered to be a base maintenance task and therefore a base maintenance scope of approval is required in addition to listing such activity in this chapter).

1.9.4.5 Maintenance away from the approved locations as per MSTAR 145.A.75 (c).

- If applicable, this paragraph shall make reference to the fact that the maintenance organisation may perform works away from the approved locations, subject to the condition specified in MOE chapter 2.24 (Maintenance outside the approved locations).

1.9.4.6 Parts fabrication as per MSTAR 145.A.42 (c).

- If applicable, this paragraph shall make reference to the fact that the maintenance organisation may fabricate parts in the course of maintenance, subject to the condition specified in MOE chapter 2.9 (where the specific parts fabrication procedure is to be entered).
- The part fabrication is to be considered under an approved rating (e.g. as part of the maintenance carried out on aircraft under rating A1, engines under rating B1, components under a C rating).

• When the maintenance organisation is approved to fabricate a restricted range of parts for use in other facilities, the range of parts is to be listed together with the locations where they will be fabricated.

1.10 Notification procedure to the DGTA regarding changes to the maintenance organisation's activities / approval / location / personnel.

DGTA approval is based on the management, organisation, resources, facilities and scope of work described in this Part 1 of the MOE. Any significant change may therefore affect the conditions under which the approval was granted. This chapter is intended to show the process to be used by the maintenance organisation to notify the DGTA of any change affecting the approval.

1.10.1 Notification.

This part of the MOE must show how the company would go about notifying the DGTA of the following changes:

1. The name of the AMO;
2. The main location of the AMO;
3. Additional locations of the AMO;
4. The Accountable Manager and all appointed deputies;
5. Any of the persons nominated under MSTAR 145.A.30(b) and their appointed deputies;
6. The facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval;
7. The ownership of the AMO or its parent company.

In addition, this procedure shall also detail:

☐ When to notify the change;
☐ How to notify the change (using the MSTAR Form 2 or not);
☐ Who in the maintenance organisation is in charge of the notification?

1.10.2 Management of the change with the DGTA.

Once the change has been notified, the maintenance organisation shall detail how the related change is internally managed:

☐ Internal audit by the Quality system;
☐ Composition of the package associated to any of the above listed changes (e.g. MSTAR Form 2, MOE, internal audit MSTAR Form 4, etc.);
☐ Who in the maintenance organisation is in charge of monitoring the change with the DGTA?

For change of approval applications, the maintenance organisation shall carry out an internal audit in accordance with its MOE chapter 3.1 audit procedure, prior to the audit by the DGTA, confirming that processes, areas, activities and personnel subject to the application have been reviewed and audited showing satisfactory compliance with all applicable MSTAR 145 requirements. The relevant audit report together with a statement of compliance from the Quality Manager shall be provided to the DGTA.

The requirement to have an internal audit carried out as part of any application for organisational change, shall be addressed in a procedure under this MOE 1.10 chapter.

1.11 MOE amendment procedures including, if applicable, delegated procedures.

The Quality Manager is responsible for reviewing the MOE on a regular basis and amending if necessary, this includes the associated procedure manuals, and the submission of proposed amendments to the DGTA. The MOE and associated documents and lists shall be amended as necessary to remain an up-to-date description of the maintenance organisation.

1.11.1 MOE amendment.

This procedure shall at least address the MOE amendment procedure.

☐ Person responsible for amending the MOE.

☐ Definition of minor & major amendments to the MOE and related approval process.

☐ Definition of criteria for new issue and/or revision.

☐ The record of the MSTAR 145 approval certificate and approval of the MOE and subsequent amendment shall be described:

☐ Approval letter from the DGTA as applicable

☐ MSTAR 145 approval certificate/ approval schedule amendments following the change of the scope of activity and/or change of the locations and/or a new issue of the MOE

1.11.2 Associated procedures, lists and Forms.

The minimum procedures/lists to be considered are all those identified in MSTAR 145.A.70 (a), which are therefore integrally part of the MOE.

This procedure shall at least address:

☐ Summary table of associated procedures and lists:

Example:

Type of Document	**Document reference**	**Indirect approval***	**Approved by***	**minor amendments to which the indirect approval is limited**
Associated Procedures Manual**	APM	X	Quality Manager	Typing errors
Certifying staff and Support staff list	AMO-DOC-1		DGTA	n/a
Workshop capability list	AMO-DOC-2	X	Quality Manager	removal of part numbers

List of contractors / tasked organisations	AMO-DOC-3	X	Quality Manager	addition /removal of a contractor / tasked organisation
List of Line Maintenance Locations	AMO-DOC-4		DGTA	n/a
NDT Manual	AMO-DOC-5	X	NDT Lev.3 and Quality manager	n/a

** When an indirect approval is granted, it is important that the chapter 1.11.3 describes the limits of the indirect approval privilege. Even if a document is subject to indirect approval, in the case of a change affecting the scope of work this document shall be approved by the DGTA (i.e. amending the capability list to add a Part number belonging to a new C rating)*

*** When the maintenance organisation develops second level procedures (for example to describe the details of maintenance processes in each area/workshop), those procedures shall be collected into a separate manual (e.g. associated procedures manual) to be also listed in this table.*

☐ Definition of criteria for new issue and/or revision

1.11.3 Approval process

☐ Direct approval:

- The procedure shall at least describe the process to be followed to get the approval from the DGTA.

☐ Indirect approval:

- the list of documents for which an indirect approval privilege is granted shall be listed in the table provided in paragraph 1.11.2

- For each of the above mentioned documents, the procedure shall at least include:

  - Definition of minor & major amendments. In particular, the limits of changes that can be indirectly approved for each document shall be limited to minor amendments (may be directly identified in the table provided in paragraph 1.11.2, refer to the example);

  - The person responsible for the internal approval of the related documents (may be directly identified in the table provided in paragraph 1.11.2, refer to the example);

  - The notification of such approval to the DGTA;

  - The record of such indirect approval.

In case of minor amendment (of the MOE and/or associated procedures and lists) the Quality Manager may be delegated for indirect approval provided the appropriate procedure within this chapter 1.11 of the MOE is approved by the DGTA. Such a delegation is to be based upon the ability of the Quality System to deal adequately with the MSTAR 145 requirements.

1.11.4 List of applicable regulations and user guides

This paragraph is optional and may be used to describe how the maintenance organisation ensures the MOE and associated procedures/lists remain updated with the current applicable regulations and user guides.

This paragraph is aimed to list the applicable regulations and user guides, together with their revision status, which have been considered for the development of the current revision of the MOE and associated procedures/lists.

The quality system is responsible for assessing any revision of the applicable regulations and user guides for possible impact on the maintenance organisation's procedures/lists and to amend them as necessary.

The MOE and associated procedures/lists are expected to be amended before the date of entry into force specified in the applicable regulation or user guide.

PART 2 – MAINTENANCE PROCEDURES.

2.1 Supplier evaluation and contract / tasking control procedure.

This chapter shall be clearly structured to cover all the cases where the maintenance organisation is using the services of other organisations.

2.1.1 Type of suppliers.

This chapter shall describe how the maintenance organisation identifies the suppliers from where to purchase serviceable necessary materials, standard parts and components to carry out maintenance. A "list of suppliers" shall be developed under the control of the Quality Department.

Suppliers of tools and tools calibrations services shall be described in the MOE chapter 2.3.

☐ Suppliers of materials, standard parts, components

- Sources of supplies (e.g. military supply system, constructor, original manufacturer (OEM), distributor approved by the manufacturer, retailer, operating organisation, ...)
- Types of items (e.g. components, consumables, standards, materials, , …)

This paragraph shall describe how the maintenance organisation may contract/task part of the maintenance to another AMO as per MSTAR 145.A.70 (a)16. All such contracted/tasked organisations shall be listed in the MOE chapter 5.4.

☐ Contracted/tasked organisations

- Sources of services (e.g. AMOs and their related approved ratings)
- Types of services (e.g. specialised work, line maintenance, component maintenance,...)

This paragraph shall describe how the maintenance organisation may contract part of the maintenance to another organisation not holding an MSTAR 145 approval, as per MSTAR 145.A.75 (b). All such contracted/tasked organisations shall be listed in the MOE chapter 5.2.

☐ Contracted/tasked organisations

- Sources of services (non-MSTAR 145 approved organisations and their related qualification)

- Types of services (e.g. specialised work, line maintenance, component maintenance,...)

2.1.2 Monitoring the suppliers.

For each category of supplier identified in the previous chapter, the related monitoring and approval process shall be described.

The acceptance and monitoring process of suppliers shall comply with AMC MSTAR 145.A.75 (b).

☐ Initial nomination of suppliers and contracted/tasked organisations:

- Selection processes;
- Internal acceptance process;
- Issuance of the internal authorisations (e.g. scope of authorisation, validity, ...);
- Producing the list of suppliers, contracted/tasked organisations;
- Internal distribution of the list – access / authorisation of computerised list.

☐ Monitoring of the list of suppliers and, contracted/tasked organisations versus internal authorisation:

- Incoming inspection results, audit results, possible internal limitation…;
- Assessment of the service provided;
- Updating of the list;
- Withdrawal of the internal authorisation, when applicable.

☐ Management of the purchase orders according to the nominated suppliers and contracted/tasked organisations.

☐ Records of suppliers, contracted/tasked organisations information:

- Files;
- Duration / location;
- Type of documents (Certificates, audit reports, list of suppliers, incoming inspection results, …).

2.2 Acceptance / inspection of aircraft components and materials.

2.2.1 Component / Material certification.

This chapter is to identify the release documents to be expected/accepted for each type of component/material depending on their status (new/used). It is recommended to develop a table listing all the cases, for easy reference to receiving inspection personnel.

☐ New components

STATUS "NEW"	
type of part/material	**document to be expected**
standard parts	Option 1: when the standard part/material is purchased directly from the manufacturer, the Certificate of Conformity issued by the manufacturer is expected; Option 2: when the standard part/material is purchased thru a third-party supplier (i.e. distributor, operating organisation, maintenance organisation, etc.) the documentation accompanying the standard part/materials shall contain:
materials (raw materials and/or consumables)	Conformity certification to the standard part/material applicable standard/specification, and; • identification of the manufacturing source, and; • Identification of the supplier source. For Option 2, the information above may be included in one single Certificate of Conformity issued by the supplier (containing cross reference to the manufacturer CoC) or be composed by more documents, such as for example the CoC issued by the manufacturer plus a statement from the supplier source. In any case, the manufacturer CoC shall be made available upon request.
aircraft components	Option 1: MSTAR Form 1; Option 2: EASA Form 1 (if accepted by the DGTA, and not originating from an EASA Part M Subpart F approved organization). Option 3: A national equivalent document recognized by the DGTA as declaring an item's serviceability and airworthiness. Option 4: A release document issued by an organization accepted by the DGTA.

☐ Used components

STATUS "USED"	
type of component / material	**document to be expected**
aircraft components	Option 1: MSTAR Form 1; Option 2: EASA Form 1 (if accepted by the DGTA, and not originating from an EASA Part M Subpart F approved organisation). Option 3: A national equivalent document recognized by the DGTA as declaring an item's serviceability and airworthiness. Option 4: A release document issued by an organisation accepted by the DGTA.

☐ *Depending on the type of components the maintenance organisation shall additionally describe the specific requirements applicable to Life Limited parts, used components, etc.*

2.2.2 Receiving inspection procedure.

Incoming inspection For Components / Materials/ Standard Parts received from external sources:

- Required documentation
- Compliance with purchase order / item condition
- Conformity with maintenance organisation requirements (e.g. type of release requested, sources of requirements)
- Identification of components/material after receiving inspection (e.g. tagging)
- Materials/standard parts received in batches and related traceability (e.g. splitting of batches)
- Traceability of components and materials to the related documentation (e.g. internal tracking number)
- Receiving inspection records
- "Quarantine" procedure
- Modification Standard and AD compliance
- Identification of storage limitation/ life limits

☐ Acceptance and incoming inspection of components from internal sources (e.g. transfer between stores, from the workshops):

- Conformity with maintenance organisation requirements
- Records
- Required documentation
- Compliance with purchase order, condition
- "Quarantine" procedure
- Identification of storage limitation/ life limits

☐ Acceptance and incoming inspection of internal fabricated parts in accordance with AMC MSTAR 145.A.42 (c) 9.

☐ Acceptance and incoming inspection of serviceable components removed from aircraft.

☐ Acceptance of components received in ‘Aircraft On Ground’ situations (these parts are often received directly at the grounded aircraft location and dedicated procedures need to be in place).

2.2.3 Installation of components / parts / materials

Procedure for verification by the installer prior to installation of components/parts and prior to use materials on an aircraft or component

- Verification of satisfactory condition and appropriate document for installation of any aircraft component

- Verification that, a component is eligible to be fitted when different modification and/or airworthiness directive configuration may be applicable
- Verification of standard parts on an aircraft or component (i.e. traceability, applicable standard as per maintenance data requirement)
- Verification prior to use any raw or consumable material on an aircraft or component (i.e. due dates, applicable specification as per maintenance data requirement)"

2.3 Storage, tagging and release of aircraft components and materials to aircraft maintenance.

☐ Procedures for maintaining satisfactory storage conditions (including segregation) of:

- Aircraft components
- Perishables, raw material
- Flammable fluids
- Engines
- Bulky assemblies
- Record of position in the store (s)
- Etc

☐ System and procedure to control shelf life / life limit and modification standard.

☐ Special storage requirements (condition and limitation) e.g.: Electro-sensitive devices, rubber.

☐ Tagging / labelling system and storage areas:

- Serviceable components /material
- Unserviceable components /material
- Unsalvageable components (see MSTAR 145.A.42(d))
- Quarantine
- Batch number
- Scrap (etc.)

☐ Issue of components, standard parts and materials, to the maintenance process (control, identification, batch segregation).

☐ Deployed operations.

☐ Access to storage facilities restricted to authorised personnel

The storage condition and the storage limitation must be based upon manufacturer specifications.

2.4 Acceptance of tools and equipment.

This chapter shall describe the procedures for the acceptance of new, maintained, modified, calibrated tools/ equipment received and also the loaned/ hired tooling. It could also specify (as for chapter 2.1) the assessment processes of tooling suppliers and the control of contracted/tasked organisations carrying out maintenance services on tooling:

☐ Tools and equipment acceptance procedure:

- Sources
- Conformity with maintenance organisation requirements (e.g. certification, ...)
- Records

☐ Incoming inspection for tools:

- Required documentation
- Compliance with purchase order / condition of the tool
- "Quarantine" procedure
- Internal identification
- Verification of necessary control / calibration

☐ Monitoring of tool maintenance service suppliers:

- Selection processes for each type of supplier
- Internal authorisation processes for each type of supplier and contracted/tasked organisation
- Monitoring of the internal authorisations (e.g. scope of authorisation, validity,...)
- Withdrawal of the internal authorisation

Note: A list of tool related service providers (inspection /servicing/ calibration) has to be established and amended under the control of the Quality System.

2.5 Calibration of tools and equipment.

This chapter shall describe all the procedures related to the controls, revisions, modifications, checking and calibrations of the tools/ equipment:

☐ Inspection, servicing and calibration programme / equipment and calibrated tool register.

☐ Establishment of inspection, servicing and calibration time periods and frequencies.

☐ Person/ department responsible for the calibration programme, the register, the follow up, time period and frequencies (link between departments if necessary).

☐ Identification of servicing / calibration due dates.

☐ Management of loaned calibrated tools / equipment.

2.6 Use of tooling and equipment by staff (including alternative tools).

This chapter shall describe all management procedures for tooling, distribution and return of the tooling after use:

☐ Distribution of tools:
- record of user
- location of use
- Verification of A/C or component is clear of all tools after completion of maintenance

☐ Determining tool serviceability prior to issue.

☐ Training and control of personnel in the use of tools and equipment (records of training).

☐ Loan tool control and audit.

☐ Control of alternative tools:

- Demonstration of equivalence between design/manufacturing data of alternative tools and the data/features of the tools recommended in the maintenance data of the manufacturers
- In-house identification rule of alternative tools (P/N, S/N)
- Alternative tools validation process
- Register of alternative tools /tagging/relation between the references of original tools and alternative tools
- Treatment of possible changes of maintenance data according to the new references of alternative tooling (modifications limited to the references of the tooling to be used and/or adaptation of maintenance data regarding alternative tooling)
- Use, storage and maintenance manuals associated with the alternative tools (if applicable)
- In-house approval of each alternative tooling before being used
- Storage of the records of alternative tooling

2.7 Cleanliness standards of maintenance facilities.

☐ Organisation of the cleaning of the facilities:
- “Foreign Object" exclusion programme
- Cleaning programme
- Individual responsibilities
- Timescales
- Waste material disposal
- Special procedure for some facilities (e.g. painting, white room, parts cleaning, etc)
- Segregation of facilities to prevent cross contamination

2.8 Maintenance instructions and relationships to aircraft / aircraft component manufacturer's instructions including updating and availability to staff.

This chapter shall describe the management of all the technical documentation in use within the maintenance organisation.

This chapter shall be structured to clearly identify the various types of documentation in use (both of external and/or internal origin), to be controlled by the maintenance organisation in order to perform the intended scope of work. The documentation may be divided in two main groups:

2.8.1 Maintenance data coming from external sources.

This paragraph needs to identify that the applicable maintenance data is used as defined in 145.A.45 (b). coming from external sources such as (M)TCH, (M)STC holders, the DGTA (e.g. instructions for continuing airworthiness, AD, SB, etc);

☐ Control of information:
- Technical library
- Subscriptions control
- Information held / needed regarding the scope of work
- Issue / amendment control

☐ Technical information amendment procedures:
- Manuals
- Service Information (AD, SB, etc.)
- Distribution: access to the staff

☐ Control of customer supplied maintenance data (refers also to Chapter 2.13).

2.8.2 Documentation / maintenance instructions issued by the maintenance organisation.

This chapter needs to identify and describe the objective and management of the documentation issued by the maintenance organisation itself, as for example:

☐ Modification of maintenance instructions by the maintenance organisation as defined in MSTAR 145.A.45 (d) as applicable;

☐ Maintenance instructions issued in conformity to approved data as per MSTAR 145.A.45 (e) in order to facilitate/customise the maintenance (e.g. work card/work sheet, engineering orders, technical specifications, etc.) as applicable (refers also to Chapter 2.13);

☐ Documentation issued for internal information purposes (e.g. quality information bulletins, quality alerts, occurrence investigation reports, etc.) as applicable;

☐ Control of information:
- Technical library
- Information held / needed regarding the scope of work
- Issue / amendment control

☐ Verification and validation of new procedures where practicable;

☐ Incorporation of best practice and human factors principles;

☐ Incorporation of Fuel Tank Safety concept on maintenance documentation (Job Instruction Cards etc.);

☐ Incorporation of CDCCL concept (where applicable):

- compliance with CDCCL instructions
- traceability of CDCCL completion

☐ Awareness of Technical Publications, Instructions and Service Information by the staff.

2.9 Repair procedures.

2.9.1 Repairs.

This chapter is intended to describe how the maintenance organisation is performing repairs on aircraft/components/engines according to already available maintenance data and how it is managing the repairs not described in the manufacturers' documentation.

It has to be noted that the privilege given by MSTAR 145.A.45 (d) in order for the maintenance organisation to develop modified maintenance instructions (as described in previous MOE chapter 2.8), is excluding the engineering design of repairs and modifications.

Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data specified in MSTAR M.A.304.

☐ Repairs according to already available maintenance data:

- Repairs In accordance with AMM, SRM, CMM etc.
- Sources of repair approval as per MSTAR M.A.304
- Repairs already approved by the TC Holder
- Internal process in use and forms to manage the repairs

☐ Repairs requiring a new approval (not already included in the available maintenance data):

- Sources of repair approval as per MSTAR M.A.304
- Acceptance of minor/major repairs approvals (it is recommended to develop a table listing the various case)
- Work order
- internal process in use and forms to manage the repairs
- Maintenance instruction (job cards,...)

☐ Control of the scope of work versus the requested repair (limitations and conditions).

2.9.2 Fabrication of parts.

A maintenance procedure shall be established to address requirements of MSTAR 145.A.42 (c) and its associated AMC.

If this chapter is used/is applicable, the parts fabrication permission shall also be specified in the MOE chapter 1.9 “scope of work”.

2.10 Aircraft Maintenance Programme compliance.

This chapter shall refer to the aircraft, engines and component maintenance programmes (scheduled tasks, inspections, adjustment, tests, and replacement of component/life limited parts...).

☐ Qualification and experience required to demonstrate appropriate expertise
☐ Details about the contract with the CAMO

☐ Delegated functions:

a. Developing the aircraft maintenance and reliability programme,
b. Performing the collection and analysis of the reliability data,
c. Providing reliability reports, and
d. Proposing corrective actions to the CAMO.

More generally the procedure shall also detail how the maintenance organisation is providing adequate reporting to the CAMO:

☐ Maintenance programme variations

☐ Corrosion prevention and control programme reporting

☐ Structural Significant Items reporting

☐ Reliability reporting

2.11 Airworthiness Directives procedure.

The follow up of Airworthiness Directives is the responsibility of the CAMO who must request their enforcement on the work order/tasking sent to the maintenance organisation. The maintenance organisation is then responsible for embodying the ADs which have been ordered/tasked.

It is necessary to differentiate between the activities of management / implementation of ADs on behalf of the CAMOs/operating organisation and that carried under the MSTAR 145 approval.

Only the AD related activities which concern the AMO tasks have to be described in the MOE, with particular reference to the following points.

☐ Identification of the responsibilities of the maintenance organisation with regards to ADs, such as but not limited to establishing compliance with the following:

- MSTAR 145.A.42 “Acceptance of components” requires the maintenance organisation to ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive standards may be applicable. In order to comply with this requirement, the maintenance organisation shall demonstrate it has an adequate control on ADs applicable to components in their store(s), being able to demonstrate as a minimum:

  - Access to the relevant ADs;

  - When the airworthiness control of the components is directly ensured by the owner of the components, the maintenance organisation shall demonstrate that a contract is in place, attributing the responsibilities related to the ADs to such owner. This also applies to component(s) directly delivered by their owner to the line stations (MSTAR 145.A.75 (d) refers);

  - When the maintenance organisation retains control of the airworthiness status of the component(s) (i.e. the maintenance organisation owns the component), the maintenance organisation shall ensure that all applicable ADs are embodied to the components they have in store. The maintenance organisation shall employ qualified

staff for the AD analysis, issuing internal work orders and performing the AD compliance follow-up.

- MSTAR 145.A.45 “Maintenance data” requires the maintenance organisation to have access to and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. This means the maintenance organisation shall demonstrate, as a minimum:
- access to the relevant ADs;
- MSTAR 145.A.50(a) “Certification of Maintenance” requires to issue a Certificate of Release to Service when it has been verified that “….. and that there are no noncompliance’s which are known to endanger flight safety”. This means that the maintenance organisation shall demonstrate, as a minimum:
  - access to the relevant ADs;
  - a procedure to ensure that a CRS is only issued when there is no non-compliance which is known to endanger flight safety (i.e. the maintenance organisation is aware of an overdue Airworthiness Directive applicable to the product/component being maintained).

☐ Maintenance organisation policy:

- Studying ADs according to the scope of work of the maintenance organisation;
- Selection of ADs according to the scope of work of the maintenance organisation;
- Recording of applicable ADs according to the scope of work of the maintenance organisation;
- Determining internal or external ADs embodiment (linked to the scope of work).

☐ Accomplishment of ADs via work orders specifying the status of the document to be used.

☐ Awareness that the associated maintenance data contained within the AD is mandatory.

☐ Identification of the mandatory requirement in the maintenance documentation.

2.12 Optional modification procedure.

This chapter shall refer to the modifications to be embodied on the aircraft/components/engines. It has to be noted that the privilege given by MSTAR 145.A.45 (d) in order for the maintenance organisation to develop modified maintenance instructions (as described in previous MOE chapter 2.8), excludes the engineering design of repairs and modifications.

Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data specified in MSTAR M.A.304.

☐ Maintenance organisation policy:

- Sources of modification approval as per MSTAR A.304;
- Internal process in use and forms to manage the modifications;
- Modification including embodiment of (M)STCs.

☐ Control of the scope of work (limitations and conditions).

The embodiment of the Optional Modifications is the responsibility of the operating organisation/CAMO who will detail their embodiment on the contract/tasking sent to the maintenance organisation.

2.13 Maintenance documentation in use and completion of same.

This chapter shall refer to the creation of a standard work file and how to complete the work documents/ work cards making up these files. Specific instructions from manufacturer maintenance data related to CDCCL shall be considered.

It is recommended to structure this chapter in three separate paragraphs as indicated below. Clear differentiation is expected for each individual rating in the scope of work (e.g. aircraft, engines, components, specialised services).

2.13.1 Conception and update of the template.

This procedure shall identify the process of issuing and updating templates for the documents to be used during maintenance.

- ☐ Conception / validation of a template
- ☐ Identification of the templates needed
- ☐ Analysis and implementation of manufacturer data revisions
- ☐ Revision of the template

2.13.2 Maintenance documentation in use.

This procedure shall identify all the internal documents used for recording maintenance and making the complete work package.

- ☐ List of maintenance documents which build up a standard work package (e.g. front page with general information, list of tasks required, work cards, associated work orders, expected CRS…)
- ☐ Assembly of work packages for issue to maintenance activity
- ☐ Worksheets for non-routine tasks
- ☐ Assembly of completed work package for certification
- ☐ Control and use of customer supplied work cards/worksheets

2.13.3 Completion of maintenance documentation.

This procedure shall describe the completion of each of the documents identified in the previous paragraph. This may be done by reference to MOE chapter 5.1 where the related sample document is included together with its related completion instructions. This procedure shall detail:

- ☐ Process of declaring a task not applicable including conditional tasks
- ☐ Process of recording test results and dimensions
- ☐ Process of recording materials/components replaced together with the related traceability to the accompanying documents
- ☐ Record and management of additional works
- ☐ Record and management of deferred maintenance
- ☐ Process to correct a maintenance record imperfectly/incorrectly entered during the performance of maintenance
- ☐ Worksheet / work card completion and maintenance / independent inspection sign-off Use of personal stamps

☐ Procedure for recording calibrated tool / equipment used in maintenance tasks

This procedure shall also clarify the process of task sign-off [3], depending on the various situations (e.g. sign-off of a normal task, of a task requiring an independent inspection, with a person on training, etc.) and depending upon the job descriptions identified within the maintenance organisation's MOE (e.g. certifying staff/support staff in MOE chapter 3.4, qualifying maintenance personnel in MOE chapter 3.8, qualifying supervisors in MOE chapter 3.7, etc.).

The procedure shall clearly indicate when a task is to be considered signed-off and by which means (e.g. use of personal stamp, use of signature, combination of stamp plus signature, etc.).

☐ The use of a summary table for tasks-sign off is recommended

All the personnel "authorised" [4] by the maintenance organisation to sign off tasks shall be identified (e.g. by reference to a separate personnel list).

Consistency of this paragraph shall be ensured with the job descriptions introduced in the other MOE chapter (e.g. 3.4,3.7,3.8,3.11)

Notes:

[3] - A "sign-off" is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different from the

[4] - "Authorised personnel" means personnel formally authorised by the maintenance organisation approved under MSTAR 145 to sign-off tasks. "Authorised personnel" are not necessarily "certifying staff".

2.14 Technical records control.

☐ System for control, storage conditions (e.g. is there a fire extinguisher system, fire detection, etc...) and retrieval of records (paper or computer based)

☐ Control of access to records (paper and / or computer-based records)

☐ Record-keeping systems

☐ Lost or destroyed records (reconstruction and DGTA acceptance)

☐ Provision of records to operator

☐ Retention of records:

- Periods
- Methods
- Security

2.15 Rectification of defects arising during base maintenance.

New defects or incomplete maintenance work orders identified during maintenance shall be brought to the attention of the CAMO for the specific purpose of obtaining agreement to rectify such defects or completing the missing elements of the maintenance work order.

In the case where the CAMO declines to have such maintenance carried out, MSTAR 145.A.50 (e) is applicable in order to issue the Release to Service for aircraft (with deferred maintenance), as addressed in MOE chapter 2.16.

☐ Base maintenance procedure:
- Records of base maintenance defects
- Sign-off of base maintenance defects

☐ Analysis of defects and rectification

☐ Notification process (when necessary) to the CAMO, (and DGTA in case of doubt – AMC MSTAR 145.A.50 (e) para 2 refers)

☐ Report to the CAMO

☐ Approval of the CAMO to launch the rectification according to the contract

Incorporation of standard defect rectification in work files, records, their control, release certificate and information to the contracting/tasking organisations are to be dealt with in MOE chapters 2.13, 2.14, 2.16, 2.17.

2.16 Release to Service procedure.

Clear differentiation is expected for each different rating in the scope of work (e.g. aircraft, engines, components, specialised services). The release to service procedure shall at least address the following issues:

☐ Definition of the CRS statement

☐ Issuance and completion instruction of CRS after:
- ☐ Base Maintenance (e.g. Maintenance Release Certificate);
- ☐ Line Maintenance;
- ☐ Engines/components/specialised services maintenance (MSTAR Form 1).

☐ Cross-reference to work orders (initial work order, additional works, …) to ensure that all the tasks ordered have been performed

☐ Minimum information to be contained in the certificate of release to service:

☐ Basic details of the maintenance carried out (by reference to the maintenance data and related revision status, plus any eventually associated work orders or job card as applicable to the product or component being maintained); and
☐ The date such maintenance was completed; and
☐ The location where the release to service is issued; and
☐ The identity of the maintenance organisation and person issuing the release to service, including:
- the approval reference of the maintenance organisation; and
- the MSTAR 145 AMO C/S - S/S individual authorisation number/references of the certifying staff issuing such a certificate;

☐ The limitations to airworthiness or operations, if any.

☐ Issuance of a CRS with limitations/incomplete work as per 145.A.50 (e) (e.g. maintenance organisation not in condition to complete all the maintenance ordered, deferred maintenance, CAMO acceptance)

☐ Impossibility to sign a release certificate that could hazard flight safety e.g.:

- ☐ AD owed and not enforced;
- ☐ Work carried out not in accordance with the approved data;
- ☐ Discrepancies that may have consequences on the airworthiness of the aircraft/ component/engine.

☐ Issuance and completion instruction of CRS in the following specific cases, if applicable:

- ☐ One-off authorisation (note: the MOE chapter 3.4 specifies the related qualification requirement);
- ☐ Maintenance Away from the Approved Location(s) as per 145.A.75 (c) (note: the MOE chapter 2.24 specifies the related conditions).

☐ Release to service for components removed serviceable from aircraft (AMC 2 145.A.50 (d)):

- ☐ Issuance of an MSTAR Form 1 for components removed serviceable from DGTA registered A/C;
- ☐ Swap/change over serviceable components between DGTA registered A/C or between different positions of the same DGTA registered aircraft; A component removed serviceable shall be released to service following the specific procedures included in MOE chapter 2.16 before being installed in another position;
- ☐ Issuance of an MSTAR Form 1 for components removed serviceable from a non DGTA registered A/C.

☐ Temporary fitting an aircraft component without appropriate release certificate in AOG condition (e.g., agreement of the CAMO, acceptable certificate, checking the status of the component, technical log record, corrective action when the aircraft returns to its Main Operation Base...)

☐ The specificities of MSTAR Form 1:

This procedure shall at least address the following issues:

- The address to be recorded in the MSTAR Form 1 block nr. 4 is either the address of the MSTAR 145 AMO which is reflected in the first page of the MSTAR Form 3 certificate or the address where the maintenance was performed. However, to allow the identification of the maintenance site where the MSTAR Form 1 is issued (in the case where, in particular, this address is different from the one in the MSTAR Form 3), the maintenance organisation shall ensure a system is in place to retrieve the information of the maintenance site where the MSTAR Form 1 was issued, starting from the tracking number of the MSTAR Form 1 (block nr. 3);
- The tracking numbering/references system of MSTAR Form 1 shall be described demonstrating a unique number/reference is used;
- An identification system shall enable to track the location where the maintenance has been released to service;
- The recording system allowing to easily retrieve all the issued MSTAR Form 1;
- The cancellation or correction of an MSTAR Form 1 mistakenly completed/issued.

2.17 Records for the CAMO.

This chapter is only applicable when the maintenance organisation is retaining records on behalf of the CAMO (e.g. Original Aircraft Technical Logbooks, Life limited parts records, etc.).

- ☐ Contracted/tasked record keeping for CAMOs;
- ☐ Arrangements for processing and retention of CAMO's maintenance records.

2.18 Reporting of defects.

2.18.1 Internal occurrence reporting system.

It shall be understood that the internal occurrence reporting system is intended to collect all reports internally generated by the maintenance organisation. The internal occurrences which fall within the definition of occurrences to be reported as per MSTAR 145.A.60 (e.g. to DGTA, etc) shall be only a part of the collection.

- ☐ Collection and evaluation of reports;
- ☐ Extraction of occurrences to be reported as per MSTAR 145.A.60 (which are referred in the following paragraph 2.18.2);
- ☐ Just culture (errors management procedure is expected in the MOE chapter 2.25);
- ☐ Description of the process to investigate occurrences (i.e. criteria to identify occurrences to be investigated, investigation report format, management actions in response to investigation findings, follow-up system, feedback to staff, etc.);
- ☐ Methods of maintenance errors investigation;
- ☐ Maintenance errors identified to be used for internal human factors training;
- ☐ Description of process to record occurrences;
- ☐ The analysis of occurrence data;
- ☐ Sharing information from investigations.

2.18.2 Reportable occurrences as per MSTAR 145.A.60.

This procedure must describe the reporting procedure to DGTA and all further addressees as required by national regulations. Any condition of the aircraft or component identified by the maintenance organisation that has resulted or may result in unsafe condition that hazards seriously the flight safety shall be reported.

- ☐ List of Reportable occurrences (refer to EMAD 20-8 under development for further guidance);
- ☐ Technical Occurrence Report Form;
- ☐ Methods for reporting;
- ☐ Reporting timescale;
- ☐ Reports must contain pertinent information and evaluation of results (where known);
- ☐ Persons responsible for reporting;
- ☐ Occurrences reported by Contractors/tasked organisations.

2.19 Return of defective aircraft components to store.

This chapter shall refer to the process of parts returned by maintenance organisation teams to the store.

- ☐ Labelling and identification of "defective" components (required information)
- ☐ Serviceable aircraft component found "defective" at installation (e.g. involvement of quality system for investigation, possible need to report the occurrence as per MOE chapter 2.18)

☐ Handling and movement of components (link between involved departments)
☐ Storage of “defective” components

2.20 Management of defective components with outside contractors / tasked organisations.

This chapter shall refer to the process of sending components to outside contractors/tasked organisations for repair or modification.

This chapter is only applicable when the maintenance organisation is sending/contracting/tasking component maintenance to:

• Another MSTAR 145 AMO as per MSTAR 145.A.70 (a) (16). This fact shall be reflected in the MOE chapter 2.1 and the contracted/tasked organisation(s) listed in MOE chapter 5.4, or
• Another maintenance organisation not holding an MSTAR 145 approval, as per MSTAR 145.A.75 (b). This fact shall be reflected in the MOE chapter 2.1 and the “Contractors/tasked organisations” listed in the MOE chapter 5.2.

☐ Dispatch of components for repair / overhaul / calibration
☐ Identification of required work
☐ Return of the serviceable component after maintenance at the contractor/tasked organisation facility
☐ Control of dispatch, location and return
☐ Return of unserviceable loan parts
☐ Management of the packaging and special transportation condition (e.g.: Wheels – oxygen bottles)

2.21.1 Control of computer maintenance records system.

This chapter shall refer to the computer systems used to manage and/or record information regarding the maintenance tasks carried out.

☐ Description of the computer records system in use and relate objectives
☐ Information retrieval
☐ Back-up systems (frequency, means, and delay) and second site storage (frequency, means and delay)
☐ Security and safeguards to unauthorised access

This chapter shall not be confused to MOE chapter 2.14 *“Technical record control” which is intended to cover the record keeping requirement addressed in MSTAR 145.A.55.*

2.21.2 Control of man-hour planning versus scheduled maintenance work.

☐ Hangar visit plan versus man-hour plan
The "hangar visit plan" shall be made available to demonstrate sufficiency of hangar space to carry out planned base maintenance. The relation between the hangar visit plan and the man-hour plan shall be described. The hangar visit plan shall also include other activities.

☐ Management system of maintenance organisation planning versus time available (e.g. A/C base maintenance or components maintenance activity, …)

☐ Type of planning (man hours availability versus work load)

☐ Type of factors taken into account in the planning:

- Human performance limitations
- Complexity of work
- Additional factor

☐ Use of “contracted/tasked” [5] personnel as per AMC 145.A 30 (d)

At least half the staff that perform maintenance in each workshop, hangar or flight line on any shift shall be employed to ensure organisational stability. For the purpose of meeting a specific operational necessity, a temporary increase of the proportion of contracted/tasked staff may be permitted to the maintenance organisation by the DGTA in accordance with an approved procedure to be included in this MOE chapter, which shall describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability.

☐ Notification to the Quality Manager and Accountable Manager of deviations exceeding 25% between the work load and the man hour availability

Notes:

[5] - *“Contracted/tasked” means the person is employed by another maintenance organisation and contracted/tasked*

2.23 Control of critical maintenance tasks.

This chapter is intended to establish a procedure to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the component/engine/aircraft if not performed properly.

☐ Procedure for the performance of critical maintenance tasks affecting safety:

- Minimum list of “critical maintenance tasks affecting safety” defined by the maintenance organisation (e.g. engine installation, rigging/adjustment of flight controls);
- Data sources used to identify the list of “critical maintenance tasks affecting safety” ((M)TCH data, occurrence reporting, audit, etc.);
- Error capturing method(s) used. The primary error capturing method to be used shall be the independent inspection procedure as per AMC 145.A.48 (b) b). This procedure is expected to be detailed in the MOE chapter 2.25. The list of “critical maintenance tasks affecting safety” should be subject to continuous evaluation and when necessary amendment by the maintenance organisation as the result of maintenance errors investigations, audit, (M)TCH data analysis, etc.

  When the CAMO/Operating Organisation defines its own list of critical maintenance tasks affecting safety, the effective independent inspection tasks to be carried out are the independent inspections required by the MSTAR 145 MOE plus the ones required by the CAMO/Operating Organisation.

☐ Procedure to minimise the risk of multiple errors and errors being repeated in identical maintenance task

This procedure shall cover the prevention, where possible, of simultaneous maintenance by the same person on similar systems on the same aircraft (disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check).

In particular, the procedure shall describe:

- Definition of simultaneous maintenance by the same person on similar parts/systems on the same component/engine/aircraft, including examples applicable to the scope of work (i.e. this may be a dual engine oil uplift, simultaneous replacements of two cabin pressure controllers, etc.);

- The related error capturing method(s) to be used. When more than one error capturing method is defined, criteria need to be established to prioritise the methods to be adopted. For example:
  - Planning the accomplishment of such “identical maintenance tasks” by different mechanics or to be done in different working shifts (this could be done for example at the maintenance planning phase);
  - Completion of the identical maintenance tasks by adopting the independent inspection procedure;
  - “Re-inspection task by the same person” when only one person is available (re-inspection to be recorded).

  When a detailed procedure is necessary to further detail the peculiarities of the error capturing method(s) identified in this paragraph, this procedure is expected to be included in the MOE chapter 2.25. For example, in the case the error capturing method of “re-inspection task by the same person” is adopted, a detailed procedure is to be expected in the MOE chapter 2.25 to describe as a minimum how the “re-inspection” is going to be recorded in the maintenance records.

2.24 Reference to specific maintenance procedures.

☐ Maintenance outside the approved location (s) * as per MSTAR 145.A.75(c) and Chapter 1.9:

- Support an unserviceable aircraft (AOG requiring defect rectification)
- Occasional Line Maintenance

☐ Engine run up
☐ Aircraft pressure run
☐ Aircraft towing Aircraft taxiing
☐ Technical wash
☐ Control/ supervision of de-icing systems
☐ Handling and control of waste materials
☐ Scrapping of parts
☐ Aircraft military specific systems procedures
☐ Maintenance check flight in accordance with CAMO procedure

2.25 Procedures to detect and rectify maintenance errors.

☐ Error capturing method(s) chosen by the maintenance organisation.

This paragraph shall detail the various detailed procedures associated to each of the possible error capturing methods, which have been identified in the MOE chapter 2.23 as a mean to avoid errors during the performance of “critical maintenance tasks affecting safety” and/or “identical maintenance tasks”. As a minimum, the following error capturing methods procedures shall be detailed:

- Independent inspection procedure:
  - Definition as per AMC MSTAR 145.A 48 (b);
  - How to perform the independent inspection/what to check (e.g. ensure correct assembly, locking and sense of operation, etc.);
  - Re-inspection procedure: record of re-inspection done by the same person in the case of “identical maintenance tasks”.

This Independent inspection procedure shall be consistent with the job descriptions entered in the MOE chapters 3.4, 3.7, 3.8, 3.11 and with the sign-off policy entered in MOE chapter 2.13.

In addition to the above the policy adopted for preventing omissions is to be described, being a standard error capturing method. This typically consists in having procedures which ensure: signoff of task only after completion, policy for sign- off of group of tasks, work by trainees performed under supervision, etc. Those specific procedures may be included in other MOE chapters as applicable (i.e. sign-off policy in the MOE chapter 2.13), however in this paragraph the policy of preventing omissions shall be described.

- Procedure for general verification after completion of all maintenance as per MSTAR 145.A 48 (d):
  - Missing tools and foreign object procedure.

☐ Aims and objectives of the error management system (this procedure may be developed in this chapter or referred to a procedure introduced in MOE chapter 2.18):
- The encouragement of reporting
- A code of practice
- No reprisal policy
- Feedback of the independent inspections

2.26 Shift / task handover procedures.

☐ Aims and objectives of the shift handover

☐ Training of personnel in shift/task handover

☐ Processes Recording of shift/task handover

☐ Description of a formalised handover process and required information:
- Facility status
- Work status
- Manning status
- Outstanding issues
- Other possible information

☐ Responsible person for managing and filling up the shift / task handover

2.27 Procedures for notification of maintenance data inaccuracies and ambiguities to the author of the maintenance data.

☐ Definitions of maintenance data ambiguities

☐ Method of internal notification of maintenance data ambiguities

☐ Method of external notification of maintenance data ambiguities to the authors of that data

☐ Method of assessment and extraction of those ambiguities / inaccuracies to be reported under MOE chapter 2.18 as mandatory reportable occurrences Feedback to staff and

☐ implementation of author corrections

☐ Impact of the data ambiguity on the on-going maintenance task

The authors are:

- *Aircraft / component design organisation (AMM, SB, SRM,...)*
- *The DGTA*
- *The (M)TC / (M)STC holder*
- *The maintenance organisation itself in the case of maintenance organisation job cards*
- *The CAMO / Operating Organisation in the case of job cards issued and furnished by the CAMO / Operating Organisation*

2.28 Maintenance planning procedures.

☐ Analysis of the work order to ensure the requested maintenance remains within the approved scope of approval.

☐ Verification that the maintenance work package provided by the *CAMO/Operating Organisation* is utilizable by the maintenance organisation. In any case the maintenance organisation shall issue an internal work package as detailed in MOE chapter 2.13:
Case 1: *CAMO/Operating Organisation* job cards to be used (with appropriate training)
Case 2: work package to be developed and prepared by the maintenance organisation based on the *CAMO/Operating Organisation* work order

☐ Control of the availability and update of maintenance documents (list + MM / job cards /…)

☐ Procedure for establishing all necessary resources are available before commencement of work (manpower with required capabilities, staff, facilities, tools, equipment, parts, documentation, etc.)

☐ Procedure for outsourcing contractors/tasked organisation as necessary.

☐ Procedure for organizing maintenance personnel and providing all necessary support during maintenance

☐ Consideration of human performance limitations (Circadian rhythm / 24 hours body cycle...)

☐ Planning of critical maintenance tasks

Note: The main driver to determine whether a scheduled maintenance check shall be considered as "line maintenance" shall remain the content of the check. Additional tasks or constraints may be also associated to the check such as deferred items, rectification of defects, inspection requesting skilled workers, qualification of the certifying staff, environmental

conditions, overall length of the tasks etc. Access to a hangar or hangar in the nearby shall be part of the decision making.

Therefore a "decision making process" is necessary to assess the content of the check.

PART L2 - ADDITIONAL LINE MAINTENANCE PROCEDURES

MOE Part L2 is intended to provide additional procedures which are specific for the line maintenance environment, which have not been covered in the MOE Part 2. Where a procedure, was already covered in the MOE Part 2 and there is no need of further detail to be added, a direct reference to the MOE (Part 2) chapter may be used in the relevant MOE (Part L2) chapter.

L2.1 Line maintenance control of aircraft components, tools, equipment, etc.

This chapter must describe the additional / special procedures of the management of the facilities, materials/ ingredients and tools/ equipment, technical documentations, staff associated to the line maintenance activity. For example, this applies when a line station separate from the main maintenance site needs to use procedures to control the components, tools, equipment which are not the same used in the main site as described in MOE Part 2.

- ☐ Component / Material acceptance - (required documentation, condition, "Quarantine" procedure)
- ☐ Components removed serviceable from aircraft
- ☐ Procedures to maintain satisfactory storage conditions - (routable, perishables, flammable fluids, engines, bulky assemblies, special storage requirements)
- ☐ System for control of shelf life and modification standard
- ☐ Tagging / labelling system (serviceable, unserviceable, scrap, etc.)
- ☐ Release of components to the maintenance process
- ☐ Tools and test equipment, servicing and calibration programme / equipment register
- ☐ Identification of servicing / calibration due dates
- ☐ Procedure for general verification after completion of line maintenance as per MSTAR 145.A.48 (d)

L2.2 Line maintenance procedure related to servicing / fuelling / de-icing / including inspection for removal of de-icing / anti-icing fluid residues, etc.

This chapter must describe the additional / special procedures of management of the specific activities:

- ☐ Technical and maintenance documentation management (control and amendment)
- ☐ Maintenance organisation Technical Procedures / Instructions management
- ☐ Fuel supply quality monitoring (bulk storage / aircraft re-fuelling)
- ☐ Ground de-icing (procedures / monitoring of contractors/tasked organisations)
- ☐ Maintenance of ground support equipment
- ☐ Aircraft military specifics systems procedures
- ☐ Monitoring of contracted/tasked organisations ground handling and servicing

L2.3 Line maintenance control of defects and repetitive defects.

This chapter must describe the general procedures followed by the maintenance organisation regarding the rectification of defects and repetitive defects recorded during operation of the aircraft. The procedures shall also cover the follow up of defects and repetitive defects on behalf of CAMO/Operating Organisation and the MSTAR 145 AMO.

- ☐ Reportable defects
- ☐ Rules for deferring (periods - review - permitted personnel - conformity with MEL /CDL provisions)
- ☐ Awareness of deferred defects carried by aircraft – (monitoring of repetitive defects - communication with main operation base)
- ☐ Analysis of tech log (repetitive defects – crew complaints - analysis and transfer of cabin log items as required)
- ☐ Co-ordination with the CAMO/Operating Organisation
- ☐ Procedure on how to deal with defects requiring B2 certifying staff in the case of line stations where such staff is not permanently available

L2.4 Line procedure for completion of aircraft technical log.

This chapter must describe the additional procedures of management/completion of the technical log(s) in use. It must also cover the procedures for ETOPS release where applicable. These procedures must be associated to chapters 2.13, 2.16 of the MOE.

- ☐ Technical Log system:
  - Taking into account CAMO/Operating Organisation Procedure
  - Distribution of copies
- ☐ Training on CAMO/Operating Organisation procedures and maintenance record completion (logbook …)
- ☐ Certification / Sign-off (Maintenance Statements)
- ☐ Maintenance Duplicate Inspections
- ☐ ETOPS Certification where applicable
- ☐ Retention of records:
- ☐ Periods
- ☐ Methods and security

L2.5 Line procedure for pooled parts and loan parts.

This chapter must describe the additional management procedures for pooled or loaned parts specific to the line maintenance activity. It shall also cover the removal of serviceable parts from aircraft for use on another aircraft. These procedures must be associated to chapters 2.2, 2.3, 2.19, 2.20 of the MOE.

- ☐ Verification of approved sources of parts (sources, conformity with maintenance organisation requirements, Modification Standard and AD compliance, records)
- ☐ Compliance with loan and contract requirements
  - Tracking and control
  - Required documentation
- ☐ Processing removed loan parts for return to source (records)
- ☐ Components removed serviceable from aircraft

L2.6 Line procedure for return of defective parts removed from aircraft.

This chapter must describe the additional management procedures for treatment of defective components associated with the line maintenance activity. These procedures must cover the same subjects specified in chapters 2.19, 2.20 (return of removed components, sending components...) of the MOE.

L2.7 Line procedure control of critical maintenance tasks.

This chapter is the equivalent of the chapter 2.23 of the MOE for the line maintenance activity.

☐ Follow guidance as per AMC MSTAR 145.A.65 (b) (3)

PART 3 – QUALITY SYSTEM PROCEDURES.

3.1 Quality audit of maintenance organisation procedures.

This chapter must explain how the audit of internal procedures is organised and managed i.a.w. MSTAR 145.A.65 and associated AMC MSTAR 145.A.65.

In particular this chapter shall describe how the requirements for system/procedure audit are complied with and the methodology of the audit. *Small maintenance organisation may choose to contract/task the audits to another organisation or an outside person with satisfactory technical knowledge and satisfactory audit experience (link to MOE chapter 3.6).*

☐ Definition of the Quality System:
- Independence of the quality compliance monitoring staff (e.g. quality auditor)
- Access to Accountable Manager
- Composition and functions of management quality staff

☐ Definition of the “system/procedure” audit (ref. AMC MSTAR 145.A.65 (c) (1) 3&4):
- Common audit procedures for several lines of product
- Specific audit procedure by line of product
- Single exercise audit or subdivided over 12 months

☐ Findings classification (ref. MSTAR 145.A.95):
- Procedures to manage findings and related due dates to be entered in MOE chapter 3.3

☐ “System/procedure” Audit programme:
- System/procedure audit plan (refer to GM MSTAR 145.A.65 (c) (1))
- Principles of annual audit procedure planning
- Grouping of audits
- Dates and timescales
- Audit of the Quality system by an independent auditor, being either:
  - A person employed by the maintenance organisation and working in another department (i.e. production), or;
  - A person contracted/tasked by the maintenance organisation (part-time basis or short time contract/task based on the AMC MSTAR 145.A.30 (d) contracted personnel) to perform audits on the quality system procedures. This case does not mean contracting/tasking the quality system.
- Audit of contracted/tasked organisations, as applicable depending to the monitoring criteria defined in MOE chapter 2.1

- Scheduled audits and audits to be carried out at random and to be carried out during maintenance including night shifts
- Validation/internal approval of the audit programme and management of changes to the programme
- Follow up of the audit program: scheduled, performed, audit report issued, open/close – link with MOE chapter 3.3

☐ Maintenance organisation Audit Policy including compliance audit:
- Audit notification
- Audit reports (documents used, writer, issue, points checked and deviations noted, deadline for rectification)
- Reference can be made to MOE chapter 3.3 detailing the process to manage findings
- Allocation of resources to the audit (audit team, team leader, etc.)
- Principles when deviations are noted on a line of product

☐ Quality audit reports retention:
- Duration (At least duration of 2 years from the date of the findings closure) / location
- Type of documents (notification, audit reports, check list, audit programs)

3.2 Quality audit of aircraft and / or components.

This chapter must describe the procedures related to the product audits (aircraft, aircraft component, engine, specialised service) according to MSTAR 145.A.65 (c) 1 and AMC MSTAR 145.A.65 (c) 1).

☐ Definition of “Product” audit (ref. AMC MSTAR 145.A.65 (c) (1) 5)

☐ Maintenance organisation “Product” Audit Policy:
- A dedicated “Product” audit policy may be added, provided it does not conflict with the one described in the previous chapter. The maintenance organisation audit procedure shall include the quality audit of aircraft (and/or component)

☐ “Product” Audit programme:
- Product samples for each line of product (aircraft and / or components and/or engines and/or specialised services)
- Dates and timescales

☐ “Product” Auditing methods:
- Sampling
- "Trail" / “investigation” audits with regard to previous findings/trends,…

☐ Records of “Product” audit reports:
- Duration (At least duration of 2 years from the date of the findings closure) / location
- Type of documents (notification, audit reports, check list, audit programs, …)

Small maintenance organisation may choose to contract/task the audits to another organisation or an outside person with satisfactory technical knowledge and satisfactory audit experience (link to MOE chapter 3.6).

3.3 Quality audit remedial action procedure.

This chapter must describe the procedures of follow up of corrective actions (originating from internal Quality audits and/or DGTA audits)**.**

☐ Description of the quality audit report feedback system.

☐ Corrective action and timescale:
- Corrective action planning and follow up e.g. notified, answered, corrective action accepted, open/closed
- The corrective action plan shall be designed in a way which allows identifying and recording the finding, the root cause, the relevant immediate and long-term preventive action with the appropriate timescales.

☐ Management of finding due dates:
- Alert system, finding database
- Extension of the due date
- Procedure describing the maintenance organisation actions when the corrective action deadline has to be postponed or when the answer has not been received on time.

☐ Management responsibilities for corrective action and follow-up

☐ Review of the Quality system overall results:
- Meeting with the Accountable Manager. (Including record of meeting procedure)
- Regular meetings to check the progress of corrective actions

The follow up of corrective actions cannot be contracted/tasked. The revision of the audit planning according to the deviations noted/corrected could be linked to MOE chapter 3.1.

3.4 Certifying staff and support staff qualification and training procedures.

This chapter shall refer to MSTAR 145.A.30, AMC MSTAR 145.A.30, MSTAR 145.A.35 and AMC MSTAR 145.A.35 and is limited to the certifying staff and category B1 and B2 support staff qualification*.* Clear differentiation is expected for each different rating in the scope of work (e.g. aircraft, engines, components, specialised services).

3.4.1 Aircraft certifying staff and / or support staff.

☐ Experience, training and competence requirements

☐ MSTAR 145 C/S - S/S individual authorisation *: requirements for initial issue, extension (scope of work), renewal, withdrawal of the authorisation, including, as applicable:
- “Certification Authorisation” for aircraft line/base maintenance certifying staff (cat. A, B1, B2, C as applicable);
- Individual authorisation for aircraft base maintenance support staff (B1, B2 as applicable).

Note: the competence assessment process for issuance, extension, and renewal of the MSTAR 145 C/S - S/S individual authorisation is expected to be described in the MOE chapter 3.14 “Competence Assessment”.

☐ Continuation training procedures (maintenance organisation procedures, new technology, human factor issues, etc.)

☐ Demonstration of 6/24 months maintenance experience or exercising certifying authorisation /support staff privileges including a table of similar aircraft types/series/groups (relevant to the scope of work hold by the maintenance organisation) to be used for the demonstration of 6/24 months requirement

☐ Situations where personnel not meeting the 6 months requirement to be approved by the Accountable Manager as C/S and S/S on a temporary basis to be reported to the DGTA as per AMC 2 MSTAR 145.A 35 c)

☐ One-off certification authorisation

3.4.2 Components / Engines / APU certifying staff.

☐ Experience, training and competence requirements
☐ MSTAR 145 C/S individual authorisation: initial issue, extension (scope of work), renewal, withdrawal procedures

Note: the competence assessment process for issuance, extension, renewal of the MSTAR 145 C/S individual authorisation is expected to be described in the MOE chapter 3.14 “Competence Assessment.

☐ Continuation training procedures (maintenance organisation procedures, new technology, human factor issues, etc)
☐ Situations where personnel not meeting the 6 months requirement to be approved by the Accountable Manager as C/S on a temporary basis to be reported to the DGTA as per AMC 2 MSTAR 145.A 35 c)
☐ Demonstration of 6/24 months maintenance experience including criteria to define similarity of engines /components/APUs (relevant to the scope of work hold by the maintenance organisation) to be used for the demonstration of 6/24 months requirement

3.4.3 Specialised services certifying staff.

☐ Internal experience, training and competence requirements in addition to EN 4179 or national equivalent qualification (NDT refers)
☐ MSTAR 145 C/S individual authorisation: initial issue, extension (scope of work), renewal, withdrawal procedures

Note: the competence assessment process for issuance, extension, renewal of MSTAR 145 C/S individual authorisation is expected to be described in the MOE chapter 3.14 “Competence Assessment”.

☐ Continuation training procedures (maintenance organisation procedures, new technology, human factor issues, etc)

3.5 Certifying staff and support staff records.

This chapter must describe how the certifying staff records are managed.

☐ List of certifying personnel and B1/B2 support staff (refer if need be to chapter 1.6)
Constitution of the records (electronic or paper copy) as per AMC MSTAR 145.A.35(j)
Management of certifying staff records:
☐ Retention of records:
- Duration / location
- Type of documents

☐ Format of the MSTAR 145 C/S-S/S individual authorisation document and authorisation codes
☐ Control of certifying staff records by:
- Authorized persons
- DGTA personnel
- Authorized managers
- Delivery of a copy of their MSTAR 145 C/S-S/S individual authorisation in either a documented or electronic format (MSTAR 145.A.35 (k)). The scope of work has to be detailed, including limitations when applicable

3.6 Procedures for qualifying of quality audit personnel.

This chapter must describe how the Quality system personnel are managed.

☐ Required experience and competence (professional background and minimum number of audits performed under supervision)

☐ Required training including audit techniques, Regulation, MOE and continuation training

☐ Specific experience and/or technical training in order to be authorised to audit specific areas or to cover specific audit functions, as applicable to the maintenance organisation (e.g. audit of NDT areas, Lead auditor, etc.)

☐ Scope of authorisation for auditors (e.g. Product auditor, System Auditor, NDT auditor, etc.)

☐ Authorisations issue, extension, renewal or withdrawal procedures

Note: the competence assessment process for issuance, extension, renewal of the MSTAR 145 Authorisation is expected to be described in the MOE chapter 3.14 “Competence Assessment”.

☐ Independence of quality audit personnel when the maintenance organisation uses skilled personnel working within another department than that of Quality Retention of records:
- Duration / location
- Type of documents

☐ Check that the number of quality personnel remains adapted to the maintenance activity to be supervised (relation with MOE chapter 2.22 “Man hour planning”)

☐ Allocated man-hours (if not full-time employed) shall be addressed

3.7 Procedures for qualifying of inspectors.

This chapter is dedicated to the qualification and authorisation of the “qualifying inspectors” which undertake inspection functions and sign-off the related task(s).

The various types of “Qualifying inspector” personnel, as applicable to the maintenance organisation, need to be addressed (e.g. aircraft inspector, component inspector, engine inspector, store receiving inspector, etc.).

For example, they may be authorised:

- As Aircraft/component/engine qualifying inspectors, in order to sign-off (ref. MOE 2.13 table):
  - The tasks performed under supervision (i.e. work performed by trainees);
  - The independent inspection tasks.

- As Store incoming inspectors, to perform and attest the receiving inspection of aircraft components/materials as per MOE 2.2 procedure

An Aircraft/component/engine qualifying inspector is not authorised to issue a release to service for aircraft or component or engine unless he/she is also holding a “certifying staff privilege”.

Note: In the aircraft base maintenance environment the qualifying inspector’ function does not correspond to the support staff function. After the task sign-off, a further inspection stage is

necessary by B1 and/or B2 Support staff as applicable. B1 and B2 Support Staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service of the aircraft.

When the staff is holding more than one authorisation (i.e. qualifying technician, qualifying inspector and certifying staff), the different authorisations shall be clearly distinguished.
For example: a person may be at the same time:

- Qualifying technicians on the A 400M (TP 400), C 130 J (RR AE2100) and Casa 295 M (PW 127G);
- Qualifying inspector on the A 400M (TP 400) and C 130 J (RR AE2100);
- Holding a certification authorisation as certifying staff only for the C 130 J (RR AE2100).

Clear differentiation is expected for each different rating in the scope of work (e.g. aircraft, engines, components, specialised services).

☐ Experience, training and competence requirements
☐ Aeronautical and practical Experience
☐ General Training (FTS, CDCCL, EWIS when needed and Human Factor, MOE, standard practices,…)
☐ Specific training requirements applicable to the scope of activity (aircraft, engine, store, etc.)
☐ Knowledge of the language in which the maintenance approved data are written Authorisations issue, extension, renewal or withdrawal procedures including scope of authorisation
☐ Authorisation is expected to be described in the MOE chapter 3.14 “Competence Assessment”.

Note: the competence assessment process for issuance, extension, renewal of the MSTAR 145

☐ Continuation training procedures including:
- Training Programme (MOE and associated procedures, MSTAR 145, Human
- Factor, special requirements, …)
- Training setting up
- Duration, intervals

☐ Retention of records:
- Duration / location
- Type of documents

3.8 Procedures for qualifying of maintenance personnel.

This chapter shall refer to the different specialities of technicians (mechanics, avionics, sheet metal workers, cabin, fuel, engines, painters, welders, cleaners, components, NDT staff, composites, line maintenance, ...), as applicable to the maintenance organisation. Those personnel have to be considered authorised by the maintenance organisation approved under MSTAR 145 to sign-off [3] tasks that the authorised qualifying technicians has personally performed. Consistency shall be ensured with the sign-off policy described in MOE chapter 2.13. An authorised qualifying technician is not authorised to issue a release to service for aircraft or component or engine or NDT unless he/she is also holding a “certifying staff privilege”.

[3] A “sign-off” is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different from the release to service of the aircraft

When the staff is holding more than one authorisation (i.e. qualifying technician, qualifying inspector and certifying staff), the different authorisations shall be clearly distinguished. For example: a person may be at the same time:

- Qualifying technicians on the A 400M (TP 400), C 130 J (RR AE2100) and Casa 295 M (PW 127G);
- Qualifying inspector on the A 400M (TP 400) and C 130 J (RR AE2100);
- Holding a certification authorisation as certifying staff only for the C 130 J (RR AE2100).

Clear differentiation is expected for each different rating in the scope of work (e.g. aircraft, engines, components, specialised services).
Experience, training and competence requirements

☐ Aeronautical and practical Experience
☐ General Training (FTS, CDCCL, EWIS when needed and Human Factor, MOE, standard practices,)
☐ Specific training requirements applicable to the scope of activity (aircraft, engine, store, etc.)
☐ Knowledge of the language in which the maintenance approved data are written
☐ Authorisations issue, extension, renewal or withdrawal procedures including scope of authorisation

Note: the competence assessment process for issuance, extension, renewal of the MSTAR 145 Authorisation is expected to be described in the MOE 3.14 “Competence Assessment”.

☐ Continuation training procedures including:
- Training Programme (MOE and associated procedures, MSTAR 145, Human
- Factors, specific technical requirements,)
- Training setting up
- Duration, intervals

☐ Retention of records:
- Duration / location
- Type of documents

3.9 Aircraft or aircraft component maintenance tasks exemption process control.

This chapter must describe the procedures of the maintenance organisation regarding exceptional authorisations related to maintenance tasks. As per Appendix XI to AMC to MSTAR M.A.708 (c), deviations have to be requested by the CAMO to its DGTA or granted by the CAMO in accordance with a procedure approved by the DGTA. The contract/tasking between the CAMO/Operating Organisation and the maintenance organisation shall specify the support the MSTAR 145 AMO may provide to the CAMO in order to substantiate the deviation request. This chapter is to be considered applicable only under these circumstances.

☐ System for control and processing with the DGTA which includes:
- Relations with the CAMO/Operating Organisation in case of deviation for a maintenance intervention in progress;
- Supply to the CAMO of information enabling to write out requests for exceptional authorisation applications;
- Control of the approval by the DGTA (linked with CRS).

3.10 Concession control for deviation from the maintenance organisations' procedures.

This chapter must describe the procedures followed by the maintenance organisation in order to deviate from the approved MOE procedures.
It shall be understood that any request for concession to deviate from MOE procedures shall be anyway in compliance with any regulatory requirement with particular reference to MSTAR 145. Under no circumstances this chapter may be used to deviate from regulatory requirements.

☐ Concession criteria:
- Object, procedures involved, justifications, compensatory conditions, period of validity, etc.

☐ Concession management procedure:
- Internal evaluation
- Drafting process
- Response
- Internal validation process and follow-up

☐ System of approval and control of concession
☐ Feedback from the Quality system to DGTA

Any concession shall be approved by DGTA.

3.11 Qualification procedure for specialised activities such as non-destructive testing, welding…

This chapter shall refer to the qualification of specialised services staff such as defined in AMC MSTAR 145.A.30 (f). It shall apply to all the specialised services mentioned in the MOE paragraph 1.9.4 (e.g. NDT, painting, welding, machining, NDI).

It is recommended to structure this chapter to provide qualification requirements for each group of specialised services staff in a separate paragraph.

The EN 4179 requires that an **NDT written practice** shall be in place to define:
- The specific technique(s) for each NDT method used in the maintenance organisation;
- The qualification and authorisation of NDT staff to meet the requirements of EN 4179.

For the purpose of MSTAR 145 the following document shall be issued:
- A document associated to the MOE to be referred as "NDT manual" only detailing the technical compliance of NDT activities/techniques under the control and approval of the responsible NDT level 3 to be referred in the . In addition, the related approval process is to be described in the r;
- A procedure detailing the qualification and authorisation of the NDT staff to be included directly in the MOE 3.11 chapter.

3.11.1 NDT personnel.

☐ NDT staff:
- List of non-destructive testing personnel
- Levels of qualification and authorisation
- Role and privileges of these staff (including responsible level 3 person who shall approve the maintenance organisation's NDT Manual

☐ Experience & qualification:
- Criteria regarding experience, training and skills
- Experience required by NDT method for each level of authorisation
- Responsible NDT level 3 shall demonstrate an appropriate knowledge of the manufacturer maintenance Data, MSTAR 145 requirements, MOE, Human Factors, FTS and EWIS
- Level 3 requires suitable training/examination provided by an organisation under the general control of a national NDT Board or as specified by DGTA should be addressed in this paragraph

☐ Training:
- Basic NDT training for each level of authorisation
- Training on the NDT procedures of the maintenance organisation

☐ Examination:
- Procedure of skills assessment (practical assessment and/or examination related to the job card)
- General examination on the fundamentals of the NDT methods
- Specific examination by NDT method
- Practical examination by level of authorisation
- Medical examination
- Eyesight testing

☐ Continuation training and testing

☐ Authorisations issue, renewal or withdraw procedures Retention of NDT staff records:
- Duration / location
- Type of documents

☐ Contract arrangement (this applies in the case of contracted/tasked staff as per AMC MSTAR 145.A.30 (d))

The certifying staff authorised in accordance with subcategory B1 of the MSTAR 66 can carry out and/or control colour contrast dye Penetrant inspection/visible dye penetrant inspection.

When a maintenance organisation uses NDT methods defined by EN 4179 as "emerging NDT method", the related requirements for personnel training, experience and examination shall be established by the maintenance organisation in accordance with EN 4179 and the particular equipment manufacturers' recommendations.

This chapter shall also describe the qualification requirements applicable to NDT Level 3, particularly when he is contracted/tasked and/or not Certifying Staff.

3.11.2 Other specialised activities personnel (e.g. welders, painters, etc.).

☐ Similar topics as the ones mentioned for NDT staff shall be described for each category, as applicable.

3.12 Control of manufacturers' and other maintenance working teams.

This chapter shall refer to the role of outside teams acting in the premises of the maintenance organisation to carry out a maintenance task on an aircraft/ engine/ component in the scope of a task under the responsibility of the maintenance organisation.

3.12.1 External team working under their own MSTAR 145 approval.

In this case at the end of the work, the external team will issue their own CRS for the work done (aircraft and/or component CRS, as applicable).

- ☐ Segregation between the two maintenance organisations working in the same premises
- ☐ Clear work order provided to the external working team
- ☐ Type of support (tools/equipment, facilities,…) made available to the External Team Working
- ☐ Management of the progress of work (meetings, etc.)
- ☐ MSTAR 145 release to service to be expected from the working team

3.12.2 External working team not holding an MSTAR 145 approval.

In this case, the external working team shall be considered as a "contracted/tasked organisation" and the applicable procedures developed in MOE chapter 2.1 shall be followed. This contracted/tasked organisation shall be listed in MOE chapter 5.2 together with the scope of authorisation.

- ☐ Control of the contracted/tasked organisation
- ☐ System for control of materials, tools, working instructions and procedures
- ☐ System for control of documentation such as drawings, modification, repairs instructions
- ☐ Management of the progress of work (meetings, etc)
- ☐ Certification procedure for work performed by the outside team such as: repair, replacement, modification, overhaul, test, inspection
- ☐ Environmental conditions
- ☐ Final certification
- ☐ Training on the internal procedures to external staff

3.13 Human factors training procedure

This chapter shall refer to MSTAR 145.A.30 (e) and AMC 2 145.A.30 (e) and GM1 to MSTAR 145.A.30(e) which concern the human factors training for the maintenance organisation personnel[7].

3.13.1 Initial training (except C/S and S/S).

- ☐ Aims and objectives
- ☐ Categories of staff to be trained
- ☐ Implementation time frame[8]
- ☐ Training methods and syllabus: {refer to GM 1 to MSTAR 145.A.30 (e)}
- ☐ Validation of the training courses (syllabus and duration)
- ☐ Requirements for trainers
- ☐ Training Records:
- ☐ Duration / location
- ☐ Type of documents

Note:

[7]Initial training to Human Factors for Certifying Staff and Support Staff is defined in Chapter 3.4

[8]Initial training to be provided to personnel within 6 months of joining the maintenance organisation, but temporary staff may need to be trained shortly after joining the maintenance organisation (AMC 2 to MSTAR 145.A.30(e)

3.13.2 All maintenance staff continuation training.

☐ Aims and objectives
☐ Categories of staff to be trained
☐ Training methods and syllabus: GM 1 to MSTAR 145.A.30 (e) tailored to the audience + audit findings + feedback in relation to relevant quality audit findings and other internal/external sources of information available to the maintenance organisation on human errors in maintenance (link with MOE chapter 2.25) (AMC 2 to MSTAR 145.A.30(e).
☐ Validation of the training courses (syllabus and duration)
☐ Requirements for trainers
☐ Training Records:

- Duration / location
- Type of documents

Human factors training could be adjusted to reflect the particular nature of the maintenance organisation (size, scope of work). Human factors continuation training shall be of an appropriate duration in each two-year period.

3.14 Competence assessment of personnel.

This chapter 3.14 applies to all maintenance personnel involved in the MSTAR 145 activities (management personnel, certifying staff, qualifying mechanics, qualifying inspectors, quality auditor, engineering staff, maintenance planning staff, store inspectors, tools administrators, purchasers, etc....).

The qualification requirements to be assessed for each category of staff (being different from one to the other staff category) is expected to be found in the relevant MOE chapter (i.e. chapter 3.4 in case of Certifying/Support staff, chapter 3.6 “Procedures for qualifying of quality audit personnel”, chapter 3.7 “Procedures for qualifying inspectors”, chapter 3.8 “Procedures for qualifying of maintenance personnel”, etc.).

☐ Personnel to be assessed in accordance with AMC 1 MSTAR 145.A.30 (e) and GM 2 MSTAR 145.A.30 (e) “Competence assessment procedure”

☐ Management of competence assessment:

- Assessment procedures for initial, extension and renewal of an authorisation (process/method used)
- Person responsible for this process on behalf of the maintenance organisation
- When the assessment shall take place
- Verification of the qualification requirements (i.e. experience, training, etc.).
- Evaluation of competence “On-the-Job performance. Evaluation of competence by testing of knowledge by appropriately qualified personnel may be also considered when the possibility to perform On-the-Job performance is not feasible (i.e. In the case where the assessment is related to a new activity for which the maintenance organisation is not yet approved such as a new aircraft type, new component, etc.).
- Supervision
- Assessors
- Commission/ examination
- Actions to be taken when the assessment is not satisfactory

☐ Assessment records:

- Duration / location

- Type of documents
- Results of the assessment. The assessment records shall allow to:
    - Clearly identify the scope of the assessment (initial, extension or renewal of an MSTAR 145 C/S-S/S individual authorisation). This means for example:
        - For aircraft certifying staff, which is/are the category(s) (i.e. B1 line maintenance certifying staff, B1 base maintenance support staff, C base maintenance certifying staff, A line maintenance certifying staff, etc.) and which is/are the aircraft type (s) being assessed for endorsement in the authorisation (initial or extension of privileges);
        - For components certifying staff, which is/are the rating(s) (i.e. C14, C6, C5, etc.) and the specific components associated to each rating (i.e. Landing Gears P/N, Battery P/N, etc.) being assessed for endorsement in the authorisation (initial or extension of privileges);
        - For quality auditor, which is the scope of the auditor authorisation (i.e.system/procedures or product audit)
        - Etc.,
    - Clearly verify that all the applicable qualification requirements for the specific category of staff as detailed in the relevant MOE chapter (i.e. 3.4 in the case of certifying staff, etc.) being assessed are met;
    - Identify that the assessment included the evaluation of competence “On-the Job performance” and/or testing of knowledge by appropriately qualified staff.

3.15 Training procedures for On-the-Job Training as per Section 6 of Appendix III to MSTAR 66.

This chapter is limited to the case where the DGTA for the MSTAR 145 approval and for the MSTAR 66 licence is the same.

3.16 Procedure for the issue of a recommendation to the DGTA for the issue of an MSTAR 66 licence in accordance with MSTAR 66.B.105.

This chapter is limited to the case where the DGTA for the MSTAR 145 approval and for the MSTAR 66 licence is the same.
Additionally, there may be occasions when the recommendation for the issue of an MSTAR 66 licence is submitted to another entity than the DGTA as per MSTAR 66.B.15.

PART 4

This MOE Part is to be considered applicable only to cover any CAMO’s peculiar requirement which has to be endorsed in the MOE for the purpose of being used in the performance of maintenance (e.g. how to acquire the necessary information for removal of serviceable components, etc.). It is recommended to have a separate procedure for each CAMO.

4.1 Contracting / tasking CAMO.

This chapter must list those CAMO for whom maintenance is provided, with details of the types of aircraft (and/or engines/APU) and the scope of work undertaken, e.g. Base maintenance, Line maintenance, Defect rectification etc, with any limitations.

4.2 CAMO procedures and paperwork.

This chapter must describe for each contracting/tasking CAMO, the special mode of operation (procedures/ documents/ exchange of information, planning meetings, technical, quality, reliability) between the maintenance organisation and its CAMO.

☐ Need to receive training on CAMO procedures, work card / worksheet

4.3 CAMO record completion.

This chapter must describe (for each contracted/tasked CAMO) how the maintenance organisation:

☐ Completes CAMO/Operating Organisation's log books
☐ Keeps the CAMO/Operating Organisation's technical records
☐ Retains records on behalf of the CAMO/Operating Organisation
☐ Communicates with the CAMO/Operating Organisation

PART 5

5.1 Sample of documents.

This chapter must list all the documents and forms in use by the maintenance organisation. Each form shall be uniquely identified with a number and revision date to allow traceability of changes Examples:

☐ Request to DGTA for approval of an Exposition amendment
☐ Request to DGTA for acceptance of a Capability List change
☐ Material tags: Serviceable, Unserviceable and Scrap labels
☐ Tooling identification tag
☐ Maintenance Task Card (Scheduled Maintenance)
☐ Maintenance Task Card (Additional Defects)
☐ Base Maintenance CRS
☐ Line Maintenance CRS
☐ MSTAR Form 1
☐ Quality Audit Report Form
☐ Quality Audit Corrective Action Report Form
☐ Personnel Training Record
☐ MSTAR 145 C/S-S/S individual authorisation Concession Application and Approval

5.2 List of contracted / tasked maintenance organisations as per MSTAR 145.A.75 (b).

This chapter must list the non-MSTAR 145 contracted/tasked maintenance organisations working under of the maintenance organisation quality system linked with MOE chapter 2.1.

5.3 List of Line maintenance locations as per MSTAR 145.A.75 (d).

This chapter must list the line station locations - linked with MOE chapter 1.8 and 1.9.

5.4 List of contracted / tasked maintenance organisations as per MSTAR 145.A.70 (a) (16).

This chapter must provide the list of contracted/tasked maintenance organisations operating under their own MSTAR 145 approval - linked with MOE chapter 2.1.

The lists shown in 5.2, 5.3 and 5.4 are to be included within or associated to the MOE, is an integral part of the approval. This means that it shall be approved (directly by the DGTA or by the maintenance organisation, through a procedure which has been previously approved by the DGTA (refers to MOE chapter 1.10, 1.11).

PART 6 – OPERATING ORGANISATION'S MAINTENANCE PROCEDURES.

This section is reserved for those maintenance organisations who are also part of Operating Organisations.

(e.g. cannibalization, battle damage repairs, contingency maintenance,…).

MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

PART 4 CHAPTER 1

MSTAR 145 REQUIREMENTS FOR MAINTENANCE ORGANISATIONS

Form

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS					
1. Approving NMAA DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS	2. AUTHORISED RELEASE CERTIFICATE MSTAR FORM 1				3. Form Tracking Number:
4. Approved Organisation Name and Address:					5. Work Order/Contract/Invoice
6. Item	7. Description	8. Part Number	9. Qty	10. Serial Number	11. Status/Work
12 Remarks					
13a. Certifies that the items identified above were manufactured in conformity to: approved design data and are in a condition for safe operation non-approved design data specified in Block 12			14a. MSTAR 145.A.50 Release to Service Other regulation specified in Block 12 Certification Statement Certifies that unless otherwise specified in Block 12, the work identified in Block 11 and described in Block 12, was accomplished in accordance with MSTAR 145 and in respect to that work the items are considered ready for release to service.		
13b. Authorised Signature	13c. Approval/Authorisation Number		14b. Authorised Signature (Electronic signature on file)		14c.Approval/Authorisation Number
13d. Name	13e. Date (dd/mmm/yyyy)		14d. Name		14e. Date (dd/mmm/yyyy)
USER/INSTALLER RESPONSIBILITIES: This Certificate does not automatically constitute authority to install. Where the User/Installer performs work in accordance with the regulations of an NMAA different than the NMAA specified in Block 1, it is essential that the user/installer ensures that their NMAA accepts items from the NMAA specified in Block 1.Statements in Block 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.					

MSTAR Form 1 – V1.0

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MSTAR Form 1

Authorised Release Certificate

Guidance

These guidelines are designed to assist you to complete the MSTAR Form 1 for MSTAR 21 and MSTAR 145 organisations. Attention is drawn to MSTAR 21 and MSTAR 145 which use the MSTAR Form 1 for production and maintenance purposes respectively. The Certificate referenced MSTAR Form 1 is called the Authorised Release Certificate.

1. Purpose and use

1.1. The primary purpose of the certificate is to declare the airworthiness of new aviation products, (excluding aircraft) parts and appliances or maintenance work undertaken on products (excluding aircraft), parts and appliances (hereafter referred to as item(s)).

1.2. Correlation must be established between the certificate and the item(s). The originator must retain a certificate in a form that allows verification of the original data.

1.3. For production purposes only - The certification may be applicable to more than one NMAA (or Authority), dependent on bilateral agreements of the relevant NMAA. The 'approved design data' mentioned in this certificate then means approved by the NMAA of the country under whose approval the certificate was issued. The Certificate is prepared and signed by the manufacturer. For production under MSTAR 21 Section A Subpart F it is presented for validation (by counter signature) by the Authority.

1.4. The certificate is not a delivery or shipping note.

1.5. NOT USED

1.6. The certificate does not constitute approval to install the item on a particular aircraft, engine, or propeller but helps the end user determine its airworthiness approval status.

1.7. A mixture of production released and maintenance released items is not permitted on the same certificate.

1.8. A mixture of items certified in conformity with 'approved data' and to 'non-approved data' is not permitted on the same certificate.

2. General format

2.1. The certificate must comply with the format attached including Block numbers and the location of each Block. The size of each Block may however be varied to suit the individual application, but not to the extent that would make the certificate unrecognisable.

2.2. The certificate must be in 'landscape' format but the overall size may be significantly increased or decreased as long as the certificate remains recognisable and legible. If in doubt consult the NMAA.

2.3. The User/Installer responsibility statement can be placed on either side of the form.

2.4. All printing must be clear and legible to permit easy reading.

2.5. The certificate may either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible and in accordance with the defined format. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

2.6. The certificate shall be in English, and if appropriate, in the official language(s) of the NMAA.

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2.7. The details to be entered on the certificate may be either machine/computer printed or handwritten using Block letters and must permit easy reading.

2.8. The use of abbreviations must be kept to a minimum, to aid clarity.

2.9. The space remaining on the reverse side of the certificate may be used by the originator for any additional information but must not include any certification statement. Any use of the reverse side of the certificate must be referenced in the appropriate Block on the front side of the certificate.

NOTES

The original certificate shall accompany the items and correlation must be established between the certificate and the items. A copy of the certificate must be retained by the organisation that manufactured or maintained the item. Where the certificate format and data are entirely computer generated, subject to acceptance by the NMAA, it is permissible to retain the certificate format and data on a secure database.

Where a single certificate was used to release a number of items and those items are subsequently separated out from each other, such as through a parts distributor, then a copy of the original certificate must accompany such items and the original certificate must be retained by the organisation that received the batch of items. Failure to retain the original certificate could invalidate the release status of the items.

2.10 The Certificate that accompanies the item(s) may be attached to the item(s) by being placed in an envelope for durability.

3. Copies

3.1. There is no restriction in the number of copies of the Certificate sent to the customer or retained by the originator.

4. Error(s) on a certificate

4.1. If an end-user finds an error(s) on a certificate, they shall identify it/them in writing to the originator. The originator may issue a new certificate only if the error(s) can be verified and corrected.

4.2. The new certificate shall have a new tracking number, signature and date.

4.3. The request for a new Certificate may be honoured without re-verification of the item(s) condition. The new Certificate is not a statement of current condition and should refer to the previous certificate in Block 12 by the following statement:

‘This Certificate corrects the error(s) in Block(s) [enter Block(s) corrected] of the Certificate [enter original tracking number] dated [enter original issuance date] and does not cover conformity/condition/release to service’.

4.4. Both Certificates should be retained according to the retention period associated with the first.

5. Completion of the certificate by the originator

Except as otherwise stated, there shall be an entry in all Blocks to make the document a valid Certificate.

Block 1—Approving NMAA

State the name and country of the NMAA under whose approval the certificate was issued.

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Block 2—MSTAR Form 1 Header

AUTHORISED RELEASE CERTIFICATE

MSTAR Form 1

Block 3—Form Tracking Number

Enter the unique number established by the numbering system/procedure of the organisation identified in Block 4; this may include alphanumeric characters.

Block 4—Approved Organisation Name and Address

Enter the full name and address of the approved organisation (refer to MSTAR Form 55 for production organisations or MSTAR Form 3 for maintenance organisations) releasing the items covered by this certificate. Logos, etc, are permitted if the logo can be contained within the block.

Block 5—Work Order/Contract/Invoice

To facilitate customer traceability of the item(s), enter the work order number, contract number, invoice number, or similar reference.

Block 6—Item

Enter line item numbers when there is more than one line item. This block permits easy cross referencing to the Remarks Block 12.

NOTE

This block is used to accurately reference a number of parts which may be legitimised by a single MSTAR Form 1. For example, a single MSTAR Form 1 has been generated to include 10 items with the same part number but different material batch numbers or serial numbers

Block 7—Description

Enter the name or description of the item. Preference shall be given to the term used in the instructions for continuing airworthiness or maintenance data, eg Illustrated Parts Catalogue, Aircraft Maintenance Manual, Service Bulletin, Component Maintenance Manual.

Block 8—Part Number

Enter the part number as it appears on the item or tag/packaging. In case of an engine or propeller the type designation may be used.

The part number as it appears on the item, usually defined in the design data; however, in the case of a kit of parts, media containing software or any other specific condition of supply may be defined in production data developed from design data. Information about the contents of the kit or media may be given in Block 12 or in a separate document cross-referenced from Block 12.

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Block 9—Quantity

State the quantity of items contained in each line item.

Block 10—Serial Number

If the item is required to be identified with a serial number, enter it here. If there is no serial number identified on the item, enter 'N/A' (Not Applicable).

Block 11—Status/Work

The following describes the permissible entries for Block 11 for production or maintenance purposes. Enter only one of these terms – where more than one may be applicable, use the one that most accurately describes the majority of the work performed and/or the status of the article.

For **production** purposes, enter either 'PROTOTYPE' or 'NEW'.

Enter 'PROTOTYPE' for:

(1) the production of a new item in conformity with non-approved design data;

(2) re-certification by the organisation identified in Block 4 of the previous certificate after alteration or rectification work on an item, prior to entry into service, eg after incorporation of a design change, correction of a defect, inspection or test, or renewal of shelf-life. Details of the original release and the alteration or rectification work are to be entered in Block 12.

Enter 'NEW' for:

(1) The production of a new item in conformity with the approved design data.

(2) re-certification by the organisation identified in Block 4 of the previous certificate after alteration or rectification work on an item, prior to entry into service, eg after incorporation of a design change, correction of a defect, inspection or test, or renewal of shelf-life. Details of the original release and the alteration or rectification work are to be entered in Block 12.

(3) re-certification by the organisation identified in Block 4 of the previous Certificate of items from 'prototype' (conformity to non-approved data) to 'new' (conformity to approved data and in a condition for safe operation), subsequent to approval of the applicable design data, provided that the design data has not changed. The following statement must be entered in Block 12:

RE-CERTIFICATION OF ITEMS FROM 'PROTOTYPE' TO 'NEW': THIS DOCUMENT CERTIFIES THE APPROVAL OF THE DESIGN DATA [INSERT MSTC/ STC NUMBER, REVISION LEVEL], DATED [INSERT DATE], TO WHICH THIS ITEM (THESE ITEMS) WAS (WERE) MANUFACTURED.

The box 'approved design data and are in a condition for safe operation' should be marked in Block 13a.

(4) The examination of a previously released new item prior to entry into service in accordance with a specified standard or specification, (details of which and of the original release are to be entered in Block 12) or to establish airworthiness (an explanation of the basis of release and details of the original release are to be entered in Block 12).

For **maintenance** purposes, enter either:

(1) **OVERHAULED.** Means a process that ensures the item is in complete conformity with all the applicable service tolerances specified in the (Malaysian State) Type Certificate holders, or equipment manufacturers instructions for continuing airworthiness, or in the data which is approved or accepted by the NMAA. The item will be at least disassembled, cleaned, inspected, repaired as necessary, reassembled and tested in accordance with the above specified data.

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(2) **REPAIRED.** Rectification of defect(s) using an applicable standard (*).

(3) **INSPECTED/TESTED.** Examination, measurement, etc, in accordance with an applicable standard, (*) eg visual inspection, functional testing, bench testing.

(4) **MODIFIED.** Alteration of an item to conform to an applicable standard (*).

(*) Applicable standard means a manufacturing/design/ maintenance/ quality standard, method, technique or practice approved by or acceptable to the NMAA. The applicable standard shall be described in Block 12.

Block 12—Remarks

Describe the work identified in Block 11, either directly or by reference to supporting documentation, necessary for the user or installer to determine the airworthiness of item(s) in relation to the work being certified. If necessary, a separate sheet may be used and referenced from the main MSTAR Form 1. Each statement must clearly identify which item(s) in Block 6 it relates to. If there is no statement, state NONE.

For **production** purposes, examples of conditions which would necessitate statements in Block 12 are:

(1) the justification for release to non-approved design data, eg pending (Malaysian State) Type Certificate, for test only, pending approved data, if applicable.

(2) When the certificate is used for prototype purposes the following statement must be entered at the beginning of block 12:

'NOT ELIGIBLE FOR INSTALLATION ON IN-SERVICE TYPE-CERTIFICATED AIRCRAFT'

(3) For complete engines, a statement of compliance with the applicable emissions requirements currents at the date of manufacture of the engine.

(4) For TSO articles, state the applicable TSO number.

(5) Modification standard.

(6) Compliance or non-compliance with airworthiness directives or Service Bulletins (or National Equivalent).

(7) Details of repair work carried out, or reference to a document where this is stated.

(8) Shelf-life data, manufacture date, cure date, etc.

(9) Information needed to support shipment with shortages or re-assembly after delivery.

(10) References to aid traceability, such as batch numbers.

For **maintenance** purposes, examples of information to be entered in Block 12 are:

(1) Maintenance data used, including the revision status and reference. For all work performed and not limited to the entry made in Block 11. A statement such as 'in accordance with the Component Maintenance Manual (CMM)' is not acceptable. NDT methods with appropriate documentation used when relevant.

(2) Compliance with airworthiness directives or service bulletins or national equivalent.

(3) Repairs carried out.

(4) Modifications carried out.

(5) Replacement parts installed.

(6) Life limited parts status.

(7) Deviations from the customer work order.

(8) Shelf-Life Limitations

(9) Information needed to support shipment with shortages or re-assembly after delivery.

(10) References to aid traceability, such as batch numbers.

(11) etc

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NOTE

If printing the data from an electronic MSTAR Form 1, any appropriate data not fit for other blocks should be entered in this block.

Blocks 13a – 13e

Used for **production** release only:

Block 13a—Certification statement

Mark only one of the two boxes:

1. Mark the 'approved design data and are in a condition for safe operation' box if the item(s) was/were manufactured using approved design data and found to be in a condition for safe operation.
2. Mark the 'non-approved design data specified in Block 12' box if the item(s) was/were manufactured using applicable non-approved design data. Identify the data in Block 12, eg pending type-certificate, for test only, pending approved data.

Mixtures of items released against approved and non-approved design data are not permitted on the same certificate.

Block 13b—Authorised Signature

This space shall be completed with the signature of the authorised person. Only persons specifically authorised under the regulations of the NMAA are permitted to sign this block. To aid recognition, a unique number identifying the authorised person may be added.

Block 13c—Approval/authorisation Number

Enter the approval/authorisation number/reference. This number or reference is issued by the NMAA.

Block 13d—Name

Enter the name of the person signing Block 13b in a legible form.

Block 13e—Date (dd/mmm/yyyy)

Enter the date on which Block 13b is signed, the date must be in the format dd/mmm/yyyy (dd = 2-digit day, mmm = first 3 letters of the month, yyyy = 4 digit year).

NOTE

Blocks 13a to 13e Inclusive, **are not used for** maintenance release. For maintenance purposes, these blocks should be shaded, darkened, or otherwise marked to preclude their inadvertent or unauthorised use.

Blocks 14a – 14e

Used for **maintenance** release only:

Block 14a—Certification statement

Mark the appropriate box(es) indicating which regulations apply to the completed work. If the box "other regulations specified in Block 12" is marked, then the regulations of the other airworthiness authority(ies) must be identified in Block 12. At least one box must be marked, or both boxes may be marked, as appropriate.

For all maintenance carried out by maintenance organisations approved in accordance with MSTAR 145, the certification statement 'unless otherwise specified in Block 12' is intended to address the following cases:

(1) Where the maintenance could not be completed.

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(2) Where the maintenance deviated from the standard required by MSTAR 145.

(3) Where the maintenance was carried out in accordance with a requirement other than that specified in MSTAR 145. In this case Block 12 shall specify the particular national regulation.

Block 14b—Authorised Signature

This space shall be completed with the signature of the authorised person. Only persons specifically authorised under the rules and policies of the NMAA are permitted to sign this block. To aid recognition, a unique number identifying the authorised person may be added.

NOTE

This signature can be computer printed subject to the NMAA being satisfied that only the signatory can direct the computer and that a signature is not possible on a blank computer-generated form.

Block 14c—Approval/Authorisation Number

The MSTAR145 Approved Maintenance Organisation Approval/Authorisation number given by the NMAA.

Block 14d—Name

Enter the name of the person signing Block 14b in a legible form.

Block 14e—Date

Enter the date on which Block 14b is signed, the date must be in the format dd = 2-digit day, mmm = 3 digit month, yyyy = 4 digit year.

NOTE

Blocks 14a to 14e Inclusive, **are not used for** production release. For production purposes, these blocks should be shaded, darkened, or otherwise marked to preclude their inadvertent or unauthorised use.

User/Installer responsibilities

Place the following statement on the certificate to notify end users that they are not relieved of their responsibilities concerning installation and use of any item accompanied by the form:

'THIS CERTIFICATE DOES NOT AUTOMATICALLY CONSTITUTE AUTHORITY TO INSTALL'.

'Where the user/installer performs work in accordance with regulations of an NMAA different than the NMAA specified in Block 1, it is essential that the user/installer ensures that their NMAA accepts items specified in Block 1'.

'Statements in Block 13a and Block 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown'.

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ACCEPTABLE MEANS OF COMPLIANCE

AMC to MSTAR Form 1 – Authorised Release Certificate

Use of the MSTAR Form 1—Authorised Release Certificate for production or maintenance.

1. The following formats of an issued MSTAR Form 1 or equivalent certificate are acceptable:

- A paper certificate bearing a signature (both originals and copies are accepted);
- A paper certificate generated from an electronic system (printed from electronically stored data) when complying with paragraph 2;
- An electronic MSTAR Form 1 or equivalent when complying with paragraph 2.

2. Electronic signature and electronic exchange of the MSTAR Form 1:

(a) Submission to the NMAA:

Any organisation intending to implement an electronic signature procedure to issue MSTAR Form 1 and/or to exchange electronically such data contained on the MSTAR Form 1, should document it and submit it to the NMAA as part of the documents attached to its Production Organisation Exposition (POE) or Maintenance Organisation Exposition (MOE).

(b) Characteristics of the electronic system generating the MSTAR Form 1.

The electronic system should:

- guarantee secure access for each certifying staff;
- ensure integrity and accuracy of the data certified by the signature on the form and be able to show evidence of the authenticity of the MSTAR Form 1 (recording and record keeping) with suitable security, safeguards and backups;
- be active only at the location where the part is being released with an MSTAR Form 1;
- not permit a blank form to be signed;
- provide a high degree of assurance that the data has not been modified after signature (if a modification is necessary after issuance, eg re-certification of a part, a new form with a new number and reference to the initial issuance should be made);
- provide for a 'personal' electronic signature, identifying the signatory. The signature should be generated only in presence of the signatory.

  An electronic signature means data in electronic form which is attached to or logically associated with other electronic data and which serves as a method of authentication and should meet the following criteria:

- it is uniquely linked to the signatory;
- it is capable of identifying the signatory;
- it is created using means that the signatory can maintain under his sole control.

This electronic signature should be an electronically generated value based on a cryptographic algorithm and appended to data in a way to enable the verification of the data source and integrity.

The electronic system should be based on a policy and management structure (confidentiality, integrity and availability), such as:

- Administrators, signatories;
- Scope of authorisation, rights;
- Password and secure access, authentication, protections, confidentiality;

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- Track changes;
- Minimum blocks to be completed, completeness of information;
- Archives;
- etc.

The electronic system generating the MSTAR Form 1 may contain additional data such as:

- Manufacturer code;
- Customer identification code;
- Workshop report;
- Inspection results;
- etc.

(c) Characteristics of the MSTAR Form 1 generated from the electronic system

To facilitate understanding and acceptance of the MSTAR Form 1 released with an electronic signature, the following statement should be in Block 13b or 14b: 'Electronic Signature on File'.

In addition to this statement, it is accepted to print or display a signature in any form, such as a representation of the hand-written signature of the person signing, ie scanned signature, or a representation of their name.

When printing the electronic form, the MSTAR Form 1 should meet the general format as specified in MSTAR Forms. A watermark-type 'PRINTED FROM ELECTRONIC FILE' should be printed on the document.

When the electronic file contains a hyperlink to data required to determine the airworthiness of the item(s), the data associated to the hyperlink, when printed, should be in a legible format and be identified as a reference from the MSTAR Form 1.

Additional information not required by the MSTAR Form 1 completion instructions may be added to the printed copies of MSTAR Form 1, as long as the additional data does not prevent a person from filling out, issuing, printing, or reading any portion of the MSTAR Form 1. This additional data should be provided only in Block 12 unless it is necessary to include it in another block to clarify the content of that block.

(d) Electronic exchange of the electronic MSTAR Form 1.

The electronic exchange of the electronic MSTAR Form 1 should be accomplished on a voluntary basis. Both parties (issuer and receiver) should agree on electronic transfer of the MSTAR Form 1.

For that purpose, the exchange needs to include:

- all data of the MSTAR Form 1, including referenced data required by the MSTAR Form 1 completion instructions;
- all data required for authentication of the MSTAR Form 1.

In addition, the exchange may include:

- data necessary for the electronic format;
- additional data not required by the MSTAR Form 1 completion instructions, such as manufacturer code, customer identification code.

The system used for the exchange of the electronic MSTAR Form 1 should provide:

- A high level of digital security; the data should be protected, not altered or not corrupted;
- Traceability of data back to its source.

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Trading partners wishing to exchange MSTAR Form 1 electronically should do so in accordance with this Acceptable Means of Compliance. It is recommended that they use an established, common, industry method such as Air Transport Association (ATA) Spec 2000 Chapter 16.

The organisations are reminded that additional national and/or European requirements may need to be satisfied when operating the electronic exchange of the electronic MSTAR Form 1.

The receiver should be capable of regenerating the MSTAR Form 1 from the received data without alteration; if not, the system should revert back to the paper system.

When the receiver needs to print the electronic form, see paragraph 2c.

Directorate General Technical Airworthiness MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

Guidance

These guidelines are designed to assist you to complete the MSTAR Form 2 for MSTAR 145 and / MSTAR M.A Subpart G applications under Malaysian State Technical Airworthiness Regulations (MSTAR).

IMPORTANT

It is the applicant's responsibility to apply for DGTA approval only if they have a requirement for the approval and can demonstrate compliance with all the relevant regulatory requirements.

Please carefully read this document and any relevant Acceptable Means of Compliance or Guidance Material issued by DGTA. This information is available on the Directorate General Technical Airworthiness (DGTA) website and will assist with the application process.

About this form and application process

Application Process

Completing this application form is the first step in the application process. Once received, DGTA will review your application including all supporting documentation provided.

Applicants are to complete and sign the application form electronically and submit to the nominated DGTA email below.

NOTE: DGTA may not consider an application or cease to consider it further while the applicant has not complied with all MSTAR requirements.

MSTAR Form 2

This MSTAR Form 2 is the official DGTA form to apply for MSTAR 145 and/or MSTAR Part M.A Subpart G approval under MSTAR. This form is considered part of an application pack and should be submitted with the appropriate evidence to support the application.

Withdrawal of Application

An application can be withdrawn in writing at any time.

Q1. Additional Application

If your organisation has been previously issued with any AMO or CAMO Certificate, please provide the certificate number with this application.

Q2. Applicant data

Legal name of the company as it appears on the Business Registration or similar legal document. Please include confirmation of the legal status of your organisation and enclose a copy of your Certificate of Incorporation with this application. Not applicable for Defence Organisation.

Q3. Reference

If your organisation has a MSTAR 145 or MSTAR M.A Subpart G Certificate, please provide this number reference number, please provide this number with this application. If a reference number has not been issued, please leave this field blank and a reference number will be issued once your organisation has been approved by DGTA.

Directorate General Technical Airworthiness MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

Q4. Facility Address/s

For MSTAR M.A Subpart G applications, there is no requirement to complete Q4.1 providing your organisation address is the same as that identified in Q2. MSTAR 145 applicants may use Annex A or Annex B for additional facility/site locations. For MSTAR M.A Subpart G applications, there is no requirement to complete Q4.2.

NOTE: If application is only for Aircraft Technical Log or MEL, provide organisation primary address only.

Q5. Contacts

Please provide details of the Accountable Manager and the Quality Manager. (Note: A Defence Organisation MSTAR M.A Subpart G or MSTAR 145 Accountable Manager is not required to complete a MSTAR Form 4 application. All commercial organisation MSTAR 145 Accountable Managers are required to complete a MSTAR Form 4 application).

NOTE: If application is only for Aircraft Technical Log or MEL, provide primary contact details only.

Q6. Application

Provide information on the scope of this application – eg: A1 Rating and D1 rating, Change of Quality Manager, Addition of Line Maintenance Station, Tech Log, MEL.

NOTE: If application is only for Aircraft Technical Log or MEL, complete Q6 and proceed directly to Q12.

Q7. Staff Numbers

Detail the total number of staff employed by the organisation in order to comply with MSTAR 145 / MSTAR M.A Subpart G and the total number of contracted staff associated with the proposed approval.

Enter "not applicable" in Base and Line Maintenance boxes if this MSTAR Form 2 is for a MSTAR M.A Subpart G application/approval.

Q8. Scope of Approval MSTAR Part 145 Applicants

NOTE: MSTAR 145 applicants are to complete sections 8 (as applicable) for details of the scope of work for which they are seeking approval

Complete all applicable fields to the requested scope of approval. For assistance, refer to S1000D-I9005-01000-00 Chapter 8.2.5 "*Maintained SNS – Air vehicle, engines and equipment*".

Each MSTAR 145 applicant must provide a reference to each aircraft platform Component Capability List.

Q9. Scope of Approval MSTAR Part M Subpart G Applicants

NOTE: MSTAR M.A Subpart G applicants are to complete section 9 (as applicable) for details of the scope of work for which they are seeking approval.

Complete all applicable fields to the requested scope of approval.

Q10. Sub-contractors

MSTAR M.A Subpart G applicants are to complete sections 10 (as applicable) for details of Sub-contractors performing CAMO functions the applicant. If additional space is required, please attach details to this application form.

This field is "NOT Applicable" to MSTAR Part 145 applications.

Q11. Other Approvals

Please list all other applicable approvals the applicant holds with any NAA / NMAA.

Application for MSTAR 145 and MSTAR M Subpart G Approval

Q12. Checklist

In order to ensure all required information is provided to DGTA with this MSTAR Form 2 application, please review and confirm your application contains the required documents.

Q13. Declaration

The Accountable Manager / Quality Manager upon signing the MSTAR Form 2 application declares the information provided is true and correct and all documentation required by DGTA to process this application is provided.

Q14. DGTA USE ONLY

Privacy Policy

DGTA requires the provision of information as listed in this form. All such information received will be treated as confidential and will not be disclosed to any third parties unless that disclosure is required or authorised by law. DGTA will safeguard personal information however, please be aware that DGTA policy is to publish approvals on its website.

Form Submission

Submit the electronic application form to DGTA by official letter.

NOTE: If there is insufficient space in any of the fields, please attach additional information to this form.

Directorate General Technical Airworthiness

MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

Application

1. Applicant's Cert No: (If previously issued)					
2. Applicant Data					
2.1	Registered Name and Address	Organisation Name			
		Street No. and Name			
		Suburb			
		State		Post Code	
		Country			
Important Note: An approval may be granted to an organisation which may be either a natural person, a legal entity or part of a legal entity. Would you therefore please include with this application confirmation of the legal status of your organisation and enclose a copy of your Certificate of Incorporation.					
2.2	Postal Address (if different from above)	Street No. and Name			
		Suburb			
		State		Post Code	
		Country			
2.3	Contact Person	Title/Rank			
		Full Name			
		Position Title			
		Phone			
		Email			
3. Reference					
MSTAR 145					
MSTAR M.A Subpart G					
4. Address of site(s) requiring approval					
4.1 Base, Engine and Component Maintenance Site(s) For additional facility/sites refer to Annex A.					
4.1	Facility/Site 1	Street No and Name			
	Additional Sites Refer to Annex A: Yes / No	Suburb			
		State		Post code	
		Country			
4.2 Line Maintenance Site(s) For additional facility/sites refer to Annex B					
4.2	Facility/Site 1	Street No and Name			
	Additional Sites Refer to Annex B: Yes / No	Suburb			
		State		Post code	
		Country			

Directorate General Technical Airworthiness — MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

5. Contacts					
5.1	Accountable Manager	Title		Name	
		Position		Phone	
		Email			
5.2	Quality Manager	Title		Name	
		Position		Phone	
		Email			
5.3	Organisation E-mail				

6. Application				
6.1 Application for:		☐ MSTAR 145 Approval	☐ MSTAR M.A Subpart G Approval	
6.2	Application Type	☐ Initial		
		☐ Revision of Initial Application	☐ Application for Change	
		☐ Organisation Name	☐ Address data	☐ Nominated Persons
		☐ Rating(s)	☐ Contact detail(s)	☐ Number of Staff
		☐ Aircraft Technical Log	☐ MEL	
		☐ Notification for Surrender		
6.3	Reason for Application:			

Scope of MSTAR 145 / MSTAR M.A Subpart G Approval relevant to this application:

7. Number of Staff	Employees Enter N/A if the application or the scope already held does not include Base/Line Maintenance activity	Contractors Enter N/A in the case no contracted staff are working at this site
Principal Place of Business		
Base Maintenance Site(s)		
Line Maintenance Site(s)		
TOTAL		

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Directorate General Technical Airworthiness — MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

8. Scope of Requested MSTAR 145 Approval (*)

(*) in case of application for change of the scope of work, only the parts of this table affected by the change are required to be completed.

	RATING	LIMITATION	BASE		LINE	
			Yes	No	Yes	No
AIRCRAFT	A1 Aeroplanes/Airships above 5700 kg		☐	☐	☐	☐
	A2 Aeroplanes / Airships 5700 kg and below		☐	☐	☐	☐
	A3 Helicopters		☐	☐	☐	☐
	A4 Aircraft other than A1, A2 or A3		☐	☐	☐	☐
ENGINES	B1 Turbine					
	B2 Piston					
	B3 APU					

	Rating		S1000D Chapter reference[1]	Limitations Reference (List limitations or refer to Component Capability List (CCL) for individual aircraft types)
COMPONENTS OF OTHER THAN COMPLETE ENGINES OR AUXILARY POWER UNITS	C1	Air Cond & Press	21	
	C2	Auto Flight	22	
	C3	Comms and Nav	23-34-43	
	C4	Doors – Hatches	52	
	C5	Electrical Power	24-33-91	
	C6	Equipment	25-38-45-50	
	C7	Engine – APU	49-71-72-73-74-75-76-77-78-79-80-81-82-83-86	
	C8	Flight Controls	27-55-57. 40-57. 50-57. 60-57. 70	
	C9	Fuel - Airframe	28-48	
	C10	Helicopter – Rotors	62-64-66-67	
	C11	Helicopter – Trans	63-65	
	C12	Hydraulic	29	
	C13	Instruments	31-46	
	C14	Landing Gear	32-90	
	C15	Oxygen	35-47	
	C16	Propellers	61	
	C17	Pneumatic	36-37	
	C18	Protection Ice/Rain/Fire	26-30	
	C19	Windows	56	
	C20	Structural	53-54-57. 10-57. 20-57. 30	
	C21	Water Ballast	41	
	C22	Propulsion Augmentation	84	
	C51	Attack Systems	39-40-42	
	C52	Radar / Surveillance	92-93	
	C53	Weapons systems	94	
	C54	Crew Escape	95	
	C55	Missiles/Drones/Telemetry	96	
	C56	Reconnaissance	97-98	
	C57	Electronic warfare	99	
SPECIALISED SERVICES	D1 Non-Destructive Testing			
	D5 Arms, Munitions and Pyrotechnic Systems Specific			

[1] Main system breakdown based on S1000D used as example only.

S1000D is not a DGTA mandated standard and may not apply to all ADF aircraft. Consider system breakdown listed in standard applicable to particular aircraft manuals.

Directorate General Technical Airworthiness — MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

9. Scope of Requested MSTAR M.A Subpart G Approval (*)

Please do not enter any data in this table in case of MSTAR 145 application

(*) in case of application for change of the scope of work, only the parts of this table affected by the change shall be completed.

Rating	Manufacturer	Model Quote the aircraft model and the engine type fitted thereon	Aircraft	Approved Maintenance Program Reference
A1				
A2				
A3				
A4				

10. Sub-contracted organisations working under this approval

Enter N/A in case of MSTAR Part 145 applications. Add / delete lines as required

		Activity
Name / Address		
Name / Address		
Name / Address		

11. Other current approvals held by the applicant

NAA / MAA	Scope	NAA / MAA	Scope

12. Submission Checklist

Please confirm that the following information is included as part of your application:

☐	Maintenance Organisation Exposition (MOE)	☐	Continuing Airworthiness Management Exposition (CAME)
☐	All relevant plans/procedures referenced in the MOE	☐	All relevant plans / procedures referenced in the CAME
☐	Compliance Checklist/Cross-Reference Matrix	☐	Component Capability List (MSTAR 145 only)
☐	Form 4 Submitted	☐	Other specify:

Application Annexes - Page 4 of 5

Directorate General Technical Airworthiness — MSTAR Form 2

Application for MSTAR 145 and MSTAR M Subpart G Approval

13. Applicant's Declaration

(To be completed by the Accountable Manager for Initial Approval, and / or the Quality Manager, for subsequent approvals)

Declaration

☐ I declare that the information provided on this form is true and correct.

☐ I understand and accept that for DGTA to proceed with this application, I have supplied all supporting documentation to DGTA.

Date	Name / Position	Signature

14. DGTA USE ONLY

14.1 Record Objective ID:		
14.2 Organisation Approval application:		
☐ Application Approved	☐ Application Requires Resubmit	☐ Application NOT Approved
14.3 Additional Comments:		

Date	Name / Position	Signature

MSTAR Form 3 – Maintenance Organisation Approval Certificate

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS

MAINTENANCE ORGANISATION APPROVAL CERTIFICATE

Reference:

Pursuant to Malaysian State Technical Airworthiness Regulation 145 and subject to the conditions specified below,the Authority hereby certifies

[NAME AND MAINTENANCE ORGANISATION ADDRESS]

As an MSTAR 145 maintenance organisation approved to maintain the products, parts and appliances listed in the attached approval schedule and issue related certificates of release to service using the above reference.

CONDITIONS

1. This approval is limited to that specified in the scope of work section of the MSTAR 145 Approved Maintenance Organisation's Exposition, and
2. This approval requires compliance with the procedures specified in the MSTAR 145 ApprovedMaintenance Organisation's Exposition, and
3. This approval is valid whilst the Approved Maintenance Organisation remains in compliance withMSTAR 145.
4. Subject to compliance with forgoing conditions, this approval shall remain valid for an unlimitedduration unless the approval has been surrendered, superseded, suspended or revoked.

Date of original issue:
Date of this revision:
Revision No:
Signed:

For the DGTA

MAINTENANCE ORGANISATION APPROVAL
SCHEDULE

Organisation name :

Reference : [participating Member State code](*).MSTAR145.XXXX

CLASS	**RATIING**	**LIMITATION**	**BASE**	**LINE**
AIRCRAFT(**)	(***)		(YES/NO)(**)	(YES/NO)(**)
	(***)		(YES/NO)(**)	(YES/NO)(**)
	(***)		(YES/NO)(**)	(YES/NO)(**)
	(***)		(YES/NO)(**)	(YES/NO)(**)
ENGINES (**)	(***)	(***)		
	(***)	(***)		
COMPONENTS OTHER THAN COMPLETE ENGINES OR APUs (**)	(***)	(***)		
	(***)	(***)		
	(***)	(***)		
	(***)	(***)		
	(***)	(***)		
	(***)	(***)		
SPECIALISED SERVICES (**)	(***)	(***)		
	(***)	(***)		
OTHERS				

This approval schedule is limited to those products, parts and appliances and to the activities specified in the scope of work section contained in the MSTAR 145 Approved Maintenance Organisation's Exposition.
MOE Reference:
Date of original issue:
Date of last revision approved: Revision no:
Signed
For the NMAA

(*) Text to be determined by DGTA
(**) Delete as appropriate if the organisation is not approved.
(***) Complete with the appropriate rating and limitation.

MSTAR Form 4 – DGTA Acceptance of Nominated Management Personnel

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS (DGTA)
c/o SUBANG AIRBASE
40000 SHAH ALAM

MSTAR Form 4

Acceptance of Nominated Management Personnel

GUIDANCE

These guidelines are designed to assist you to complete the MSTAR Form 4 for the acceptance of nominated personnel under an approved exposition and the under Malaysian State Airworthiness Regulation (MSTAR).

IMPORTANT

It is the applicant's responsibility to apply for DGTA approval only if they have a requirement for the approval and can demonstrate compliance with all the relevant regulatory requirements.

Please carefully read this document and any relevant Acceptable Means of Compliance or Guidance Material issued by DGTA. This information is available on the DGTA website and will assist with the application process.

Application Process

Completing this application form is the first step in the application process. Once received, DGTA will review your application including all supporting documentation provided.

Applicants are to complete this application form and submit to the DGTA.

This MSTAR Form 4 is the official DGTA form for the nomination and acceptance of key personnel. This form is considered part of an application pack and should be submitted with the appropriate evidence to support the application. One (1) MSTAR Form 4 form must be completed for **each** nominated position.

Q1. Details of Management Personnel - The applicant is to select ONE approval type

Q2. Position - The nominated person is required to select the position for which they require a Form 4 application. The "Additional Information" field should be completed for personnel applying for deputy or nominated positions. Other pertinent information can also be added in this field. Do not forget to enter the planned with effect date for the position.

Q3. Nominated Person - The nominated person must provide their full legal name. This is the name that would appear on, for example Malaysia identification card (IC), passport or birth certificate. The nominated person must provide their current business address and contact details.

Q4. Organisation's Details - The nominated person is required to provide the name of the legal entity with which they are associated.

Q5. Qualifications - The nominated person is required to provide details and supporting documentation of their qualifications relevant to the position for which they will hold within the organisation. Information on qualifications can be provided in a separate document (i.e. Curriculum Vitae) attached to this form. Examples of qualifications are: university degrees, professional training courses from verifiable sources and internal training courses. Please refer to the qualification requirement for the position applied for within the appropriate MSTAR, e.g. refer to MSTAR M.A.706 for Continuing Airworthiness Manager qualification requirements.

Q6. Experience - The nominated person is required to provide details and supporting documentation of their experience relevant to the position for which they will hold within the organisation. Additional information may be provided as an attachment to the application. Please refer to the experience requirement for the position applied for within the appropriate MSTAR, e.g.: refer to MSTAR M.A.706 for Continuing Airworthiness Manager experience requirements.

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS (DGTA)
c/o SUBANG AIRBASE
40000 SHAH ALAM

Post Holders Declaration

By signing the declaration, the nominated person is indicating to DGTA that they have:
1. Read the guidelines;
2. Completed the application in full; and
3. Accepted the terms and conditions for processing the application. The application must be signed by the nominated person listed in item 3.

Privacy Policy

DGTA requires the provision of information as listed in this form. All such information received will be treated as confidential and will not be disclosed to any third parties unless that disclosure is required or authorised by law.

Form Submission

The applicant is to ensure either the supporting MSTAR Form (eg. Form 2, 12, 51 or 82) for the change has been supplied iaw MSTAR requirements, if required or has obtained approval from their sponsoring approved MSTAR Organisation.

NOTE: If there is insufficient space in any of the fields, please attach additional information to this form.

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS (DGTA)
c/o SUBANG AIRBASE
40000 SHAH ALAM

MSTAR Form 4

Acceptance of Nominated Management Personnel

APPLICATION

1. Details of Management Position required to be accepted as specified in:			
MSTAR 145 ☐	MSTAR M ☐	MSTAR 21 ☐	MSTAR 147 ☐

2. Position within the Organisation				
MSTAR 145 RM NDT Responsible LvL 3 QM	**MSTAR M** CAM QM AwR Staff	**MSTAR 21J** HDO COA CISM	**MSTAR 21G** RM QM	**MSTAR 147** TM QM

Additional Information	
Planned With Effect Date	

3. Business Contact Details:		
3.1	Title/Name	
	Address	
	Work Phone	
	Mobile	
	Email	

4. Organisation		
4.1	Name	

5. Qualifications relevant to the item (2) position: (Attach Supporting Documentation)

DIRECTORATE GENERAL TECHNICAL AIRWORTHINESS (DGTA)
c/o SUBANG AIRBASE
40000 SHAH ALAM

MSTAR Form 4

6. Work experience relevant to the item (2) position: (Attach Supporting Documentation)		
7. Post Holder Declaration (To be completed by Applicant)		
Declaration I declare that the information provided on this form is true and correct. I understand and accept that for DGTA to proceed with this application, I have supplied all supporting documentation to DGTA. I have obtained approval from the sponsoring approved MSTAR Organisation, as attached or, I understand that for DGTA to proceed with this application, the supporting MSTAR Form for the change has been supplied iaw MSTAR requirements.		
Date	Name/Position	Signature:
8. DGTA USE ONLY		
8.1 Record Objective ID:		
8.3 Staff Assessment: I have assessed this application against the requirements of the MSTAR and recommend this application as		
☐ Accepted	☐ Accepted with Conditions	☐ Resubmit Required	☐ Not Accepted
If Accepted; Planned With Effect Date:		
Assessment Comments:		
Date	Name/Position	Signature
8.4 DGTA Acceptance/Rejection		
☐ Accepted	☐ Accepted with Conditions	☐ Resubmit Required	☐ Not Accepted
Conditions (If Applicable)		
Date	Name/Position	Signature

MSTAR Form 6 – MSTAR 145 Approval Recommendation Report

MSTAR 145 APPROVAL RECOMMENDATION REPORT MSTAR	FORM 6
Part 1: General Name of organisation: Approval reference: Requested approval rating: MSTAR Form 3 dated*: EASA Part-145 Cert No (if applicable): Address of Facility Audited: Audit period: From to Date(s) of Audit: Audit reference(s): Persons interviewed: NMAA surveyor: Signature(s): NMAA office: Date of Form 6 part 1 completion: *delete where applicable	

MSTAR 145 APPROVAL RECOMMENDATION REPORT MSTAR FORM 6

Part 2: MSTAR 145 Compliance Audit Review

The five columns may be labelled and used as necessary to record the approval class and/or product line reviewed. Against each column used of the following MSTAR 145 sub-paragraphs please either tick (√) the box if satisfied with compliance or cross (X) the box if not satisfied with compliance and specify the reference of the Part 4 finding next to the box, or enter N/A where an item is not applicable, or N/R when applicable but not reviewed.

Para	Subject					
145.A.25	Facility requirements					
145.A.30	Personnel requirements					
145.A.35	Certifying staff and support staff					
145.A.40	Equipment, tools and material					
145.A.42	Acceptance of components					
145.A.45	Maintenance data					
145.A.47	Maintenance planning					
145.A.48	Performance of maintenance					
145.A.50	Certification of maintenance					
145.A.55	Maintenance records					
145.A.60	Occurrence reporting					
145.A.65	Safety and maintenance quality system					
145.A.70	Maintenance Organisation Exposition (MOE) (See Part 3)					
145.A.75	Privileges of the AMO					
145.A.80	Limitations on the AMO					
145.A.85	Changes to the AMO					
145.A.95	AMO Findings by the NMAA					

Competent surveyor(s): Signature(s):
NMAA office: Date of Form 6 part 2 completion:

MSTAR 145 APPROVAL RECOMMENDATION REPORT MSTAR FORM 6

PART 3: Compliance with MSTAR 145.A.70 Maintenance Organisation Exposition
Please either tick (√) the box if satisfied with compliance; or cross (X) if not satisfied with compliance and specify the reference of the Part 4 finding; or enter N/A where an item is not applicable; or N/R when applicable but not reviewed.

Part 1 Management

1.1		Corporate commitment by the Accountable Manager
1.2		Safety and quality policy
1.3		Management personnel
1.4		Duties and responsibilities of the management personnel
1.5		Management organisation chart
1.6		List of certifying staff and support staff (Note: a separate document may be referenced)
1.7		Manpower resources
1.8		General description of the facilities at each address intended to be approved
1.9		Organisation's intended scope of work
1.10		Notification procedure to the NMAA regarding changes to the organisation’s activities/approval/location/personnel
1.11		MOE amendment procedures including, if applicable, delegated procedures.

Part 2 Maintenance Procedures

2.1		Supplier evaluation and contract/tasking control procedure
2.2		Acceptance/inspection of aircraft components and material from outside contractors/organisations
2.3		Storage, tagging, and release of aircraft components and material to aircraft maintenance
2.3		Acceptance of tools and equipment
2.5		Calibration of tools and equipment
2.6		Use of tooling and equipment by staff (including alternative tools)
2.7		Cleanliness standards of maintenance facilities
2.8		Maintenance instructions and relationship to aircraft/aircraft component manufacturers’ instructions including updating and availability to staff
2.9		Repair procedures
2.1		Aircraft Maintenance Programme compliance
2.11		Airworthiness Directives procedure
2.12		Optional modification procedure
2.13		Maintenance documentation in use and completion of same

PART 3: Compliance with MSTAR 145.A.70 Maintenance Organisation Exposition
Please either tick (√) the box if satisfied with compliance; or cross (X) if not satisfied with compliance and specify the reference of the Part 4 finding; or enter N/A where an item is not applicable; or N/R when applicable but not reviewed.

Part 3 Compliance with MSTAR 145.A.70 Maintenance Organisation Exposition		
2.14		Technical record control
2.15		Rectification of defects arising during base maintenance
2.16		Release to service procedure
2.17		Maintenance records for the CAMO
2.18		Reporting of defects to the NMAA/CAMO/(Military) TC/STC Holder
2.19		Return of defective aircraft components to store
2.20		Management of defective components with outside contractors/organisations
2.21		Control of computer maintenance record systems
2.22		Control of man-hour planning versus scheduled maintenance work
2.23		Control of critical tasks
2.24		Reference to specific maintenance procedures
2.25		Procedures to detect and rectify maintenance errors
2.26		Shift/task handover procedures
2.27		Procedures for notification of maintenance data inaccuracies and ambiguitiesto the NMAA/ (Military) TC/STC holder
2.28		Maintenance planning procedures
Part L2 Additional Line Maintenance Procedures		
L2.1		Line maintenance control of aircraft components, tools, equipment, etc.
L2.2		Line maintenance procedures related to servicing/fuelling/de-icing, etc.
L2.3		Line maintenance control of defects and repetitive defects
L2.3		Line procedure for completion of technical log
L2.5		Line procedure for pooled parts and loan parts
L2.6		Line procedure for return of defective parts removed from aircraft
L2.7		Line procedure for control of critical tasks
Part 3 Quality System Procedures		
3.1		Quality audit of organisation procedures
3.2		Quality audit of aircraft and components
3.3		Quality audit remedial action procedure
3.4		Certifying staff and support staff qualification and training procedures
3.5		Certifying staff and support staff records
3.6		Procedure(s) for qualifying of quality audit personnel

MSTAR 145 APPROVAL RECOMMENDATION REPORT	FORM 6

Part 3: Compliance With MSTAR 145.A.70 Maintenance Organisation Exposition

3.7		Procedure(s) for qualifying of supervisors
3.8		Procedure(s) for qualifying of maintenance personnel
3.9		Aircraft or aircraft component maintenance tasks exemption process control
3.10		Concession control for deviation from organisation's procedures
3.11		Qualification procedure for specialised activities such as NDT, welding etc.
3.12		Control of manufacturers' and other maintenance working teams
3.13		Human factors training procedure
3.14		Competence assessment of personnel
3.15		Training procedures for On-the-Job Training as per Section 6 of Appendix III to MSTAR 66
3.16		Procedure for the issue of a recommendation to the NMAA for the issue of a SAML in accordance with MSTAR 66.B.105.

Part 4

4.1		Contracting/tasking CAMO
4.2		CAMO procedures/paperwork
4.3		CAMO record completion

Part 5 Appendices

5.1		Sample Documents
5.2		List of contractors/tasked organisations as per MSTAR 145.A.75(b)
5.3		List of line maintenance locations as per MSTAR 145.A.75(d)
5.4		List of contracted/tasked organisations as per MSTAR 145.A.70(a)(16)

MOE References: MOE Amendment:

NMAA audit staff: Signature(s):

NMAA office: Date of Form 6 part 3 completion:

MSTAR 145 APPROVAL RECOMMENDATION REPORT **FORM 6**

Part 4: Findings MSTAR 145 Compliance status

Each level 1 and 2 finding should be recorded whether it has been rectified or not and should be identified by a simple cross-reference to the Part 2 requirement. All non-rectified findings should be copied in writing to the organisation for the necessary corrective action

Part 2 or 3 ref.	Audit reference(s): Findings	Level	Corrective action		
			Date Due	Date Closed	Reference

MSTAR 145 APPROVAL RECOMMENDATION REPORT	**FORM 6**
Part 5: MSTAR 145 Approval or Continued Approval or Change Recommendation	

Name of organisation:

Approval reference:

Audit reference(s):

The following MSTAR 145 scope of approval is recommended for this organisation:

Or, it is recommended that the MSTAR 145 scope of approval specified in MSTAR Form 3
referenced..... be continued.

Name of recommending NMAA surveyor:

Signature of recommending NMAA surveyor:

NMAA office:

Date of recommendation:

MSTAR Form 6 review (quality check): Date:

* delete where applicable