Australian Government
Civil Aviation Safety Authority

Minimum Equipment Lists (MEL)

Civil Aviation Advisory Publication

October 2011

CAAPs provide guidance, interpretation and explanation on complying with the Civil Aviation Regulations (CAR) or Civil Aviation Orders (CAO).

This CAAP provides advisory information to the aviation industry in support of a particular CAR or CAO. Ordinarily, the CAAP will provide additional 'how to' information not found in the source CAR, or elsewhere.

A CAAP is not intended to clarify the intent of a CAR, which must be clear from a reading of the regulation itself, nor may the CAAP contain mandatory requirements not contained in legislation.

Note: *Read this advisory publication in conjunction with the appropriate regulations/orders.*

The relevant regulations and other references

- Regulation 21M of *Civil Aviation Safety Regulations 1998* (CASR 1998) (Approval design of modification or repair)
- Regulation 37 of the *Civil Aviation Regulations 1988* (CAR 1988) (Permissible unserviceabilities)
- Regulation 42L of CAR 1988 (System of maintenance)
- Regulation 42U of CAR 1988 (Modifications and repairs)
- Regulations 48, 49 and 50 of CAR 1988 (Endorsement on maintenance release)
- Regulation 42.125 of CASR 1998 (Approval of design for modifications or repairs to aircraft)
- Civil Aviation Order (CAO) 20.18 Aircraft Equipment - Basic
- Operational Requirements

This CAAP will be of interest to

This Civil Aviation Advisory Publication (CAAP) applies to:

- Certificate of Registration holders (CoR);
- Registered Operators;
- Air Operator's Certificate (AOC) holders;
- Maintenance Controllers; and
- Pilots.

Why this publication was written

This CAAP provides information and guidance on developing and seeking approval of MELs from the Civil Aviation Safety Authority (CASA).

Status of this CAAP

This is the fourth amendment of this CAAP and replaces CAAP 37-1(3) dated May 2006. It has been amended by introducing references to new regulations (Part 21M and Part 42 of CASR 1998). Changes to Regulation 37 of CAR 1988 have removed reference to damage and that regulation now only deals with the unserviceability of equipment.

For further information

For application and policy advice contact CASA's Office closest to you on Telephone 131 757.

Contents

1. Acronyms

AD Airworthiness Directive

AFM Aircraft Flight Manual

AOC Air Operator's Certificate

ATA Air Transport Association

CAAP Civil Aviation Advisory Publication

CAO Civil Aviation Order

CAR Civil Aviation Regulations 1988

CASA Civil Aviation Safety Authority

CASR Civil Aviation Safety Regulations 1998

CDL Configuration Deviation List

CoR Certificate of Registration

ICA Instructions for Continuing Airworthiness

(M) Maintenance Procedures

MCM Maintenance Control Manual

MEL Minimum Equipment Lists

MMEL Master Minimum Equipment List

NAA National Airworthiness Authority

(O) Operations Procedures

PIC Pilot-in-Command

PU Permissible Unserviceabilities

STC Supplemental Type Certificate

TAC Type Acceptance Certificate

TCDS Type Certificate Data Sheets

2. Definitions

ACCEPTABLE MASTER MINIMUM EQUIPMENT LIST (MMEL) means a MMEL either approved by CASA or the National Airworthiness Authority (NAA) of the country of type design as part of the type certificate or type acceptance certificate.

AIRCRAFT FLIGHT MANUAL (AFM). AFM is the source document for operational limitations and performance for an aircraft. The term AFM can apply to either an aeroplane flight manual or a rotorcraft flight manual. CASA requires an AFM for type certification or type acceptance certification.

INSTRUCTIONS FOR CONTINUING AIRWORTHINESS (ICA). The ICA, or maintenance manual, is the source document produced by a manufacturer for maintenance procedures for an aircraft, engine or propeller. The term ICA can apply to either an aeroplane maintenance manual or a rotorcraft maintenance manual. CASA requires the ICA for type certification.

AIR TRANSPORTATION ASSOCIATION (ATA) NUMBERING SYSTEM. The standard ATA numbering system refers to systems on different aircraft in a standardised manner. MMELs use the ATA numbering system.

CALENDAR DAYS include all days, with no exclusion for weekends and holidays.

DEACTIVATION means to make a piece of equipment or an instrument unusable by the pilot/crew by preventing its operation.

DEFERRED MAINTENANCE is the postponement of the repair or replacement of an item of equipment or an instrument.

DISPATCH for the purpose of a MEL refers to the time the aircraft engines have been started or at the commencement of pushback from the terminal for the purpose of the flight.

EQUIPMENT LIST is an inventory of equipment installed by the manufacturer or operator on a particular aircraft.

INOPERATIVE means that a system and/or component has malfunctioned to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limits or tolerances.

OPERATIONS (O) AND MAINTENANCE (M) PROCEDURES in the MMEL refer to the specific maintenance procedures the operator uses to disable or render items of equipment inoperative and to specific operating conditions and limitations, as appropriate.

- An (O) symbol in column 4 of the MMEL/MEL indicates that a specific operations procedure must be accomplished before or during operation with the listed item of equipment inoperative.
- An (M) symbol in column 4 of the MMEL/MEL indicates that a specific maintenance procedure must be accomplished before beginning operation with the listed item of equipment inoperative. Normally, maintenance personnel accomplish these procedures. However, other personnel, such as the flightcrew, may be qualified and authorised to perform certain functions. Qualified maintenance personnel must perform procedures requiring specialised knowledge, skills, or the use of tools or the use of test equipment.

PLACARD is a decal or label with letters at least 3.5 mm high. The operator or maintenance personnel must place the placard on or near inoperative equipment or instruments so that it is visible to the flight crew and alerts them to the inoperative equipment.

PROCEDURES DOCUMENT as referred to in this CAAP pertains to a separate document containing the (O) and (M) procedures developed by the operator and any other operating information applicable to operation and management of a MEL. This document should be available on board the aircraft.

SUPPLEMENTAL TYPE CERTIFICATE (STC). An STC is a major change in type design not great enough to require a new application for a type certificate under Regulation 21.019 of CASR 1998. An example would be installation of a powerplant different from that which was included in the original type certificate.

TYPE CERTIFICATE DATA SHEETS (TCDS) and specifications are documents issued by the NAA which describe the aircraft's airworthiness requirements relating to a specific type, make and model of aircraft.

3. Background

3.1 Operational and airworthiness requirements, including the aircraft type design approval requirements, require that every item of equipment installed in the aircraft must be operational at the beginning of a flight. However, because of the various levels of redundancy designed into aircraft, under certain conditions an acceptable level of safety can be maintained with specific items of equipment inoperative for a limited period of time until repairs can be made.

Furthermore, many aircraft also have equipment installed that is not required for safe operation under certain operating conditions, for example, instrument lighting in day Visual Meteorological Conditions (VMC). Other equipment, such as entertainment systems or galley equipment may be installed for operators' operational considerations.

3.2 Regulation 37 of CAR 1988 provides CASA with the authority to approve defects in an Australian aircraft as a permissible unserviceability in relation to the aircraft. CASA also approves a schedule of permissible unserviceabilities for an aircraft in the form of a MEL. An approved MEL is a document, which allows for the operation of a specific aircraft under specific conditions, with a particular item(s) of equipment inoperative at the time of dispatch for the intended flight. The aircraft, however, still complies with its type design standards.

3.3 CAO 20.18 requires that in the case of a charter or regular public transport aircraft, all instruments and equipment fitted to the aircraft must be serviceable before take-off, unless unserviceability is a permissible unserviceability set out in a MEL or CASA has approved the flight with the unserviceability. This requirement enables the pilot-in-command (PIC) to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or system become inoperative.

3.4 A Configuration Deviation List (CDL) or its equivalent is not part of the MMEL/MEL and is not dealt with in this CAAP. CDLs are used to identify external components of an aircraft type which may be missing for dispatch or for flight and, where necessary, they will provide any associated information on performance corrections for such cases (e.g. missing landing gear doors, flap actuator fairings etc.). Where dispatch with such missing items is approved, the CDL is published as part of the aircraft's flight manual.

4. MMEL Vs MEL

4.1 A MMEL is a document created specifically to regulate the continued operation of an aircraft type (e.g. BEECH-200, Beechcraft model 200) with inoperative equipment. It is a list of items of equipment that may be temporarily inoperative under certain conditions and limitations, while still maintaining the level of safety intended in the design standards. The MMEL does not take into account the operating circumstances of individual operators of that type, as such it cannot in itself be regarded as providing operational permission. The MMEL is, however, the basis for the development of an individual operators MEL. Normally the MMEL is developed by the aircraft manufacturer in conjunction with operators and is approved/accepted by the appropriate NAA. CASA only accepts MMELs approved by the NAA of the country of type design as part of the type certificate or type acceptance certificate.

4.2 A MEL is a document, which allows the operation of a specific aircraft under specified conditions, with particular item(s) of equipment inoperative at the time of dispatch for the intended flight. An approved MEL consists of an approved list of the specific inoperative equipment for a particular make and model of aircraft by serial and registration mark, e.g. BEECH-200, VH-XXX, and its use is authorised by accepting the associated application procedures contained in an operator's Maintenance Control Manual (MCM) and/or operations manual or other appropriately documented procedures. The operator, taking into account the certificated seating capacity, aircraft configuration and operating environment, prepares a MEL. It is provided to CASA for consideration of approval. An approved MEL for an aircraft is a non-transferable document, i.e. if the CoR holder of the aircraft changes then new approval for the MEL is required even if the aircraft retains the same registration mark. MELs approvals should be notated to this effect.

Furthermore, if an aircraft moves from one AOC holder to another, the new AOC holder cannot automatically use the approved MEL for the aircraft. The new AOC holder will be authorised by CASA only if the holder has acceptable associated application procedures contained in an MCM and/or operations manual. A MEL must be supported within a framework of a controlled and sound program of repairs and part replacement.

4.3 The MMEL/MEL is an alleviating document. Its purpose is not, however, to encourage the operation of aircraft with inoperative equipment. It is never desirable that aircraft continue operations with inoperative equipment. Such operations are permitted only as a result of careful analysis of each item to ensure that the required level of safety is maintained. A fundamental consideration in permitting the operation of aircraft with inoperative equipment is that the continued operation of an aircraft in this condition should be minimised.

4.4 The PIC invokes the MEL. It would be pertinent to emphasise that ultimately, it is the decision of the PIC to accept the aircraft for flight with inoperative systems or equipment listed in the MEL. The overriding principle is that notwithstanding the provision of an approved MEL, a Licensed Aircraft Maintenance Engineer should not return an aircraft for flight, and the PIC should not accept an aircraft for flight if it is considered unsafe for a particular flight.

5. Developing a MEL

5.1 Format of a MEL

5.1.1 The *Civil Aviation Act 1988* and CAR 1988 do not stipulate any specific format and/or contents of a MEL. However, the format provided in Appendix B of this CAAP is the internationally accepted format and if used could avoid delay in assessing the MEL.

5.2 The MMEL, CAR 1988 and CAO requirements

5.2.1 The MEL should be developed from the latest issue of the applicable MMEL on an item-by-item basis and keeping in view the pertinent regulatory requirements.

5.2.2 The applicable MMEL is determined by reference to CASA's TAC which will detail the type certificate under which CASA accepted the aircraft.

5.2.3 A MMEL approved by another recognised NAA may be presented as evidence to support deviations from the applicable MMEL, provided the original certification basis is not affected and Australian regulatory standards continue to be met.

5.2.4 If an applicable the MMEL may cover more than one model of the aircraft type, it is acceptable to have different models of the aircraft type covered in an operators approved MEL. It is also acceptable to have only one MEL for a fleet having mixed certification basis (e.g. BAe 146 aircraft certificated to Federal Aviation Regulations of the United States of America and European Aviation Safety Agency Certification Standards by different NAAs. However, differences, if any, must be identified in the operator's approved MEL by registration marks and aircraft serial numbers.

5.2.5 If an operator chooses to add items that are not found in the MMEL (due to its particular type of operation, regulatory requirements etc.), an assessment of those items must be carried out in accordance with paragraph 5.2.9 of this CAAP. This assessment is required to ensure that these items do not affect the design standards or safe operation of the aircraft and are not in conflict with the flight manual and any regulatory requirements.

5.2.6 In general, a MEL should not be less restrictive than the applicable MMEL for the type of aircraft. If a certain item(s) of the applicant's MEL is less restrictive than the applicable MMEL, except where regulatory requirements permit to do so, then CASA may require an extensive qualitative and/or quantitative analysis to substantiate the proposed departure from the MMEL. In certain circumstances, depending on the nature of any further analysis required, assessment of a less restrictive or additional item may cost much more than the total cost of the MEL approval.

5.2.7 Where an item of a MMEL, for which relief has also been provided in CAR 1988, CAOs, etc. and relief is less restrictive than the corresponding item of the applicable MMEL. then the MEL item may be based on the least restrictive requirement. However, under no circumstances can a MEL item be less restrictive than any regulatory requirement.

5.2.8 In general, non-safety related equipment such as galley equipment, passenger convenience items or optional items, should not be listed in the MEL. Operators should establish an effective decision making process for failures that are not listed to determine if they are related to airworthiness and required for safe operation.

5.2.9 If the applicant's MEL contains passenger convenience or optional items such as galley equipment, audio/video equipment, overhead reading lamps etc. which are not addressed in the MMEL, then an assessment of the MEL should be carried out as follows:

- where passenger convenience items serve a second function, such as movie equipment being used for cabin safety briefings, operators must develop and include operational contingency procedures in case of an equipment malfunction; and
- where passenger convenience items are part of another aircraft system, for example, the electrical system, or interact with other system(s), procedures must be developed and included in the MEL for deactivating and/or securing in case of malfunction.

Note: *The aircraft should not be operated unless the MEL explicitly allows for the removal of equipment detailed in the MEL.*

5.3 Operations (O) and Maintenance (M) procedures

5.3.1 The objective of (O) and (M) procedures is to provide all people using the document with clear and concise directions on how they are to proceed in case of permissible unserviceabilities. The (O) and (M) procedures form part of the approved MEL.

5.3.2 Guidelines for (O) and (M) procedures contained in MMELs are not adequate procedures. Operators must develop detailed instructions for use by pilots and maintenance personnel that are appropriate to the operator's systems and type of operation. These procedures should be based on the operator's experience and sound industry practices. (M) procedures for removal of inoperative equipment must be based on approved maintenance data.

5.3.3 Aircraft with a MEL item invoked that requires a maintenance procedure will be configured as per the MEL and dispatched for the intended flight in accordance with the requirements of the MCM. Some aircraft manufacturers also produce operations and maintenance procedures for the use by operators (Dispatch Deviation Guides etc.). The operator, if appropriate for a particular operation, may submit these procedures, as part of the MEL. It is acceptable to publish these procedures in a separate document and they will be considered part of the MEL. However, clear referencing of the document must be made in the system of maintenance and the appropriate operating documents.

5.3.4 **(O) Operations Procedures:** Where the (O) symbol appears in the MMEL, an operations procedure must be developed that provides clear direction to the flight crew. These procedures must be included in the MEL. The only exception is when the procedure is contained in another document that is always available on the flight deck, such as an operations manual or in an approved electronic form etc. In these cases, the MEL shall refer to a section of the appropriate document(s).

5.3.5 **(M) Maintenance Procedures:** The MMEL may identify items that require a maintenance (M) procedure. If this is the case then the operator must ensure that relevant (M) procedure(s) has been developed for the MEL that provides clear direction to the maintenance personnel.

5.3.6 **Warning Signs and Placarding:** All inoperative items must be placarded as inoperative to inform flight crew members and maintenance personnel of equipment condition.

5.3.7 While the MMEL may require specific wording for some items, in the majority of cases, unless otherwise mentioned in the applicable MMEL, the operator may choose the placard wording and location at their discretion. However, it must be clearly spelled out in the (O) and (M) procedures.

5.4 Procedures for the use and guidance of flight crews and maintenance personnel

5.4.1 The operator must establish procedures for the use and guidance of flight crews and maintenance personnel, in relation to the MEL. These procedures must agree with those in the operator's MCM, system of maintenance, operations manual, and other operating documents. These procedures should include, but are not limited to, procedures for:

- deferring rectification action or invoking MEL item(s) for inoperative equipment;
- placarding requirements as per the MEL;
- ensuring that a dispatched aircraft with an invoked MEL item(s) complies with the limits and conditions of the MEL;
- controlling categorised repair intervals; and
- the training of company personnel who are responsible for compliance with MEL procedures.

5.4.2 **Procedures for invoking MEL items** are normally contained in the operator's MCM, operations manual or an alternative document. Prior to issuing a MEL approval, CASA will ensure that the MEL references these procedures in the MCM, operations manual or similar document, if not included in the MEL. If no procedures for the invoking of MEL items exist within the operator's organisation, then CASA will, in addition to vetting the MEL, require amendment to the MCM and/or operations manual.

5.4.3 The inoperative item must be placarded to inform the flight crew members of its inoperative condition(s). While the MEL for some items may require specific wording, in the majority of cases the placard wording and location is to be determined by the operator, unless otherwise specifically mentioned in the applicable MMEL. However, to the extent practicable, placards must be located as indicated in the MEL, or adjacent to the control or indicator/equipment affected.

5.4.4 A placarding procedure should be established and set out in the MCM and operations manual or, at least, within the approved MEL document.

5.4.5 The method of control of placarding must ensure:

- that all inoperative items are placarded; and
- placards are removed and accounted for when the defect is cleared.

5.4.6 Placards should be self-adhesive. The placards may vary in size and shape. Use of embossed 'Dymo'-type tape as a placard is not considered acceptable because of its unreliable adhesive characteristics on various surfaces and in various operating conditions. The placard may be in two parts. Part One would list a description of the defect and defect control number and should be attached to the logbook for crew reference. Part Two should list the system affected and the defect control number and be fixed in the appropriate location. A MEL control sheet attached to the logbook could serve the same purpose as Part One above.

5.4.7 When invoking a MEL item, the person responsible must:

- identify, in the aircraft technical log or appropriate company document, that this action has occurred;
- identify the item with its MEL number; and
- ensure that an inoperative label is placed in an appropriate location.

5.4.8 A company procedure documenting the above requirement in the appropriate operator's documentation is acceptable for compliance purposes.

5.4.9 If more than one placard is required for a MEL item, provision must be made to ensure that all placards are removed when the defect is cleared.

5.4.10 If a defect occurs at a base where maintenance personnel are not available and the MEL does not require action other than placarding, the flight crew may install a placard as required by the MEL.

5.4.11 Upon arrival at the next maintenance base, maintenance personnel must ensure that the placarding has been completed in accordance with the MEL requirements and/or the MCM and/or operations manual procedures.

5.4.12 It is the responsibility of the operator to provide the capability and instructions to the flight crew to ensure that the placard is in place prior to commencing the intended flight.

5.5 Repair intervals

5.5.1 **Each item of a MEL must be repaired within the specified repair interval.** These intervals are set to limit the maximum time an aircraft may fly with an inoperative item(s) of equipment, and are designated Category "A, B, C or D".

> ***Note 1:*** *Repair intervals for class B aircraft being operated as private aircraft are not necessary, as long as the aircraft serviceability meets the regulatory operational and airworthiness requirements.*
>
> ***Note 2:*** *Repair intervals for equipment fitted above the minimum regulatory requirements that are specified "nil required for dispatch" may be selected by operators at their discretion.*

Category A: Items in this category shall be repaired within the time interval specified in the remarks column of the MEL, adjacent to the item. Whenever the specified interval is stated in cycles or flight time, the time interval begins with the next flight.

Category B: Items in this category are to be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

> ***Note:*** *It is recognised that some operators, mainly those located in remote areas of Australia, experience genuine difficulties in complying with the requirements of MEL repair intervals. To overcome this problem, CASA may extend repair intervals for category B items for a maximum period of up to six days, where it is considered justified.*

Category C: Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

Category D: Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours), excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

5.5.2 Where the repair interval of an item of CASA generic MMEL is different than the corresponding item of the applicable MMEL then the MEL repair interval may be based on the least restrictive repair interval.

5.5.3 **Extensions of repair intervals are permitted for genuine spares procurement problems.** Some holders of delegations for Regulation 37 of CAR 1988 may have the ability to extend Category B and C repair intervals based on the non-procurement of spare parts. In these cases the delegate must have documented justification that the spares were not available from the manufacturer for the period of the extension. The extension is permitted to cover this justified period plus an additional three days for installation.

> ***Note:*** *Where the delegate extends a repair interval for a Category B or C item, they must provide the controlling CASA Regional Office with notification within 24 hours of exercising the extension authority.*

5.5.4 The operator must establish procedures whereby the maintenance support periodically reviews the deferred items. This is done to ensure that any accumulation of deferred items neither conflict with each other nor presents an unacceptable increase in crew workload. Notwithstanding the categorisation of item repair intervals, it should be the aim of each MEL document holder to ensure that inoperative items are repaired as quickly as possible.

5.6 MEL training program

5.6.1 **The operator must develop a MEL training program** for maintenance personnel and flight crew, which must be in place prior to an operator commencing operations with a MEL. The operator, when required, should conduct recurrent training, or put in place a controlled method to alert staff to any changes in MEL procedures, to ensure company personnel remain current with those procedures.

Training program — maintenance personnel

5.6.2 Operators must develop a MEL training program for maintenance personnel and flight crew (where they are authorised to carry out maintenance functions), which must be put in place prior to an operator commencing operations with a MEL.

5.6.3 The training for maintenance personnel should include those sections of the MCM procedures dealing with:

- the use of, and compliance with the MEL;
- placarding of inoperative equipment;
- return to service of an aircraft;
- dispatching an aircraft; and
- any other MEL related procedures.

Training program — flight crew

5.6.4 Operators must also provide flight crew personnel with MEL training, which should be included as part of their route/line training. The details of such a training program must be stated in the operator's operations manual.

5.6.5 The flight crew training should include, but not be limited to, the following:

- the purpose and use of a MEL;
- instruction on operator's procedures for the use and guidance of flight crew; and
- the PICs responsibility with respect to the above procedures.

6. MEL approval process

6.1 Applications for approval of a MEL

6.1.1 An operator submitting a MEL for approval must provide CASA with:

- a letter or application requesting approval of the MEL (signed by the operator); and
- at least two copies of the proposed MEL.

6.1.2 A MEL may cover more than one aircraft of the same type. However, all differences in the equipment/systems installed, if any, should be clearly identified by the aircraft registration mark.

6.2 Application for amendment to the MEL

6.2.1 Amendments to MELs are either mandatory or voluntary, depending upon the particular circumstances. Mandatory amendment of a MEL is required:

- when the applicable MMEL is amended so as to become more restrictive; or
- when required by CASA in light of in-service experience.

6.2.2 Voluntary amendment of a MEL may be carried out when:

- the MMEL is amended so as to become less restrictive; or
- as required by the operator, provided the proposed change is no less restrictive than the MMEL.

6.2.3 An application for amendment(s) to an approved MEL, together with appropriate substantiation, should be forwarded to the CASA's Service Centre.

6.3 Approval Fee

6.3.1 Approval of a MEL or a MEL amendment attracts a fee. On receipt of an application for approval of a MEL (or amendment to an approved MEL), CASA will notify the applicant of an estimate of the fee for assessment of the application.

6.3.2 The total chargeable fee is based on the actual work hours involved in assessing the MEL at the hourly rate published in the *Civil Aviation (Fees) Regulations 1995*. CASA will not initiate a MEL assessment process unless the applicant pays the estimated fee.

6.4 MEL Approval Time

6.4.1 If the operator submits a MEL that complies with this CAAP, CASA will endeavour to approve the document within 60 days.

7. Removal of inoperative equipment

7.1 Interim Approvals

7.1.1 CASA will not grant an operator interim approval while the MEL is undergoing the review process to use a MMEL as a MEL.

7.2 Removal of equipment, whether serviceable or not, from an aircraft are modifications and hence must be carried out in accordance with Regulation 42 of CAR 1988 or Regulation 42.125 of CASR 1998 as applicable.

7.3 The restriction of removal of equipment in these regulations is intended to ensure safe operation of the aircraft, as improper removal of equipment may have an adverse effect on the aircraft weight and balance or operations of other critical aircraft systems.

7.4 An approved MEL or approvals issued under Regulation 37 of CAR 1988 do not automatically allow operations of the aircraft with inoperative equipment removed for repair, unless explicitly allowed to do so.

7.5 Unless the removal of the equipment is specified in a design approval under Regulation 42U of CAR 1988 or Regulation 42.125 of CASR 1998 as applicable are met, a removal must be approved as a design modification by an authorised person for the purpose of Regulation 21M of CASR 1998.

7.6 Approved maintenance data is defined in Regulation 2A of CAR 1988. Maintenance data is defined in CASR Dictionary Part 3 Clause 15.

7.7 Once the design of the removal has been approved by an authorised person, an operator can include the procedures for removing the equipment in the maintenance (M) procedures for the aircraft's MEL.

8. Equipment failure after the commencement of the flight

8.1 The MEL is used during the preparation for flight to assist in dispatch decisions where the aircraft has an unserviceability. Use of the MEL is not applicable to an unserviceability or a malfunction that occurs or is discovered during flight. Once an aircraft is either pushed-back, towed from the blocks, or starts to move under its own power for the purpose of flight, the flight crew must handle any equipment failure in accordance with the AFM. Unserviceability of equipment occasionally occurs between the time the flight departs and the time it takes off. If the AFM contains procedures for handling the unserviceability, or if the PIC considers that the unserviceability does not affect the safety of flight, the flight may continue. In these circumstances when workload permits the crew may consult the MEL to determine whether any operational limitations or maintenance procedures indicate that a return for maintenance action or replanning may be prudent. In any case, the unserviceability must be addressed prior to the next flight.

8.2 Operators should include a procedure for handling equipment or instrument failure after the aircraft has commenced the flight. The procedure should allow the PIC to communicate with the dispatch and maintenance organisations, if required, to review the situation and determine whether the flight should:

- return for repairs (the failed equipment is a “no-go” item);
- return to accomplish an (M) procedure specified in the MEL before continuing the flight; or
- continue using the alternate procedure (abnormal procedure) for operating with the inoperative item.

8.3 The operator’s procedure may also provide for the flight to continue when the PIC determines that the flight can be operated safely using the alternate procedure under the conditions of the dispatch release, without communicating with the dispatch and maintenance organisations.

Note: *If the conditions for a flight are changed to the extent that the original dispatch or flight release is no longer valid, then a new dispatch or flight release or an amended release is required.*

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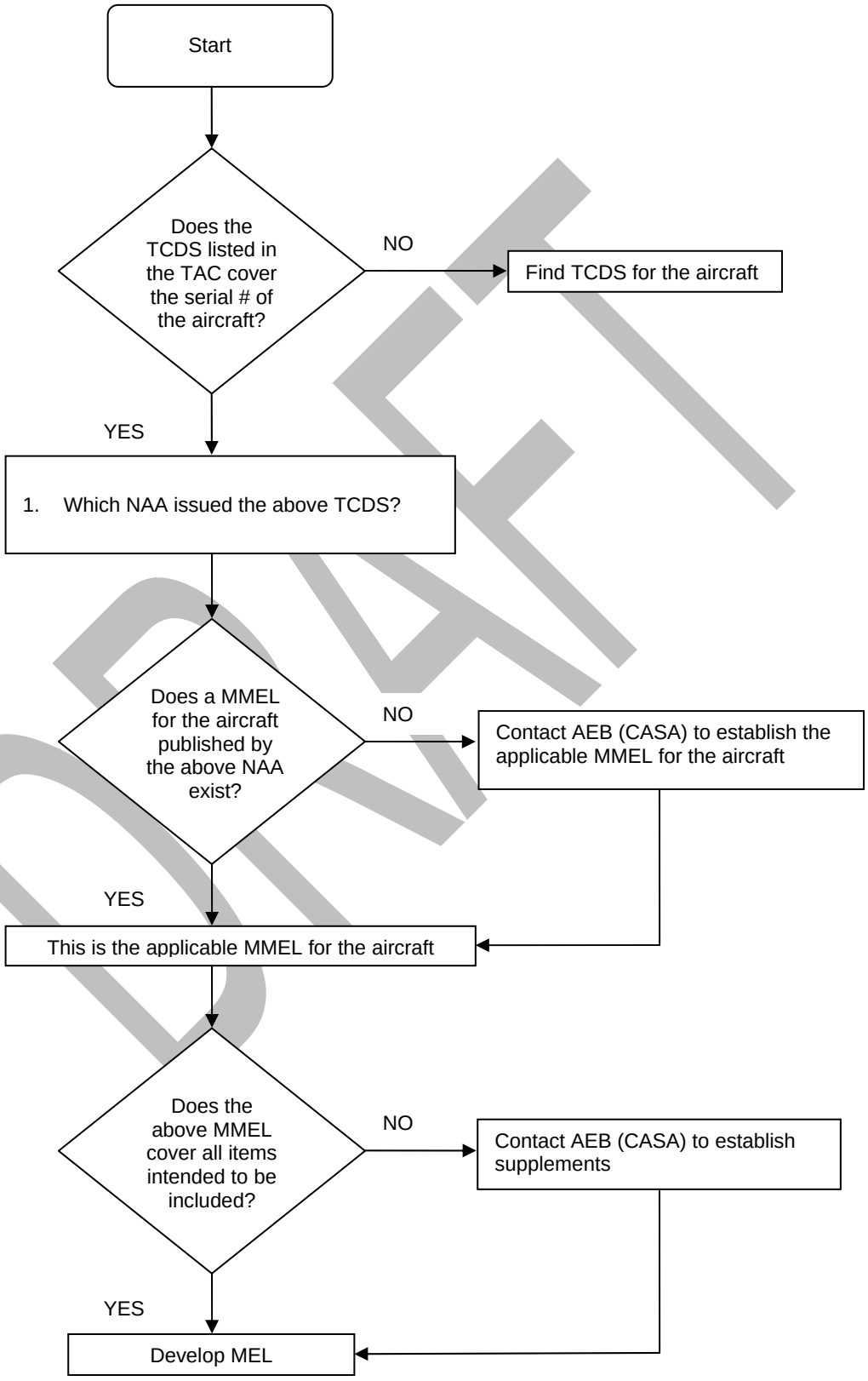
APPENDIX A –

APPLICABILITY OF A MMEL



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APPENDIX B –

FORMAT OF A MEL AND SAMPLE PAGE

MEL Format

The MEL must include:

- a List of Effective Pages (LEP);
- a Table of Contents;
- the CASA Minimum Equipment List Preamble (see sample MEL Preamble at Appendix C to CAAP 37-1-(4));
- the CASA Notes and Definitions;
- a section for each aircraft ATA Chapter and the items covered within those chapters;
- the appropriate (O) and (M) procedures; and
- the appropriate repair intervals (usually stated in the MEL Preamble).

List of Effective Pages

The List of Effective Pages is used to ensure that each MEL is up to date. It must list the date of the last revision for each page.

The date and revision status of each page of the MEL must correspond to that shown on the List of Effective Pages.

Table of Contents

The Table of Contents page lists the section for each aircraft system utilising the ATA Numbering System, as found in the MMEL.

Chapter and Page Numbering

The ATA Numbering System and sequence numbers are to be used as found in the MMEL.

Pages will be numbered with the ATA Numbering System followed by the page number for that system — for example, Flight Controls, 27-1, 27-2-7).

The MEL page format should be similar to the MMEL or as shown on the following page.

Sample Page of a MEL

Aircraft Type: DEHAVILLAND DHC-8	Revision No. 13	Page
Aircraft Registration Mark: VH-ABC	Date: 1 August 1999	27-1-1

1. ATA System and Item Sequence Numbers	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
27 FLIGHT CONTROLS CAT			
-1. Stall Warning System A Pressure Indicator			(O) (M) One may be inoperative provided the system is deactivated.
-1. Pressure Indicator	2	1	

NOTE: Deactivating a stall warning system will deactivate the related FAST/SLOW indication on the ADI.

Placard

None required as a lit STALL WARNING caution light on the affected side indicates malfunction. A placard may be required regarding non-availability of FAST/SLOW indication on the ADI.

Operating Procedures

Prior to flight, test integrity of the STALL WARNING system by selecting the STALL WARNING TEST

Maintenance Procedures

1. Pull the "STALL WRN & HTR" and "STALL XDCR HTR" circuit breakers for the affected side.

   Left Side: "STALL WARN & HTR 1" on left DC circuit breaker panel (L7).
   "STALL XDCR HTR 1" on variable frequency AC circuit breaker panel (left bus).

   Right Side: "STALL WARN & HTR 2" on right DC circuit breaker panel (R7)
   "STALL XDCR HTR 2" on variable frequency AC circuit breaker panel (right bus).

2. Make appropriate entry in the aircraft maintenance records.

Appendix C –

MINIMUM EQUIPMENT LIST

PREAMBLE

1. MEL Applicability

1.1 Aircraft type, model and serial number(s): *[Insert aircraft type/model and serial number(s)]*

1.2 Aircraft Registration Mark(s): *[Insert aircraft registration mark(s)]*

1.3 Name of the CoR holder of the aircraft: *[Insert name of the CoR holder of the aircraft]*

1.4 Under the provision of subregulation 37(2) of the *Civil Aviation Regulations 1988*, CASA hereby directs that:

> *"When using an aircraft in relation to which this MEL is in force, [insert the operator's name] must comply with this preamble and the conditions and limitations specified in the MEL."*

2. Introduction

2.1 All equipment installed in an aircraft in compliance with the airworthiness standards and the operating rules must be operative. However, under Regulation 37 of CAR 1988, CASA may approve defects in an aircraft as permissible unserviceabilities (PUs) where compliance with certain equipment requirements is not necessary in the interests of safety under all operating conditions. The approval may take the form of a MEL.

2.2 Experience has shown that with the various levels of redundancy designed into aircraft, the operation of every system or installed component may not be necessary when the remaining operative equipment can provide the required level of safety. CASA's approval of certain PUs in the form of a MEL provides the operator with the authority to operate an aircraft with certain items or components inoperative, provided CASA considers that an acceptable level of safety can be maintained by appropriate operational limitations, transfer of functions to other operating components/conditions or reference to other instruments or components that can provide the required information.

2.3 By approval of the MEL, permission to dispatch the aircraft for revenue, ferry or training flight with certain items of equipment inoperative is granted provided that an acceptable level of safety is maintained by use of appropriate operational or maintenance procedures, by transfer of the function to another operating component, or by reference to other instruments providing the required information.

> ***Note:*** *It does not imply that the aircraft may be operated with the item removed unless the approved MEL explicitly allows the removal.*

3. Contents of MEL

3.1 The MEL does not include items that are always required such as wings, engines and landing gear, nor is reference made to equipment such as passenger convenience items which, when inoperative, do not obviously affect the airworthiness of an aircraft. It is important to note that ANY ITEM WHICH IS RELATED TO THE AIRWORTHINESS OF THE AIRCRAFT OR IS REQUIRED BY THE CIVIL AVIATION LEGISLATION THAT IS NOT INCLUDED IN THE OPERATOR'S MEL MUST ALWAYS BE OPERATIVE BEFORE A FLIGHT IS DISPATCHED. THE MEL MUST NOT DEVIATE FROM THE AIRCRAFT FLIGHT MANUAL LIMITATIONS, EMERGENCY PROCEDURES, AIRWORTHINESS DIRECTIVE OR EXTENDED DIVERSION TIME OPERATIONS REQUIREMENTS.

This MEL was derived from the MMEL for *[insert the aircraft manufacturer's]* aircraft model *[insert model number]*, issued by *[insert name of the NAA]* Revision: *[insert number]*, Dated: *[insert date]*

3.2 Mandatory amendment of the MEL will be required:

- when the applicable MMEL is amended so as to become more restrictive;
- when required by CASA as a result of in-service experience; or
- when new airworthiness or operational equipment or system standard is introduced.

4. Criteria for Dispatch

4.1 Prior to departure under the provisions of a MEL item the exact nature of the defect shall be determined and compliance ENSURED with all other requirements specified in the CASRs, CARs, CAOs and the Aeronautical Information Publication etc.

4.2 All necessary operational control must be exercised to ensure that aircraft are not dispatched or flown with multiple MEL items inoperative without first determining that any interface or inter relationship between inoperative systems or components will not result in a degradation in the level of safety and/or an undue increase in crew workload.

4.3 Irrespective of the provisions of the MEL, the PIC may require a defect to be rectified after considering operational implications, multiple unserviceabilities, and additional failures during continued operation with inoperative systems or components.

4.4 Where a PIC accepts an aircraft with a MEL item of equipment as inoperative, the PIC shall ensure compliance with the intent of the preamble, the definitions, conditions and limitations specified in the MEL as applicable to the inoperative item.

5. Maintenance Action

5.1 When it is determined that an item of equipment is inoperative, it must be reported by making an entry in the aircraft maintenance record/logbook or continuing airworthiness record prior to further operation. The item must then either be repaired or rectification may be deferred as per the MEL or other approved means acceptable to CASA.

5.2 When these actions are taken, an aircraft maintenance certification in the aircraft maintenance record/logbook, or other approved documentation, shall be carried out. Such action is required prior to operation with any inoperative item of equipment and must contain a detailed description of the inoperative item(s), special advice to the flight crew, if necessary, and information provided about corrective action taken.

5.3 If inadvertent operation could produce a hazard, such equipment must be rendered inoperative (physically) as required in the appropriate maintenance procedures.

5.4 The relevant operational and maintenance procedures setting out the controls, without deviation, to achieve the principles as set out in this preamble, must ensure compliance with the conditions attached to the MEL are contained in *[identify here the particular maintenance control manual or an alternative document and operations manual]*.

6. Repair Intervals

6.1 In order to maintain an acceptable level of safety and reliability, the MEL establishes limitations on the duration of and conditions for operation with inoperative equipment. This MEL is intended to permit operation with inoperative items for a period of time until repairs can be carried out. Repairs of inoperative items, deferred in accordance with the MEL, must be affected at or prior to the repair times established by the following letter designator given in the "CAT" column of the MEL:

- **Category A:** Items in this category shall be repaired within the time interval specified in the remarks column of the MEL, adjacent to the item. Whenever the specified interval is stated in cycles or flight time, the time interval begins with the next flight.
- **Category B:** Items in this category shall be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document. For example, if it were recorded at 10 am on January 26th, the three day interval would begin at midnight January 26th and end at midnight January 29th.
- **Category C:** Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document. For example, if it were recorded at 10 am on January 26th the ten day interval would begin at midnight on January 26th and end at midnight on February 5th.
- **Category D:** Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours); excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

6.2 The letter designators are inserted adjacent to column 2.

Minimum Equipment List

Standard Notes and Definitions

1. ***System numbers*** are based on the Air Transport Association (ATA) Specification number 100 and items are numbered sequentially.

2. ***Item*** (Column 1) means the aircraft component, system, instrument or equipment listed in the "Item" column.

3. ***Number Installed*** (Column 2) is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MEL. Should the number be a variable (e.g. passenger cabin items) the MEL must reflect the actual number installed or an alternate means of configuration control approved by CASA.

4. ***Number Required for Dispatch*** (Column 3) is the minimum number (quantity) of items required for operation provided the conditions and limitations specified in Column 4 are met.

   Note: *The MEL must reflect the actual number required for dispatch or an alternate means of configuration control approved by CASA.*

5. ***(If installed)*** in the item column indicates that the listed item is not applicable to all models or configurations.

6. ***Remarks or Exceptions*** (Column 4) - this column includes a statement either prohibiting or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation, and appropriate notes.

7. ***A vertical bar*** (change bar) in the margin indicates a change, addition or deletion in the adjacent text for the current revision of that page only. The change bar is dropped at the next revision of that page.

8. ***AFM*** means Flight Manual for an aeroplane/rotorcraft as applicable.

9. ***"-"*** symbol in column 2 and/or 3 indicates a variable number (quantity) of the item installed.

   Note: *The MEL must reflect the actual number installed or an alternate means of configuration control approved by CASA.*

10. ***ER*** refers to extended range operations of a two-engine aeroplane which has a type design approval for ER operations and complies with the requirements of the applicable CAOs.

11. ***Flight Day*** means a 24-hour period (from 00.01 hrs to 23.59 hrs) either Coordinated Universal Time (UTC) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.

12. ***Icing Conditions*** means an atmospheric environment that may cause ice to form on the aircraft, engine intakes or in the engine(s).

13. ***Alphabetical symbol*** in Column 4 indicates a proviso (condition or limitation) that must be complied with for operation with the listed item inoperative.

14. ***Inoperative*** means a system and/or component malfunction to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its designed operating limits or tolerances. It does not imply that the aircraft may be operated with the item removed.

15. ***Notes:*** provide additional information for crew members or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.

16. ***Inoperative components of an inoperative system:*** Inoperative items which are components of a system which is inoperative are usually considered components directly associated with and having no other function than to support that system.

> ***Note:*** *Warning/Caution systems associated with the inoperative system must be operative unless relief is specifically authorised per the MEL.*

17. ***References*** given such as "see 21-31-15" and "see AFM Limitations" are to bring attention to certain interrelationships between the subject item and other MEL items or AFM material. These references are intended to assist with compliance but do not relieve the operator of the responsibility for determining such interrelationships.

18. ***'(M)'*** symbol indicates a requirement for a specific maintenance procedure, which must be accomplished prior to operation with the listed item inoperative. Appropriate procedures are required to be published as part of the operator's operations manual and MCM.

19. '***(O)'*** symbol indicates a requirement for a specific operations procedure which must be accomplished in planning for and/or operating with the listed item inoperative. Appropriate procedures are required to be published as a part of the operator's operations manual and MCM.

> ***Note:*** *The (O) and (M) symbols are required in the operators MEL unless otherwise authorised by CASA.*

20. ***Deactivated and Secured*** means that the specified component must be put into an acceptable condition for safe flight. An acceptable method of securing or deactivating will be established by the operator and included in the MEL procedures.

21. ***VFR*** means the Visual Flight Rules under the Civil Aviation Regulations prescribed in Part 12 of CAR 1988.

22. ***Visual Meteorological Conditions (VMC)*** means the atmospheric environment is such that would allow a flight to proceed under the visual flight rules applicable to the flight. This does not preclude operating under IFR.

23. ***Visible Moisture*** means atmospheric environment containing water in any form that can be seen in natural or artificial light; e.g. clouds, fog, rain, sleet, hail or snow.

24. ***Passenger Convenience Items*** means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ash trays, stereo equipment, overhead reading lamps, etc.

25. ***Engine Indicating Crew Alerting System (EICAS), Electronic Centralised Aircraft Monitoring System (ECAM)*** or similar systems that provide electronic messages refer to a system capable of providing different priority levels of systems information messages (e.g. Warning, Caution, Advisory, Status and Maintenance). Any discrepancy message that affects dispatching of an aeroplane will normally be at status message level (e.g. Advisory Status) or higher.

26. ***Administrative Control Item*** means an item listed by the operator in the MEL for tracking and informational purposes. It may be added to an operator's MEL provided no relief is granted or provided conditions and limitations are contained in an approved document (i.e. Structural Repair Manual, Airworthiness Directive etc.). If relief other than that granted by an approved document is sought for an item of this type, a request must be submitted to CASA. If the review results in approval the item will become a MEL item rather than an administrative control item.

27. ***Excess Items*** mean those items that have been installed that are redundant to the requirements.