



Australian Government

Civil Aviation Safety Authority

Acceptable Means of Compliance (AMC)

and

Guidance Material (GM)

CASR Part 66

**Continuing Airworthiness –
Aircraft Engineer Licences and Ratings**

An Acceptable Means of Compliance (AMC) explains how one or more requirements of the Civil Aviation Safety Regulations 1998 (CASRs) for the issue of a certificate, licence, approval or other authorisation, can be met by an individual or organisation applying to Civil Aviation Safety Authority (CASA) for the authorisation.

Applicants are not required to comply with an AMC but if they do, CASA will issue the authorisation to which the AMC relates.

Individuals and operators may, on their own initiative, propose other ways of meeting the requirements of the CASR; however, any such proposal will be subject to separate assessment by CASA to determine whether the authorisation can be issued.

Guidance Material (GM) provides explanations and amplification of a CASR policy intention, rather than a means of complying with it. GM should be read in conjunction with the applicable CASRs and AMCs. GM is identified by grey shaded text.

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Acronyms

ABC	Aluminium, Brass, Chrome
ADF	Automatic Direction Finder
ADI	Attitude Direction Indicator
ALI	Airworthiness Limitations Items
AMC	Acceptable Means of Compliance
AMM	Aircraft Maintenance Manual
AMP	Aircraft Maintenance Programme
APU	Auxiliary Power Unit
ATA	Air Transport Association
ATC	Air Traffic Control
AVM	Avionics monitor
CAO	Civil Aviation Order
CAR	Civil Aviation Regulations 1988
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
CBT	Computer Based Training
CDCCL	Critical Design Configuration Control Limitations
CFDIU	Centralised Fault Display Interface Unit
CFR	Code of Federal Regulation (of the USA)
CMM	Component Maintenance Manual
CMU	Communications Management Unit
CRS	Certificate of Release to Service
DME	Distance Measuring Equipment
EASA	European Aviation Safety Agency
ECU	Engine Control Unit
EIS	Electronic Instrument System
ELT	Emergency Locator Transmitter
ESDS	Emergency Shut Down System
FAA	Federal Aviation Authority (of the USA)
FADEC	Full Authority Digital Engine Control
FAR	Federal Aviation Regulation (of the USA)
FCU	Flight Control Unit
FDR	Flight Data Recorder
FTS	Fuel Tank System
FRS	Flammability Reduction Systems
GM	Guidance Material
GPS	Global Positioning System
HIRF	High Intensity Radio Frequency

HP	High Pressure
HSI	Horizon Situation Indicator
ICAO	International Civil Aviation Organization
JAA	Joint Aviation Authorities (European equivalent of FAA)
LAME	Licensed Aircraft Maintenance Engineer
LRU	Line Replaceable Unit (avionic)
MEL	Minimum Equipment List
MLG	Main Landing Gear
MOS	Manual of Standards
MTO	Maintenance Training Organisation
OJT	On the Job Training
PCT	Practical Consolidation Training
PRT	Power Recovery Turbine
PTU	Parallel Transfer Unit
PW	Pratt & Whitney
RPL	Recognition of Prior Learning
RPM	Revolutions per Minute
SARP	Standards and Recommended Practices
SB	Service Bulletin
SFARs	Special Federal Aviation Regulations (of the USA)
SOE	Schedule of Experience
STC	Supplementary Type Certificate
TAT	Turbine Air Temperature
TCAS	Traffic Alert and Collision Avoidance System
THS	Trimmable Horizontal Stabilizer
TOEFL iBT	Test of English as a Foreign Language Internet Based Test
TOEFL PB	Test of English as a Foreign Language Paper Based
TOEIC	Test of English for International Communication
VOR	VHF Omni-directional Radio Range

CASR Part 66

AMC CASR 66.025 – Grant of Licence

An AMC, for the purpose of demonstrating CASR Part 66.025 (3) (b) English proficiency requirements, is achievement of the benchmark represented by the following, at and reported by a Part 147 Maintenance Training Organisation (MTO) approved to do so:

- International English Language Testing System with an overall grade of six on condition no single test area has a score of less than six on either the academic or general training module;
- Test of English as a Foreign Language Internet Based Test (TOEFL iBT) score of 78;
- Test of English as a Foreign Language Paper Based (TOEFL PB) score of 547; and
- Test of English for International communication Secure Program (TOEIC Secure Program/Public Testing Centre) score of Listening 350; Reading; Speaking 160 and Writing 160.

GM CASR 66.025 – Grant of Licence

An applicant for a maintenance certification licence must be able to read, write and converse in English to a level that CASA is satisfied is sufficient to enable the applicant to safely exercise the privileges of the licence applied for:

- The level of knowledge would be such that the licence holder is able to:
 - read and understand the instructions and technical manuals in use within the organisation;
 - make written technical entries and any maintenance documentation entries, which can be understood by those with whom they are normally required to communicate;
 - read and understand the maintenance organisation procedures; and
 - communicate at such a level as to prevent any misunderstanding when exercising certification privileges.

AMC CASR 66.120 – Requirement for recent qualification or experience

An AMC, for the purpose of demonstrating CASR Part 66.120 currency requirements, is to be engaged in aircraft maintenance within an approved maintenance organisation for a period of six months, either continuously within the same organisation or split up into different blocks, within the same or in different organisations.

Note: If an individual has only partially met the requirements of CASR Part 66.120 and has (for example) five months experience in the previous 1 year 11 months, then it is only necessary to make up the remaining portion of the experience requirement.

GM CASR 66.120 –

The LAME should ensure that he keeps sufficient documentary evidence of experience to allow a customer or a CASA inspector to be satisfied that the LAME is in compliance with the requirements of this subpart.

The experience should be documented in an individual log book or in any other recording system (which may be an automated one) containing the following data:

- Date;
- Aircraft type;
- Aircraft identification i.e. registration;

- ATA chapter (optional);
- Operation performed i.e. 100 FH check, MLG wheel change, engine oil check and complement, SB embodiment, trouble shooting, structural repair, STC embodiment...;
- Type of maintenance i.e. base, line;
- Type of activity i.e. perform, supervise, release; and
- Category used - A, B1, B2 or C.

For Category A certifying staff, the experience should include exercising the privileges, by means of performing tasks related to the authorisation on at least one aircraft type for each licence subcategory. Tasks can include servicing, aeronautical product changes and simple defect rectifications.

For Category B1 and B2, for every aircraft included in the authorisation, the experience needs to be on that particular aircraft or on a similar aircraft within the same licence category or subcategory. Two aircraft can be considered as similar when they have similar technology, construction and comparable systems, which means equally equipped with the following (as applicable to the licence category):

- Propulsion systems (piston or turboprop or turbofan or turboshaft or jet-engine or push propellers);
- Flight control systems (only mechanical controls or hydro-mechanically powered controls or electro-mechanically powered controls);
- Avionic systems (analogue systems or digital systems); and
- Structure (manufactured of metal or composite or wood).

For Category C, the experience should cover at least one of the aircraft types endorsed on the authorisation.

For a combination of categories, the experience should include activities from each category.

Manual of Standards (MOS)

MOS GM 66.A.20 – (a) Privileges

The following titles shown against each category designator below are intended to provide a readily understandable indication of the job function:

- Category A: Line maintenance certifying mechanic.
- Category B1: Maintenance certifying engineer - mechanical.
- Category B2: Maintenance certifying engineer - avionic.
- Category C: Base maintenance certifying engineer.

Individual aircraft maintenance licence holders are not restricted to a single category. Provided that each qualification requirement is satisfied, any combination of categories may be granted.

MOS GM 66.A.20 – (a) Privileges

Tasks permitted by CASR Part 66.A.20 (a) (1) and (2) under the Category A certification authorisation, as part of minor scheduled maintenance or simple defect rectification, are as specified in CASR Part 145 and agreed by CASA. The MOS Part 145, Appendix II Subparagraph 4.p. Minimum Equipment List (MEL) item is only for minor maintenance MEL tasks. Applications to CASA seeking the addition of simple task MEL for listing as a CASR Part 145 AMC would be assessed against the teaching depth and scope for the Category A. The subject modules, levels of knowledge and competencies for the Category A can be seen at Appendices I, III and IV of the MOS Part 66.

For the purposes of Category A, minor scheduled line maintenance means any minor check up to but not including the A check where functional tests can be carried out by the aircrew to ensure system serviceability. In the case of an aircraft type not controlled by a maintenance programme based upon the A/B/C/D check principle, minor scheduled line maintenance means any minor check up to and including the weekly check or equivalent.

The Category B1 licence also permits the certification of work involving avionic systems, providing the serviceability of the system can be established by a simple self-test facility, other on-board test systems/equipment or by simple ramp test equipment. Defect rectification involving test equipment which requires an element of decision making in its application - other than a simple go/no-go decision - cannot be certified.

An “Avionic Line Replaceable Unit (LRU)” is described as a unit which has no input/output mechanical drive mechanism and containing electrical, electronic, instrument or radio parts that provide control, monitor or display functions; where the unit does not require specialist equipment, knowledge or techniques to secure, connect or test. (Avionic LRUs mentioned do not include any item that requires rigging - involving functional tests and adjustments - requiring the use of external specialised test equipment). The process of transferring software data, using onboard data loaders, is treated as an Avionic LRU replacement as long as LRU replacement serviceability can be established by using a simple test.

If an Avionic LRU is replaced that requires more than one BITE test because it interfaces with several systems, as long as the outcome of each test is a unique go-no go indication or parameter with no need for interpretation of the test results, it still remains a simple test. A simple test can also involve Avionic LRU's that have BITE testing that requires additional input (for example moving a switch/pushing a button/selecting a lever) whilst following the steps in the test procedure. As long as the outcome of the test is a pass or fail, it does not matter that a variety of steps were taken to establish serviceability of the LRU.

A B1 licence holder has the simple test privilege for establishing avionic system serviceability if a simple test may be carried out even if an Avionic LRU change has not been made.

The Category B2 will need to be qualified and hold the Category A maintenance certification licence in order to carry out simple mechanical tasks and be able to make certifications for such work.

The Category C certification authorisation permits certification of scheduled base maintenance by the issue of a single certificate of release to service for the complete aircraft after the completion of all such maintenance. The basis for this certification is that the maintenance has been carried out by competent mechanics and both Category B1 and B2 staff have signed for the maintenance under their respective specialisation. The principal function of the Category C certifying staff is to ensure that all required maintenance has been called up and signed off by the Category B1 and B2 staff before issue of the certificate of release to service. Category C personnel who also hold Category B1 or B2 qualifications may perform both roles in base maintenance.

MOS GM 66.A.20 – Table 1 – Aircraft systems, designations and conditions for Category, B1 and Category B2 licences

Table 1 makes a clear distinction between aircraft systems, by designating them as mechanical, powerplant, structural, electrical or avionic. Despite that clear distinction, there will be times that there will be an intersection of aircraft systems and it may not be readily apparent as to which licence holder may provide the maintenance certification for the maintenance required. The oxygen system is, for example, a mechanical system but it also contains instruments (avionic system) and hence the question arises as to which licence, B1 or B2, has responsibility for the maintenance.

In such a case either category could maintain the instrument (eg pressure indicator) - but it would depend on the nature of the maintenance who should in any particular situation. If the indicator is to be replaced due to failure of a sensor feed - then it would be appropriate for the B2 licence holder to provide the maintenance certification but a B1 licence holder could also carry out the maintenance and provide the maintenance certification. If the indicator was not sensing because an in-line oxygen sensor failure, requiring the oxygen line to be broken, purged and the part needed to be replaced, then category B1 would be the appropriate licence holder to carry out the work and provide the maintenance certification.

MOS GM 66.A.25 – Basic knowledge and competency requirements

The levels of knowledge are directly related to the complexity of certifications appropriate to the particular MOS Part 66.A.1 Category, which means that Category A must demonstrate a limited but adequate level of knowledge, whereas Category B1 and B2 must demonstrate a complete level of knowledge in the appropriate subject modules. Category C certifying staff must meet the relevant level of knowledge for B1 or B2.

MOS AMC 66.A.30 (a) – Experience requirements

An AMC, for a Category C applicant holding an academic degree, is to base the representative selection of tasks on: observation of hangar maintenance, maintenance planning, quality assurance, record-keeping, approved spare parts control and engineering development.

MOS GM 66.A.30 (a) – Experience requirements

Maintenance experience on operating aircraft means the experience of being involved in maintenance tasks on aircraft which are being operated by airlines, air taxi organisations etc. The point being to gain sufficient experience in the environment of commercial maintenance as opposed to only the training school environment. Such experience may be combined with approved training so that periods of training can be intermixed with periods of experience rather like the apprenticeship.

MOS AMC 66.A.30 (e) – Experience requirements

An AMC for demonstrating sufficient additional civil aircraft maintenance experience is for:

- Category A, the additional experience of civil aircraft maintenance would be a minimum of 6 months.
- Category B1 or B2, the additional experience of civil aircraft maintenance would be a minimum of 12 months.

Aircraft maintenance experience gained outside a civil aircraft maintenance environment can include aircraft maintenance experience gained in armed forces, coast guards, police or in aircraft manufacturing.

MOS GM 66.A.45 (d) – Type/task training and ratings

The training should give adequate detailed theoretical knowledge of the aircraft, its main parts, systems, equipment, interior and applicable components, including training in the systems in use for technical manuals and maintenance procedures. The course should also take into account the following:

- in service experience on the aircraft type;
- feedback from in-service difficulties/occurrence reporting etc.;
- significant airworthiness directives and/or service bulletins; and
- known human factors issues associated with the particular aircraft type.

Theoretical training should be supported by training aids such as aircraft system parts. Ground simulator time, engine ground running and computer based training (CBT) etc. may also be utilised.

Theoretical and practical training should also take into account critical aspects such as Critical Design Configuration Control Limitations.

Knowledge is also recommended of relevant inspections and limitations as applicable to the effects of environmental factors such as cold and hot climates, wind, moisture, etc.

The required duration of practical training must be accepted on a case by case basis by CASA prior to the type rating endorsement. It is strongly recommended that the agreement on the practical training duration be reached before the training starts.

While it is not feasible to establish a formula giving the required training duration in all cases, the following may be used as a guideline:

- For a first type training course with no recent recorded maintenance experience four months practical training is required.
- Some factors that may lead to a reduction in the maximum duration of four months practical training required are as follows:
 - experience on aircraft type of a similar technology, construction and systems including engines;
 - recency on type;
 - the quantity of the practical experience. For example experience gained will depend upon the environment e.g. line maintenance environment with one aircraft per week would permit limited experience compared with the constant base maintenance check environment; and
 - the quality of the practical experience. The type of tasks carried out. These tasks should reflect, at a minimum, those tasks specified by the practical training needs matrix developed by the organisation approved under CASR Part 147.

The minimum two weeks practical training is normally required for all type training courses. This includes the addition of similar type ratings on a CASR Part 66 licence (differences courses). There may be cases where the practical differences training required is less than two weeks for example an engineer with a CASR Part 66 type license in Category B2 on an Airbus A330 with PW 4000 engines who takes a differences course to an Airbus A330 with Rolls Royce Trent engines.

Fuel Tank Safety training can be developed against the guidance provided with Appendix I of this document.

MOS GM 66.A.45 (d) and (e) – Type/task training and ratings

CASR Part 66 Appendix III type training levels are based upon ATA 104 corresponding type training levels.

MOS GM 66.A.45 (f) – Type/task training and ratings

The examinations in respect of Category B1 or B2 or C aircraft type ratings may be conducted by training organisations appropriately approved under CASR Part 147.

MOS AMC 66.A.50 & 66.A.55 – Appendix II

AMCs for Practical on Course, Practical Consolidation Training and On Job Training (OJT) respectively, is provided in Appendix II.

APPENDIX I

Fuel Tank Safety Training

This appendix includes an AMC and general instructions when providing training on Fuel Tank Safety issues. The level of training required for fuel tank training is level 2.

Level 2 Detailed training Objectives

Know the history and the theoretical and practical elements of the subject and be able to give a detailed description of the concept of Critical Design Configuration Control Limitations, Airworthiness Limitations Items (ALI) 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 detailed information on how the above items affect the aircraft in the scope of the activity of the organisation or in the fleet.

Understand and carry out activities with the use of manufacturer and regulatory authority data providing instructions on design and maintenance, such as Service Bulletins, Airworthiness Directives, Aircraft Maintenance Manual, Component Maintenance Manual etc.

Use easily the manufacturer's documentation from various sources and apply corrective action where appropriate.

Identify the appliances or parts or the aircraft subject to fuel tank safety from the manufacturer's documentation, plan the action or apply a Service Bulletin and an Airworthiness Directive.

Continuing training

The interval between continuing training shall be established by the organisation employing such personnel, but should not exceed two years. The continuing training shall include knowledge on evolution of material, tools, documentation and manufacturer's or CASA's directives.

General requirements

Personnel training would normally be carried out before any airworthiness review certificate is issued or any maintenance task is certified on an aircraft or a aeronautical product.

The training should be made in appropriate facilities containing examples of aeronautical products, systems and parts affected by FTS issues and having access to aircraft or aeronautical product where typical examples of FTS issues can be shown. The use of pictures, films and practical examples of the maintenance on fuel tank system is recommended.

The training shall include a representative number of repair and inspections as required by the maintenance programme showing the necessity of using the manufacturer's data.

Characteristics of the training

The following characteristics shall be taken into consideration when the level 2 training programmes are being established:

- a) an understanding of the background and concepts of fuel tank safety as developed during the last 10 years;
- b) how in maintenance organisations mechanics can recognise, interpret and handle the improvements that have been made or are being made during fuel tank system maintenance; and
- c) an awareness of any hazards working on the Fuel System, and especially with a Flammability Reduction System using nitrogen.

The characteristics should be introduced in the training programme addressing the following issues:

- a) The theoretical background behind the fuel tank safety: 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.
- b) The major accidents and accident investigations and their conclusions.
- c) SFARs from 14 CFR SFAR 88 of the FAA and JAA Internal Policy (INT POL) 25/12: reason of these documents, and what was the ultimate goal, margins of fuel system safety improvements (from 10-6 to 10-9, in fact improvement by a factor 100-1000, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance).
- d) Explain the concepts that are being used: the results of SFAR 88 of the FAA and JAA INT POL 25/12: modifications, airworthiness limitations and CDCCL.
- e) Where relevant information can be found by the mechanics and how to use and interpret this information (maintenance manuals, aeronautical product maintenance manuals).
- f) Fuel Tank Safety and Maintenance: fuel tank entry and exit procedures, clean working environment, what is meant by configuration control, wire separation, bonding of parts etc.
- g) Flammability reduction systems (FRS): reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS.
- h) Recording maintenance actions, recording measures and results of inspections.

APPENDIX II

Practical Element of Type Training

AMC 1 - Practical element of type training - PCT

Note: This AMC is applicable to LAME who hold a type rating in the category or subcategory applicable to the rating.

An AMC, for the purpose of delivering the practical element of type training is the use of a Practical Consolidation Training (PCT) course as described at http://casa.gov.au/ame/download/pct_212b.pdf.

The PCT program assessments need to be conducted by an MTO assessor.

AMC 2 - Practical element of type training – Practical on-course

Note: This AMC is applicable to LAME who already hold a type rating in the category or subcategory applicable to the rating.

An alternative AMC is delivery of practical training in conjunction with the theory training course. Practical training is that which is gained in the conduct of the type course.

The objective of practical training is to gain competence in performing safe maintenance. At least one maintenance task from all ticked item (both rows and columns in the table below) needs to be completed and assessed as part of the approved practical training. Tasks crossed represent subjects that would be mandatory for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks is adequately addressed; particularly where these cannot be fully explained by theoretical training alone. The list details the minimum practical training subjects, other items may be added where applicable to the particular aircraft type. Tasks to be completed must be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

A type course developed to include the practical tasks below is subject to the normal type course approval process described in MOS Part 66.

	B1/B2					
	locate	Function/ operate test	Svc Grd Handle	Remove Install	MEL	Trouble Shoot
Blade Tracking	X/-	-	-	-	-	X/-
Rotors	X/-	-	X/-	X/-	-	X/-
Rotor Drives	X/-	X/-	-	-	-	X/-
Tail Rotor	X/-	-	X/-	-	-	X/-
Tail Rotor Drive	X/-	X/-	-	-	-	X/-
Folding Blades / Pylon	X/-	X/-	X/-	-	-	X/-
Rotors flight controls	X/-	X/-	X/-	-	X/-	X/-
Time limits, dimension & areas, lifting & shoring, levelling & weighing, towing & taxing, parking & mooring, placards & markings, servicing	X/X	-	X/X	-	-	-
Airframe Structures Fuselage	X/-	-	-	-	-	X/-
Airframe Structures Windows	X/-	-	-	-	-	X/-
Airframe Structures Wings	X/-	-	-	-	-	-
Airframe Structures Stabilisers	X/-	-	-	-	-	-
Airframe Structures Nacelles/Pylons	X/-	-	-	-	-	-
Airframe Structures Flight Control Surfaces	X/-	-	-	-	-	X/-
Airframe Structures Fuselage Doors	X/X	X/-	X/X	-	-	-
Air Conditioning	X/X	X/-	X/X	-	X/-	X/-
Air Supply	X/X	X/-	-	-	-	-
Pressurization	X/X	X/-	-	-	X/-	X/-
Safety and warning Devices	X/X	X/X	-/X	-/X	-/X	-/X
Indicating/Recording Systems	X/X	X/X	X/X	X/X	X/X	X/X
Auto Flight	X/X	-/X	-/X	-/X	X/X	-/X
Communications	X/X	-/X	X/X	-/X	X/X	-/X
Navigation	X/X	-/X	X/X	-/X	X/X	-/X
Central Maintenance System	X/X	X/X	X/X	X/X	X/X	X/X
Information Systems	X/X	-/X	-	-	-	-
Electrical Power	X/X	X/X	X/X	X/X	X/X	X/X
Equipment & Furnishings	X/X	X/X	X/X	X/X	-	-
Fire Protection	X/X	X/X	-/X	X/-	X/-	X/-
Flight Controls	X/X	X/X	X/-	X/-	X/-	X/-
Fuel Systems	X/X	X/-	X/-	X/-	X/-	X/-
Hydraulic Power	X/X	X/-	X/X	X/-	X/-	X/-
Ice & Rain Protection	X/X	X/X	-/X	-/-	X/-	X/-
Landing Gear	X/X	X/-	X/-	X/-	X/-	X/-
Lights	X/X	X/X	X/X	-X	X/X	-
Oxygen	X/-	X/-	X/-	X/-	-	-
Integrated modular avionics	X/X	-/X	-/X	-/X	-/X	-/X
Cabin systems	X/X	-/X	-/X	-/X	-/X	-/X
Centralized maintenance systems	X/X	X/X	X/X	X/X	X/X	X/X
Pneumatic/Vacuum	X/-	X/-	-/-	X/-	X/-	X/-
Water/Waste	X/-	X/-	X/-	-	-	-

	B1/B2					
	locate	Function/ operate test	Svc Grd Handle	Remove Install	MEL	Trouble Shoot
Auxiliary Power Units (APU)	X/-	X/X	X/X	-	-	X/-
Water Ballast	X/-	-	-	-	-	-
Information systems	X/X	X/X	X/X	-	X/X	X/X
Cargo & Accessory Compartments	X/X	-	X/-	-	-	-
Turbine/Piston Engine Module						
Power Plant	X/-	X/-	X/X	-	-	-
Engine Turbine / Turbo Prop / Ducted Fan / Unducted fan	X/-	-/X	-	-	-	-
Engine Fuel and Control	X/X	X/-	-	-	-	-
Fire protection	X/X	X/X	X/X	X/X	X/X	X/X
FADEC Systems	X/X	X/X	-X	X/X	X/X	X/X
Ignition	X/X	X/X	-	-	-	-
Air	X/-	-	-	X/-	-	X/-
Engine Controls	X/-	X/-	-	-	-	X/-
Engine Indicating	X/X	X/X	-	-	X/X	X/X
Exhaust	X/-	X/-	-	-	X/-	X/-
Oil	X/-	-	X/-	X/-	-	-
Starting	X/-	X/-	-	-	X/-	X/-
Water Injection	X/-	X/-	-	-	-	-
Propulsion Augmentation	X/-	X/-	-	-	-	-
Accessory Gearboxes	X/-	-	X/-	X/-	-	-
Engine Monitoring and Ground Operation	X/-	-	-	-	-	-
Engine Storage and Ground Operation	X/-	-	X/-	-	-	-
Propellers						
Pitch Control	X/-	X/-	-	X/-	X/-	X/-
Synchronising	X/-	X/-	-	-	-/X	X/-
Electronic Control	X/-	X/X	X/X	X/X	X/X	X/X
Ice Protection	X/-	X/-	-	X/-	X/-	X/-
Maintenance	X/X	X/X	X/X	X/X	X/X	X/X

Practical element of type training – AMC3 - OJT

Note: This AMC is applicable to LAME who do not hold a type rating in the category or subcategory applicable to the rating to which they seek.

An alternative AMC is the combination of AMC 1 or AMC 2 practical training, combined with completion of the OJT i.e. this AMC 3.

OJT is the maintenance experience gained in the workplace on aircraft. The objective of OJT is to gain the required competence and experience in performing safe maintenance and may or may not use structured learning processes. This is usually peer to peer and shall take place on aircraft, or aeronautical product, or at the workplace involving actual work task performance. OJT includes both line and base maintenance tasks.

The OJT shall cover a cross section of tasks representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Each task shall be signed off by the student, in addition to the workplace supervisor or workplace assessor. The tasks listed shall refer to an actual job card/work order etc. The following data shall be addressed on the OJT worksheets/logbook:

- Name of Trainee;
- Date of Birth;
- Approved Maintenance Organisation;
- Location;
- Name of Supervisor and Assessor (including licence number if applicable);
- Date of task completion;
- Description of task and job card/work order/tech log, etc.;
- Aircraft type and Aircraft Registration; and
- Licence Rating applied for.

The final assessment of the OJT that has been satisfactorily completed needs to be certified by either a Part 147 MTO assessor or the Part 145 quality manager.

The OJT should cover at least 50% of the list of tasks below, although type specific tasks may be substituted as applicable to the aircraft type concerned and licence category. OJT should demonstrate a variety and cross section of tasks both in terms of aircraft systems experience and in the complexity of the tasks performed.

Type experience should be demonstrated by the submission of OJT records or a logbook showing tasks performed by the applicant. The maintenance organisation should provide applicants for a type rating a schedule or plan indicating a list of tasks to be performed under supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each or a group of tasks may be countersigned by an approved assessor. The logbook format and its use should be clearly defined. A CASA Schedule of Experience or a Workplace Journal of Experience can be utilised for the logging of OJT.

Where the OJT and its assessment are conducted under the responsibility of a nominated quality manager or MTO assessor within a Part 145 maintenance organisation, an adjustment is required to the Part 145 approval to describe the process. These procedures should specify the requirements for assessor training and the assessment process and should identify the assessor by name and position within the organisation.

It is acceptable for confirmation of individual OJT task completion to be undertaken by a direct supervisor. The MTO Assessor or quality manager needs to conduct a final review of the tasks undertaken and provide confirmation of the completion of the required diversity, variety and quantity of OJT. During OJT, the supervision is to oversee the complete process, including task completion and use of manuals and procedures during the performance of maintenance in an appropriately approved maintenance environment. The OJT record needs to be submitted to the MTO with which an arrangement has been made for assessment or by the Part 145 quality manager. CASR Part 42 definitions provide a description of supervision.

When the OJT has been successfully completed the MTO or quality manager needs to complete the appropriate section of CASA Form 465 - A, B1 or B2 Notification to CASA of Training Outcome(s). The assessment may be performed task by task or conducted as a final assessment at the end of the practical training and/or OJT.

Aircraft Type Practical Experience and On the Job Training - List of Tasks Time limits/Maintenance checks

- 100 hour check (general aviation aircraft).
- “B” or “C” check (transport category aircraft).
- Assist carrying out a scheduled maintenance check i.a.w. AMM.
- Review Aircraft maintenance Log for correct completion.
- Review records for compliance with airworthiness directives.
- Review records for compliance with aeronautical product life limits.
- Procedure for inspection following heavy landing.
- Procedure for inspection following lightning strike.

Dimensions/Areas

Locate aeronautical product(s) by zone/station number.
Perform symmetry check.

Lifting and Shoring

Assist in:

- Jack aircraft nose or tail wheel.
- Jack complete aircraft.
- Sling or trestle major aeronautical product.

Levelling/Weighing

Level aircraft.
Weigh aircraft.
Prepare weight and balance amendment.
Check aircraft against equipment list.

Towing and Taxiing

Prepare aircraft for towing.
Tow aircraft.
Be part of aircraft towing team.

Parking and mooring

Tie down aircraft.
Park, secure and cover aircraft.
Position aircraft in maintenance dock.
Secure rotor blades.

Placards and Markings

Check aircraft for correct placards.
Check aircraft for correct markings.

Servicing

Refuel aircraft.
Defuel aircraft.
Carry out tank to tank fuel transfer.
Check/adjust tire pressures.

Check/replenish oil level.
Check/replenish hydraulic fluid level.
Check/replenish accumulator pressure.
Charge pneumatic system.
Grease aircraft.
Connect ground power.
Service toilet/water system.
Perform pre-flight/daily check.

Vibration and Noise Analysis

Analyse helicopter vibration problem.
Analyse noise spectrum.
Analyse engine vibration

Air Conditioning

Replace combustion heater.
Replace flow control valve.
Replace outflow valve.
Replace safety valve
Replace vapour cycle unit.
Replace air cycle unit.
Replace cabin blower.
Replace heat exchanger.
Replace pressurisation controller.
Clean outflow valves.
Check operation of air conditioning/heating system.
Check operation of pressurisation system.
Troubleshoot faulty system.

Fire protection

Check fire bottle contents.
Check/test operation of fire/smoke detection and warning system.
Check cabin fire extinguisher contents.
Check lavatory smoke detector system.
Check cargo panel sealing.
Install new fire bottle.
Replace fire bottle squib.
Troubleshoot faulty system.
Inspect engine fire wire detection systems.

Auto flight

Install servos.
Rig bridle cables.
Replace controller.
Replace amplifier.
Replacement of the auto flight system LRUs in case of the fly-by-wire aircraft.
Check operation of auto-pilot.
Check operation of auto-throttle/auto-thrust.
Check operation of yaw damper.
Check and adjust servo clutch.
Perform autopilot gain adjustments.
Perform mach trim functional check.

Troubleshoot faulty system.
Check autoland system.
Check flight management systems.
Check stability augmentation system.

Electrical Power

Charge lead/acid battery.
Charge ni-cad battery.
Check battery capacity.
Deep-cycle ni-cad battery.
Replace integrated drive/generator/alternator.
Replace switches.
Replace circuit breakers.
Adjust voltage regulator.
Change voltage regulator.
Amend electrical load analysis report.
Repair/replace electrical feeder cable.
Troubleshoot faulty system.
Perform functional check of integrated drive/generator/alternator.
Perform functional check of voltage regulator.

Equipment/Furnishings

Replace carpets.
Replace crew seats.
Replace passenger seats.
Check inertia reels.
Check seats/belts for security.
Check emergency equipment.
Check ELT for compliance with regulations.
Repair toilet waste container.
Repair upholstery.
Change cabin configuration.
Replace cargo loading system actuator.
Test cargo loading system.
Replace escape slides/ropes.

Flight Controls

Inspect primary flight controls and related aeronautical products i.a.w AMM.
Extending/retracting flaps and slats.
Replace horizontal stabiliser.
Replace spoiler/lift dumper.
Replace elevator.
Deactivation/reactivation of aileron servo control.
Replace aileron.
Replace rudder.
Replace trim tabs.
Install control cable and fittings.
Replace slats.
Replace flaps.
Replace powered flying control unit.
Replace flap actuator.

Rig primary flight controls.
Adjust trim tab.
Adjust control cable tension.
Check control range and sense direction of movement.
Check for correct assembly and locking.
Troubleshoot faulty system.
Functional test of primary flight controls.
Functional test of flap system.
Operational test of the side stick assembly.
Operational test of the THS.
THS system wear check.

Fuel

Water drain system (operation).
Replace booster pump.
Replace fuel selector.
Replace fuel tank cells.
Replace/test fuel control valves.
Replace magnetic fuel level indicators.
Replace water drain valve.
Check / calculate fuel contents manually.
Check filters.
Flow check system.
Check calibration of fuel quantity gauges.
Check operation feed/selectors.
Check operation of fuel dump/jettison system.
Fuel transfer between tanks.
Pressure de-fuel.
Pressure re-fuel (manual control).
Deactivation / reactivation of the fuel valves (transfer de-fuel, X-feed, re-fuel).
Troubleshoot faulty system.

Hydraulics

Replace engine driven pump.
Check/replace case drain filter.
Replace standby pump.
Replace hydraulic motor pump/generator
Replace accumulator.
Check operation of shut off valve.
Check filters/clog indicators.
Check indicating systems.
Perform functional checks.
Troubleshoot faulty system.
Pressurisation/depressurisation of the hydraulic system.
PTU operation.

Ice and rain protection

Replace pump.
Replace timer.
Inspect repair propeller deice boot.
Test propeller de-icing system.
Inspect/test wing leading edge de-icer boot.

Replace anti-ice/deice valve.
Install wiper motor.
Check operation of systems.
Operational test of the pitot-probe ice protection.
Operational test of the TAT ice protection.
Operational test of the wing ice protection system.
Assistance to the operational test of the engine air-intake ice protection (engines in operation).
Troubleshoot faulty system.

Indicating/recording systems

Replace flight data recorder (FDR).
Replace cockpit voice recorder.
Replace clock.
Replace master caution unit.
Replace FDR.
Perform FDR data retrieval.
Troubleshoot faulty system.
Implement ESDS procedures.
Inspect for HIRF requirements.
Start/stop EIS procedure.
Bite test of the CFDIU.
Ground scanning of the central warning system.

Lights

Repair/replace rotating beacon.
Repair/replace landing lights.
Repair/replace navigation lights.
Repair/replace interior lights.
Replace ice inspection lights.
Repair/replace logo lights.
Repair/replace emergency lighting system.
Perform emergency lighting system checks.
Troubleshoot faulty system.

Landing Gear

Build up wheel.
Replace main wheel.
Replace nose wheel.
Replace steering actuator
Replace truck tilt actuator.
Replace gear retraction actuator.
Replace uplock/downlock assembly.
Replace shimmy damper.
Rig nose wheel steering.
Functional test of the nose wheel steering system.
Replace shock strut seals.
Servicing of shock strut.
Replace brake unit.
Replace brake control valve.
Bleed brakes.
Replace brake fan

Test anti skid unit.
Test gear retraction.
Change bungees.
Adjust micro switches/sensors.
Charge struts with oil and air.
Troubleshoot faulty system.
Test outbrake system.
Replace rotorcraft skids.
Replace rotorcraft skid shoes.
Pack and check floats.
Check/test emergency blowdown.
Operational test of the landing gear doors.

Oxygen

Inspect on board oxygen equipment.
Purge and recharge oxygen system.
Replace regulator.
Replace oxygen generator.
Test crew oxygen system.
Perform auto oxygen system deployment check.
Troubleshoot faulty system.

Pneumatic systems

Replace filter.
Replace air shut off valve.
Replace pressure regulating valve.
Replace compressor.
Recharge dessicator.
Adjust regulator.
Check for leaks.
Troubleshoot faulty system.

Navigation

Calibrate magnetic direction indicator.
Replace airspeed indicator.
Replace altimeter.
Replace air data computer.
Replace VOR unit.
Replace ADI.
Replace HSI.
Check pitot static system for leaks.
Check operation of directional gyro.
Functional check weather radar.
Functional check doppler.
Functional check TCAS.
Functional check DME
Functional check ATC Transponder.
Functional check flight director system.
Functional check inertial nav system.
Complete quadrantal error correction of ADF system.
Update flight management system database.
Check calibration of pitot static instruments.

Check calibration of pressure altitude reporting system.
Troubleshoot faulty system.
Check marker systems.
Compass replacement direct/indirect.
Check Satcom.
Check GPS.
Test AVM.

Vacuum systems

Inspect the vacuum system i.a.w AMM.
Replace vacuum pump.
Check/replace filters.
Adjust regulator.
Troubleshoot faulty system.

Water/Waste

Replace water pump.
Replace tap.
Replace toilet pump.
Troubleshoot faulty system.
Inspect waste bin flap closure.

Central Maintenance System

Retrieve data from CMU.
Replace CMU.
Perform Bite check.
Troubleshoot faulty system.

Airborne Auxiliary power

Install APU.
Inspect hot section.
Troubleshoot faulty system.

Structures

Sheet metal repair.
Fibre glass repair.
Wooden repair.
Fabric repair.
Recover fabric control surface.
Treat corrosion.
Apply protective treatment.

Doors

Inspect passenger door i.a.w AMM.
Rig/adjust locking mechanism.
Adjust air stair system.
Check operation of emergency exits.
Test door warning system.
Troubleshoot faulty system.
Remove and install passenger door i.a.w. AMM.
Remove and install emergency exit i.a.w. AMM.
Inspect cargo door i.a.w. AMM.

Windows

Replace windshield.
Replace direct vision window.
Replace cabin window.
Repair transparency.

Wings

Skin repair.
Recover fabric wing.
Replace tip.
Replace rib.
Replace integral fuel tank panel.
Check incidence/rig.

Propeller

Assemble prop after transportation.
Replace propeller.
Replace governor.
Adjust governor.
Perform static functional checks.
Check operation during ground run.
Check track.
Check setting of micro switches.
Assessment of Dress out blade damage i.a.w. AMM.
Dynamically balance prop.
Troubleshoot faulty system.

Main Rotors

Install rotor assembly.
Replace blades.
Replace damper assembly.
Check track.
Check static balance.
Check dynamic balance.
Troubleshoot.

Rotor Drive

Replace mast.
Replace drive coupling.
Replace clutch/freewheel unit.
Replace drive belt.
Install main gearbox.
Overhaul main gearbox.
Check gearbox chip detectors.

Tail Rotors

Install rotor assembly.
Replace blades.
Troubleshoot.

Tail Rotor Drive

Replace bevel gearbox.
Replace universal joints.
Overhaul bevel gearbox.
Install drive assembly.
Check chip detectors.
Check/install bearings and hangers.
Check/service/assemble flexible couplings.
Check alignment of drive shafts.
Install and rig drive shafts.

Rotorcraft flight controls

Install swash plate.
Install mixing box.
Adjust pitch links.
Rig collective system.
Rig cyclic system.
Rig anti-torque system.
Check controls for assembly and locking.
Check controls for operation and sense.
Troubleshoot faulty system.

Power Plant

Build up ECU.
Replace engine.
Repair cooling baffles.
Repair cowling.
Adjust cowl flaps.
Repair faulty wiring.
Troubleshoot.
Assist in dry motoring check.
Assist in wet motoring check.
Assist in engine start (manual mode).

Piston Engines

Remove/install reduction gear.
Check crankshaft run-out.
Check tappet clearance.
Check compression.
Extract broken stud.
Install helicoil.
Perform ground run.
Establish/check reference RPM.
Troubleshoot.

Turbine Engines

Replace module.
Replace fan blade.
Hot section inspection/boroscope check.
Carry out engine/compressor wash.
Carry out engine dry cycle.

Engine ground run.
Establish reference power.
Trend monitoring/gas path analysis.
Troubleshoot.

Fuel and control, piston

Replace engine driven pump.
Adjust AMC.
Adjust ABC.
Install carburettor/injector.
Adjust carburettor/injector.
Clean injector nozzles.
Replace primer line.
Check carburettor float setting.
Troubleshoot faulty system.

Fuel and control, turbine

Replace FCU.
Replace Engine Electronic Control Unit (FADEC)
Replace Fuel Metering Unit (FADEC)
Replace engine driven pump.
Clean/test fuel nozzles.
Clean/replace filters.
Adjust FCU.
Troubleshoot faulty system.
Functional test of FADEC.

Ignition systems, piston

Change magneto.
Change ignition vibrator.
Change plugs.
Test plugs.
Check H.T. leads.
Install new leads.
Check timing.
Check system bonding.
Troubleshoot faulty system.

Ignition systems, turbine

Perform functional test of the ignition system.
Check glow plugs/ignitors.
Check H.T. leads.
Check ignition unit.
Replace ignition unit.
Troubleshoot faulty system.

Engine Controls

Rig thrust lever.
Rig RPM control.
Rig mixture HP cock lever.
Rig power lever.
Check control sync (multi-eng).

Check controls for correct assembly and locking.
Check controls for range and sense of operation direction of movement.
Adjust pedestal micro-switches.
Troubleshoot faulty system.

Engine Indicating

Replace engine instruments(s).
Replace oil temperature bulb.
Replace thermocouples.
Check calibration.
Troubleshoot faulty system.

Exhaust, piston

Replace exhaust gasket.
Inspect welded repair.
Pressure check cabin heater muff.
Troubleshoot faulty system.

Exhaust, turbine

Change jet pipe.
Change shroud assembly.
Install trimmers.
Inspect/replace thrust reverser.
Replace thrust reverser component.
Deactivate/reactivate thrust reverser.
Operational test of the thrust reverser system.

Oil

Change oil.
Check filter(s).
Adjust pressure relief valve.
Replace oil tank.
Replace oil pump.
Replace oil cooler.
Replace firewall shut off valve.
Perform oil dilution test.
Troubleshoot faulty system.

Starting

Replace starter.
Replace start relay.
Replace start control valve.
Check cranking speed.
Troubleshoot faulty system.

Turbines, piston engines

Replace PRT.
Replace turbo-blower.
Replace heat shields.
Replace waste gate.
Adjust density controller.

Engine water injection

Replace water/methanol pump.
Flow check water/methanol system.
Adjust water/methanol control unit.
Check fluid for quality.
Troubleshoot faulty system.

Accessory gear boxes

Replace gearbox.
Replace drive shaft.
Check Inspect magnetic chip detector.

APU

Removal/installation of the APU.
Removal/installation of the inlet guide-vane actuator.
Operational test of the APU emergency shut-down test.
Operational test of the APU.