



Barbados Civil Aviation
Department

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AIRWORTHINESS

ADVISORY

CIRCULAR

MINIMUM EQUIPMENT LIST (MEL)

MINIMUM EQUIPMENT LIST

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PURPOSE

1. (1) The purpose of this Advisory Circular is to provide guidance to operators for the development of a minimum equipment list as required by the Barbados Civil Aviation Regulations (BCARs).

GENERAL

2. Air Operator Certification & Administration (AOC&A) Regulation 46 requires that an operator includes in his operations manual a minimum equipment list (MEL), which specifies for a given model of aircraft the minimum operable equipment required, taking into account operating rules for the existing environmental conditions for the commencement and continuance of flight. Each operator is required to produce an MEL appropriate to his own routes and procedures within the limitations defined by the master minimum equipment (MMEL) list for the aircraft.

MASTER MINIMUM EQUIPMENT LIST

3. (1) In conjunction with the certification of each new transport type aircraft, a board is normally established by the certifying State to develop and maintain an MMEL for the aircraft and additional models of that aircraft developed in the future. The board is an advisory body to the CAA of the certifying State with representation from the flight operations and airworthiness organizations within the CAA, as well as from the organization responsible for the type design and the initial operators of the aircraft.

(2) The development of the MMEL requires detailed analysis and careful safety assessment. The interaction between systems needs to be fully analysed to ensure that multiple failures will not result in an unsatisfactory level of safety. When an aircraft is designed it is designed to achieve a certain level of safety. When any one system, instrument or equipment becomes inoperative, the design level of safety is reduced. With modern aircraft it is usual to provide extra redundancy in some systems to enable the aircraft to take off and complete a flight with acceptable margins of safety even if, for example, one channel of a system has failed during a previous flight. Minor deficiencies, even without the provision of extra redundancy, which do not too seriously affect safety, may be acceptable for an occasional flight. In any case, the MMEL board would need to carry out a thorough safety assessment as a guide to developing an acceptable list.

(3) The MMEL would not include obviously required items such as wings, empennage, flaps, powerplants, etc., nor would it include items which do not affect the airworthiness of the aircraft, such as galley equipment, entertainment systems, etc. It must be emphasized and understood that all items which are related to the airworthiness of the aircraft and are not included on the MMEL are automatically required to be operative.

(4) The actual format of the MMEL may vary, but all major systems would be listed to indicate they have been considered (communications systems, navigation systems, automatic flight control systems, etc.). In addition, those components of a system required for flight or certification would be listed on the MMEL (e.g. attitude gyros, VSI, DME, etc.).

(5) The MMEL board is responsible for maintaining an up-to-date MMEL. Amendment normally results from operator experience or analyses carried out by the organization responsible for the type design.

(6) The current MMEL for a given aircraft would normally be obtained from the organization responsible for the type design of the aircraft or from the civil aviation authority of the certifying State.

OPERATOR MINIMUM EQUIPMENT LIST

4. (1) A minimum equipment list, approved by the BCAD, is required for each aircraft, based on the MMEL established for the aircraft type by the organization responsible for the type design in conjunction with the State of Design. An operator is required to produce his own MEL based on the MMEL for the type and variant of aircraft. The operator's MEL is submitted to the BCAD for approval. The approved MEL must be made available for the use and guidance of flight and ground operations personnel. The MEL should be tailored to the individual operator's routes and procedures within the constraints imposed by the MMEL. The MMEL is not normally part of the required aircraft documentation and it is frequently necessary for an operator to request a copy of the current MMEL and amendments as they occur, in order to develop and maintain an MEL for approval by the BCAD.

(2) In developing an MEL, the philosophy should be to authorize continuation of flight with inoperative equipment only when the inoperative equipment does not render the aircraft unairworthy for the particular flight. Limitations, procedures and substitutions may be used to provide conditions under which the inoperative equipment will not make the operation unsafe or the aircraft unairworthy. This is not a philosophy which permits reduced safety in order to fly to a base where repairs can be made, but rather a philosophy which permits safe operations for a takeoff from a maintenance base or an en-route stop. It is emphasized that the operator will need to exercise close operational control over the use of the MEL by all concerned.

(3) Aircraft Operations (AO) Regulation 11 requires that an air operator carries an MEL on board. This may be part of his operations manual or a separate document. The manual must contain en-route flight, navigation and communications procedures for the continuance of flight if any item of equipment required for the operation becomes unserviceable en route. The manual must also cover requirements and procedures for dispatch with unserviceable equipment.

OPERATOR RESPONSIBILITIES

5. (1) An operator is responsible for exercising the necessary operational control to ensure that his aircraft are not dispatched with multiple MEL items inoperative without first determining that any interface or interrelationship between the inoperative systems or components will not result in a degradation in the level of safety or an undue increase in crew workload.

(2) The MEL is not intended to provide for continued operation of the aircraft for extended periods with MEL items unserviceable. In the case of unserviceable MEL items, the operator should generally make repairs at the first station where repairs or replacement may be made, but in any case repair should be accomplished at the flight termination station, since additional unserviceability may require the aircraft to be removed from service.

(3) The exposure to additional failures during continued operation with inoperative systems or equipment must also be considered in determining that an acceptable level of safety is being maintained. The MEL is not allowed to deviate from requirements of the flight manual limitations section, emergency procedures or other airworthiness requirements of the State of Registry or of the BCAD unless the appropriate airworthiness authority or the flight manual provides otherwise.

(4) Systems or equipment accepted as inoperative for a flight should be placarded where appropriate and all such items should be noted in the aircraft technical log to inform the flight crew and maintenance personnel of the inoperative system or equipment.

(5) For a particular system or item of equipment to be accepted as inoperative, it may be necessary to establish a maintenance procedure, for completion prior to flight, to deactivate or isolate the system or equipment. It may similarly be necessary to prepare an appropriate flight crew operating procedure.

(6) The responsibilities of the pilot-in-command in accepting an aircraft for operation with deficiencies in accordance with an MEL are specified AO Regulation 46 (6).

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