1.0 PURPOSE

This Advisory Circular (AC) is to provide guidance to operators for the development of a Minimum Equipment List (MEL).

2.0 REFERENCE

a. The Civil Aviation (Air Operator Certification and Administration) Regulations.
b. Advisory Circular – Development of technical manual TCAA-AC-GEN002C

3.0 GENERAL

3.1 The Civil Aviation (Air Operator Certification and Administration) Regulations on Minimum equipment list and configuration deviation list, requires that an operator provides an MEL, for a specific aircraft type and variant with the minimum operable equipment required, taking into account operating rules for the existing environmental conditions for the commencement and continuance of flight. Aircraft may also be approved for operations with missing secondary airframe and engine parts. Approval for operating with these parts missing would be authorized by the State of aircraft design. Evaluation and approval of Configuration Deviation List (CDL) are functions of the State of aircraft design.

3.2 Each operator is required to develop an MEL appropriate to his own routes and procedures within the limitations defined by the Master Minimum Equipment List (MMEL) for the aircraft.

4.0 MASTER MINIMUM EQUIPMENT LIST

4.1 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 Authority of the certifying State with representation from the flight operations and airworthiness organizations within the Authority, as well as from the organisation responsible for the type design and the initial operators of the aircraft.

4.2 The development of the MMEL requires detailed analysis and careful safety assessment. The interaction between systems needs to be fully analyzed 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.

4.3 The MMEL would not include obviously required items such as wings, empennage, flaps, power plants, 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.

4.4 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.).

4.5 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.

4.6 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.

5.0 DEFINITIONS

5.1 **Aircraft Evaluation Group (AEG) of the State of Design**. The AEG in the State of Manufacturer is responsible for the development, revision and publication of an MMEL for those aircraft within its area of responsibility;

5.2 **Aeroplane Flight Manual (AFM)/Rotorcraft Flight Manual (RFM)**. The term, aircraft flight manual, can apply to either an AFM or an RFM. The Aircraft flight manual is the document approved by the responsible authority for aircraft certification during type certification. The approved aircraft flight manual for the specific aircraft is listed on the applicable type certificate data sheet. The approved aircraft flight manual is the source document for operational limitations and performance parameters for an aircraft. The Authority requires an approved aircraft flight manual for aircraft type certification;

5.3 **The Aircraft Maintenance Manual (AMM).** The AMM is the source document for aircraft maintenance procedures. The term AMM can apply to either an aeroplane or a rotorcraft manual. The Authority requires an AMM for aircraft certification;

5.4 **Air Transport Association of America (ATA) Specification 100.** ATA Specification 100, Manufacturer's Technical Data, is an international industry numbering standard developed to identify systems and components on different aircraft in the same format and manner;

5.5 **Configuration Deviation List (CDL).** Aircraft certified under the provisions of a State's Civil Air Regulations and intended for use in air transport operations may be approved for operations with missing secondary airframe and engine parts. The aircraft source document for such operations is the CDL.

5.6 **Inoperative.** Inoperative means that a system 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;

5.7 **Master Minimum Equipment List (MMEL).** The MMEL is a list of equipment that the Authority of the State of manufacturer has determined that they may be inoperative under certain operational conditions and still provides an acceptable level of safety. The MMEL contains the conditions, limitations and procedures required for operating the aircraft with these

items inoperative. The MMEL is used as a starting point in the development and review of an individual operator's MEL;

5.8 **Minimum Equipment List (MEL).** The MEL is derived from the MMEL and is applicable to an individual operator. The operator's MEL takes into consideration the operator's particular aircraft configuration, operational procedures and conditions. When approved and authorized for use, the MEL permits operation of the aircraft under specified conditions with certain inoperative equipment;

6.0 PURPOSE OF MEL

6.1 The Regulations permit the authorization of an MEL if the Authority finds that compliance with all the aircraft equipment requirements is not necessary in the interest of safety for a particular operation. Through the use of appropriate conditions or limitations, the MEL provides for improved scheduled reliability and aircraft utilization with an equivalent level of safety.

6.2 This process is possible because of the installation of additional and redundant instruments, equipment and/or systems in present transport aircraft. Without an approved MEL, inoperative instruments, components and equipment would ground the aircraft until repair or replacement of the non-functioning equipment. An MEL is approved for a specific make and model of aircraft, and the use of it is authorized by its Operations Specifications.

7.0 ITEMS LISTED ON THE MEL

7.1 There are two categories of items that may be contained in the operator's MEL:

a. MMEL items; and
b. Passenger convenience items.

7.2 **MMEL Items**. The MEL will list all of the items for which the operator seeks relief and that are appropriate for its operation. The operator, by not listing at its discretion certain items in its MEL, may be more restrictive than permitted by the MMEL.

7.3 **Passenger Convenience Items**. The passenger convenience items, as contained in the operator's approved MEL, are those related to passenger convenience, comfort, or entertainment, such as, but not limited to, galley equipment, movie equipment, in-flight phones, ashtrays, stereo equipment and overhead reading lamps. It is incumbent on the operator to develop procedures to ensure that those inoperative passenger convenience items are not used. Passenger convenience items do not have fixed repair intervals. Items addressed elsewhere in the MMEL shall not be authorized relief as a passenger convenience item. "M" and "O" procedures may be required and should be developed by the operator, approved by the Authority, and included in the air operator's appropriate document.

8.0 TIMELY REPAIR OF ITEMS THAT ARE INOPERATIVE

8.1 The MEL is intended to permit the operation of an aircraft with certain inoperative items for a limited period of time until repairs can be accomplished. The operator is responsible for establishing a controlled and effective repair programme.

8.2 **Repair Interval**. Operators must make repairs within the time period specified by the MEL. Although the MEL might permit multiple days of operation with certain inoperative equipment, operators must repair the affected item as soon as possible.

8.3 **Day of Discovery**. The day of discovery is the calendar day an equipment malfunction was recorded in the aircraft technical log or record. This day is excluded from the calendar days or flight days specified in the MEL for the repair of an inoperative item of equipment. This provision is applicable to all MEL items, such as categories "A," "B," "C," and "D." The operator must establish a reference time in which the calendar day or flight day begins and ends 24 hours later. This reference time is established to ensure compliance with timely repair of equipment and items. The reference time shall be based on Universal Time Coordinated (UTC).

8.4 **MMEL Definitions**. More than one set of MMEL definitions exist due to years of evolving changes during which not all MMELs have been updated to the latest revision of the definitions. However, only the most up-to-date set of definitions may be used with a specific MMEL. Only certain portions of the latest definitions may be appropriate for a specific air operator's MEL.

8.5 **Continuing Authorizations**. Approval of an MEL authorizes an operator to use a continuing authorization to approve extensions to the maximum repair interval for category "B" and "C", provided the Authority is notified within 24 hours of the operator's exercise of extension authority. The certificate holder is not authorized to extend the maximum repair time for category "A" and "D" items, as specified in the approved MEL. Misuse of the continuing authorization may result in an amendment of the operator's Operations Specifications by removing the operator's authority to use an MEL.

9.0 RECORDKEEPING

When an item of equipment becomes inoperative, the operator must report it by making an entry in the aircraft technical log, as prescribed by the Civil Aviation (Operation of Aircraft) Regulations on Reporting of mechanical irregularities.

10.0 MULTIPLE ITEMS THAT ARE INOPERATIVE

Individual MEL requirements are designed to provide coverage for single failures en-route. When operating with multiple inoperative items, the operator should consider the interrelationships between those items and the effect on aircraft operation and crew workload, including consideration of a single additional failure occurring en-route.

11.0 FLEET APPROVAL

An operator who has a single MEL for multiple aircraft may reflect equipment in its MEL that is not installed on all aircraft in its fleet. In this case, the item's title in the operator's MEL need not reference any specific aeroplane identification (usually registration number) unless the operator determines that there is need to do so.

12.0 ACCESS TO MEL

Regulation on Minimum equipment list and configuration deviation list of the Civil Aviation (Air Operator Certification and Administration) Regulations requires that the MEL is made available for use among others by the flight crewmembers. This implies the MEL should be carried aboard

the aircraft or that the flight crew have direct access to the MEL information prior to flight. Other means of direct access require approval.

13.0 CONFLICT WITH OTHER CAA APPROVED DOCUMENTS

The MEL shall not conflict with other approved documents such as the aircraft flight manual limitations and airworthiness directives. The operator's MEL may be more restrictive than the MMEL, but under no circumstances shall the operator's MEL be less restrictive.

14.0 ADDITIONAL INSTRUCTIONS, NECESSARY TO CLARIFY THE ACTIONS TO BE TAKEN UNDER CERTAIN CONDITIONS AND/OR SITUATIONS REGARDING THE MEL

14.1 Some items/systems listed in the MMEL/MEL contain standard phrases such as "provided alternate, normal and emergency procedures, and/or operating restrictions are established and used." The intent of such provisions is that it is incumbent on the operator to develop the necessary manual instructions for his personnel so that appropriate action will be taken, resulting in an acceptable level of safety.

14.2 When operating in accordance with the MEL, the communications equipment used between the flight deck and the cabin crew (whether inoperative or functional), require specific instructions for inclusion in the appropriate air operator's manuals: The Flight Manual, Aircraft Operating Manual, Operations Manual and Cabin Crew Member Manual. In some cases, it may be appropriate to include such instructions in the operators MEL (O) procedure. Instructions in these manuals concerning specific inoperative equipment situations must be consistent with instructions in the other manuals.

14.3 To ensure a clear understanding of the action to be taken in emergency or abnormal situations, the pilot in command (PIC) will brief the flight crew, lead cabin crew and/or concerned cabin crew on the procedures to be followed. Examples of methods of cockpit notification to cabin could include various cockpit combinations such as cabin chimes to indicate different events, use of a separate evacuation signalling system, PA announcements, etc. The briefing is to ensure that when cabin/flight deck communication equipment becomes inoperative, procedures to be followed for each of the following events can be carried out:

a. Fire and/or smoke in the flight deck or passenger cabin;
b. Hi-jacking;
c. Ditching;
d. Emergency landing;
e. Evacuation of the passenger cabin/Rejected Takeoff evacuation; or
f. Passenger problem (medical/disturbance).

Note: It is the Authority's intention to impose a requirement to preclude a cabin crew from opening the flight deck door to report an emergency situation.

14.4 **Action.** Operators are required to include additional instructions, to clarify actions to be taken in the case of emergency or abnormal situations, concerning the MEL conditions and limitations. Air Operators are also required to inform the PIC's to brief the flight crew, lead cabin crew and/or concerned cabin crew of the actions to be taken in emergency or abnormal situations, in preparation for the possible break down of cabin/flight deck communication equipment.

15.0 MEL DEVELOPMENT PROCESS

15.1 General

This part contains specific direction, guidance, and procedures to be used by air operators when developing MELs. The MEL is developed by the operator from the appropriate Master Minimum Equipment List (MMEL) and then approved by the Authority. The approval process for an MEL follows the general process for approval or acceptance.

15.2 MEL Acceptability

15.2.1 The general criteria for MEL acceptability are as follows:
a. **Equally or More Restrictive**. The operator's MEL must not be less restrictive than the MMEL, the Civil Aviation Regulations, the operations specifications, the aircraft flight manual limitations, certification maintenance procedures, or airworthiness directives (ADs);
b. **Appropriate**. The MEL must be appropriate to the individual aircraft type and model;

c. **Specific**. The operator's operations ("O") and maintenance ("M") procedures must be specific to the aircraft and the operations conducted;
d. **Applicability.** An MEL should be applicable to the civil aviation regulations under which the operator is certificated.

15.3 MEL development

15.3.1 In this phase of the MEL development process, the operator should consult with the Authority regarding requirements for either developing an MEL or for revising an existing MEL.

15.3.2 **Operator Familiarization**. In phase one of the MEL development process, the Authority should determine the scope of the task, based on the operator's experience with MELs.

15.3.3 **Required Document Submittal**. For an MEL to be approved, the following documents must be submitted:
a. The proposed MEL or MEL changes.
b. Necessary "O" and "M" procedures, which may be based on the aircraft manufacturer's recommended procedures, Supplemental Type Certificate (STC) modifier's procedures, or equivalent operator procedures;
c. A description of the MEL management programme and its procedures as required by the Operations Specifications, unless an MEL management programme is already in place;
d. Any required guidance material developed by the operator, such as training material, guidance, and deferral procedures for both maintenance and operations personnel.

NOTE: Several manufacturers have produced manuals of recommended procedures for operating with inoperative equipment. The Boeing Dispatch Deviation Procedures Guide (DDPG) is an example of these manuals. When a manufacturer's recommended procedures exist, operators shall use them. Where a manufacturer recommended procedures do not exist, operators should coordinate with the manufacturer in developing specific procedures. Flight operations and Airworthiness inspectors should ensure acceptability of the procedures by the appropriate Aircraft Evaluation Group of the State of design before approving such procedures.

15.3.4 **Materials Provided to the Authority**. Operators shall ensure that an updated/current copy of an MMEL and all subsequent amendments for a specific aircraft is submitted to the Authority.

15.3.5 **Document Form**. The operator may submit MEL draft documents to the Authority either on hard copy (printed on paper) or on computer disk, as mutually agreed upon between the operator and the Authority. The operator and the Authority should discuss the techniques that will be used for revising and editing the proposed document. It is important that the operator understand that when the process is complete, the final proposed MEL must be submitted on paper unless otherwise approved by the Authority.

15.3.6 **MEL Format**. The MMEL format has been standardised to facilitate the development, revision and approval of both master and operator documents. If the master document contains eight total sections, then eight of these sections should be included in each operator's MEL.

15.3.7 **Generic Single Engine MMELs**. Where a generic MMEL for single engine aircraft has been developed by the State of design, this MMEL may be used for single engine aeroplane and helicopters of that State if a specific MMEL has **not** been issued. Operators may use this generic MMEL in constructing their MEL. When an operator is approved to use this generic MMEL as the basis for his MEL, and a specific MMEL for the individual aircraft type is subsequently issued, the operator's MEL must be revised within a specified time frame prescribed by the Authority to conform to the specific MMEL.

15.4 MEL Contents

a. Cover Page: The MEL cover page contains the operator's name and the make and model of the aircraft to which the MEL applies;
b. Table of Contents: The table of contents contains a list of all of the pages in the MEL by title and the corresponding page identification (usually a page number);
c. Log of Revisions: The log contains the revision identification (usually a number) and date of the revision. It may also contain a list of the revised pages, a block for the initials of the person posting the change, and additional enhancements for use by the operator;

d. Preamble: The standard MMEL preamble section must be modified by the operator to suit the (state) regulations, aircraft and type of operation.
e. Definitions: The standard MMEL definitions section must be reproduced word for word in each MEL, without modification;
f. Control Page: The control page is used as a method for keeping track of the status of the MEL and includes a record of the revision status or the date of each page of the operator's MEL. It may also be used as a means of conveying Authority approval of the MEL. The control page is also referred to as the "List of Effective Pages."

15.4.2 At a minimum, the control page must contain the following:
a. The operator's name;
b. A listing of all of the pages in the MEL (including the date of each page and its page number or revision number);
c. The MMEL revision number on which the MEL is based;
d. A signature block containing space for signature conveying Authority approval of the MEL;
e. Optional Contents. The operator may include additional information on the control page to provide flexibility and additional approval functions;
f. Highlights of Change Page (Optional). This page contains a synopsis of the changes made by the operator in each revision.

15.4.3 Additional Items. The operator may include additional information sections in excess of the six sections.
a. Individual Air Transport Association of America (ATA) System Page Evaluation. These pages contain a list of individual items of equipment in the aircraft together with provisions for the operation of the aircraft when the items are inoperative.

The ATA Numbering System. Operators should use the standard ATA numbering system, similar to the manner used in the MMEL, for numbering individual pages in this section. An example of this numbering system would be the communications page; the first page would be 23-1; the second page would be 23-2;
- **Individual Items of Equipment**. The MMEL contains listed items of installed equipment that may be inoperative.

b. **MMEL Items not listed on the Operator's MEL**. If items listed on the MMEL are not listed on the MEL, there is no relief;

c. **MMEL Items Listed on the Operator's MEL**. Each piece of equipment that is installed on the aircraft and that is contained in the MMEL, for which the operator seeks relief and that is appropriate for its operation, should be listed on the appropriate page of the operator's MEL within the associated ATA system. The operator may be more restrictive than permitted by the MMEL by not listing certain items in its MEL. Each item title on the operator's MEL will generally be entered exactly as it is shown on the MMEL. Exceptions include the following:
   i. When the MMEL uses a generic term to address equipment that serves a similar function when various operators use different names for that equipment; or
   ii. When the MMEL lists functions rather than individual pieces of equipment within that category such as "Navigation Equipment" or "Communications Equipment." In such cases, the MEL must contain a list of the individual equipment items or systems within that category that are actually installed on the aircraft, such as "VHF Communications Transceivers." When items of this type consist of several components of a system, the item may be listed as a complete system, such as "VOR Navigation System," consisting of a VOR navigation receiver and its associated indicator. The inspector should ensure that the operator has not listed inappropriate items or items that are listed individually elsewhere in the MMEL. However, the FOI is authorized to approve generic MMEL relief for navigation or communication equipment that is appropriate such as ILS, VOR, VHF, HF and GPS.

d. **Items Listed on the MMEL but not installed on the Operator's Aircraft**. In this case the operator should list the item as shown on the MMEL, and show the Number Installed as zero. Therefore, the "Number Required for Dispatch" would also be zero, and the remark "Not Installed" may be noted under "Remarks and Exceptions"; repair category designators should be omitted;

e. **Triple Asterisk Symbol (***)**. The triple asterisk symbol is used in an MMEL to indicate that an item is not installed on some models of the aircraft. Operators should not produce or use this symbol in the MEL;

f. **Repair Category**. Each item of equipment listed in the operator's MEL, except for Administrative Control Items and Passenger Convenience Items, must include the repair category designator for that item as shown on the MMEL. These designators, categorized as

"A," "B," "C," or "D," indicate the maximum time that an item may remain inoperative before repair is made. The actual repair categories corresponding to these letters are provided in the "Notes and Definitions" section of the MMEL. The operator may choose to adopt a more restrictive repair category than the one shown on the MMEL, but may not relax the requirement. Components or subsystems of items categorized in the MMEL, such as items of communications or navigation equipment that are not listed individually in the MMEL, must retain the repair category shown on the MMEL when listed as separate items on the MEL;

g. **Passenger Convenience Items**. Passenger convenience items relate to the convenience, comfort, and entertainment of passengers and must never affect the airworthiness of the aircraft. These items do not carry a specific repair category; however, the operator should make repairs to convenience items within a reasonable time frame. Normally, the operator lists these items individually in ATA chapters 25 and 38. Passenger convenience items may be included elsewhere in the MEL if clearly identified as passenger convenience items. When listing passenger convenience items on the MEL, the operator must list each item for which the operator wishes relief. The operator may make a list of passenger convenience items that is acceptable to the Authority. Passenger convenience items also apply to cargo aeroplanes, as appropriate:
    i. No item is included as an administrative control item if it is included elsewhere in the MMEL;
    ii. Administrative items are not included as a subsystem of items listed in the MMEL;
    iii. Administrative items are not granted relief in the MEL unless the release conditions or limitations are contained in another approved document.

h. **Number of Items Installed**. The MEL will normally contain the actual number of items of particular equipment installed on the aircraft. This number may be either greater or less than the number shown on the MMEL. The MMEL shows the number of items installed as the number of those items normally installed on a particular aircraft type. Individual aircraft operated by an operator may have a different number of items. Frequently the MMEL shows a dash in the "Number Installed" column. This dash indicates that variable quantities of these items are usually installed on the aircraft. If the operator has an MEL for a single aircraft or identical aircraft, the actual number of these items on the particular

aircraft must be listed in the MEL. If the operator has an MEL for multiple aircraft, and the equipment is not installed on all aircraft or there is a variable quantity between aircraft, the operator's MEL will not reference specific aircraft identifications; the "Number Installed" column may contain a dash;

i. **Number of Items Required for Dispatch**. Normally, the number of items required for dispatch is determined by the State of aircraft design, and may be modified in the MEL in only two cases as follows:
    i. When the item is not installed on the aircraft, in which case a zero shall be shown as the number required for dispatch;
    ii. When the item is shown in the MMEL as being a variable number required for dispatch.

NOTE: In this case, the operator should make a determination as to the number required for dispatch. There can be several factors that establish this number. In some cases, it is determined by a reference to specific requirements listed in the "Remarks or Exceptions" column of the MMEL. An example would be cabin lights. In this case, the MMEL may show a variable number installed while the "Remarks or Exceptions" column might state that 50 percent of those items be operable. The number required for dispatch would therefore be 50 percent of the number of lights determined to be actually installed on the individual aircraft. Another case where the MMEL may show a variable number required for dispatch is when the "Remarks or Exceptions" column of the MMEL contains the statement, "As required by regulation." In this case, the number is the minimum quantity of these items that must be installed for operations under the least restrictive regulation under which the operator conducts operations.

j. **"Remarks or Exceptions."** Certain items demand specific relief developed by the operator as authorised through his Operations Specifications, area of operation and Civil Aviation Regulations. "As required by regulation" is an example of this type of relief;

k. **Other Items**. Other items in which relief has been specifically written to reflect actions or restrictions to the operation may be changed only when the MMEL is changed. Generally they contain "O" and "M" procedures in which the operator develops his company procedures to comply with the MEL;

l. **Evaluation of Associated Documentation**. The inspector should evaluate the supporting documentation submitted by the operator to ensure that it is complete and appropriate;

m. **The Operations Manual**. The operator's manual contains adequate guidance for the operator's personnel in conducting operations using the MEL. Generally, if the operator does not presently have an MEL programme, the applicable portions of his manual and other guidance material should be submitted at the time the MEL is submitted for initial review. At a minimum, provisions for recording the following items should be developed:
    i. An identification of the item of equipment involved;
    ii. A description of the nature of the malfunction;
    iii. An identification of the person making the entry; and
    iv. The MEL item number for the equipment involved.

n. **Crew Notification**. The operator should establish procedures for advising the pilot in command (PIC) of inoperative items and required procedures such as affixing placards, alternate operating procedures, and instructions for the isolation of malfunctions. The PIC and the operator are both responsible for ensuring that flights are not dispatched or released until all of the requirements of the "O" procedures and "M" procedures have been met;

o. **Flight Restrictions**. The operator should establish procedures to ensure that dispatch or other operational control personnel, as well as the flight crew, are notified of any flight restrictions required when operating with an item of equipment that is inoperative. These restrictions may involve maximum altitudes, limitations for the use of ground facilities, weight limitations, or a number of other factors;

p. **Training Programme Material.** The operators should ensure that their flight and ground personnel training programmes contain adequate instruction for MEL use;

q. **MEL Management Programme**. Operators must develop an MEL management programme as a comprehensive means of controlling the repair of items listed in the approved MEL. Operators must include a description of the programme in their maintenance manual, maintenance control manual, or other documents. The MEL management plan must include the following:
    i. A method for tracking the date and time of deferral and repair;
    ii. The procedures for controlling extensions to maximum repair categories;

iii. A plan for coordinating parts, maintenance, personnel, and aircraft at a specific time and place for repair;
iv. A review of items deferred due to unavailability of parts; and
v. The specific duties and responsibilities of the managers of the MEL management programme, listed by job title.

15.5 Terms and Conditions of Relief

15.5.1 This section contains the terms and conditions of relief granted to an operator for operating the aircraft with items of installed equipment that are inoperative. The operator must state the terms and conditions under which operations may be conducted with inoperative items for the operator's particular organization and aircraft. The reviewing inspector must address the following elements of this section:

a. Standard Phraseology. The operator should generally use the phraseology used in the MMEL to ensure clarity and standardization;

b. "As Required by Regulations." The general term, "As Required by Regulations," applies to ATA chapters 23 (Communications), 31 (Instruments), 33 (Lights), and 34 (Navigation Equipment). When this term appears in the "Remarks or Exceptions" section of an MMEL, the operator's MEL must contain the specific conditions that apply. The operator usually must research the applicable regulations in detail to develop the appropriate provisions that apply to that operator's particular operations. An example of typical distance measuring equipment (DME) remark could read, "Not required for flights below FL 240."

NOTE: The operator's MEL must clearly establish the actual requirement for its operation when the MMEL stipulates "As required by regulation." It is not acceptable for the MEL to simply refer to the regulation.

c. "O" and "M" Procedures:

i. "O" and "M" procedures must contain descriptions of the individual steps necessary to accomplish each process. For example, if the MMEL contains an "M" symbol with a provision that a valve must be closed, the operator must include the appropriate procedures to close the valve as part of the operator's manual or MEL. The procedure should address the following:
(ac) How the procedure is accomplished;

(bc) The order of accomplishing the elements of the procedure;
(cc) The actions necessary to complete the procedure;

ii. For example, if the MMEL contains an "M" symbol with a provision that a valve must be closed, the operator must include detailed steps and actions for closing and testing the valve and installing the placard. The actual written procedures may be contained within the "Remarks or Exceptions" section of the MEL, in separate documents, or attached as an appendix. Inspectors should consult the Guidelines for "O" and "M" Procedures of the MMEL when evaluating these procedures. The section about the Guidelines for "O" and "M" Procedures does not have to be contained within the operator's MEL. If the "O" and "M" procedures are not contained within the MEL, the MEL should include a reference to the location of the procedures;

iii. **"O" Procedures**. The "(O)" symbol indicates a requirement for a specific operations procedure that must be accomplished in planning for and/or operating with the listed item inoperative. Normally, these procedures are accomplished by the flight crew; however, other personnel may be qualified and authorized to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as a part of the operator's manual or MEL;

iv. **"M" Procedures**. The "(M)" symbol indicates a requirement for a specific maintenance procedure, which must be accomplished prior to operation with the listed item inoperative. Normally these procedures are accomplished by maintenance personnel; however, other personnel may be qualified and authorized to perform certain functions. Maintenance personnel should accomplish procedures requiring specialized knowledge or skill, or requiring the use of tools or test equipment. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as part of the operator's manual or MEL;

v. **Provisos**. The "Remarks and Exceptions" section of the MMEL generally contains provisos that include specific conditions under which an item of equipment may be inoperative. These provisos must be carried over either verbatim into the operator's MEL or by using equivalent terminology. Provisos are distinct from "O" and "M" procedures. A procedure is an action that must be performed. A proviso is a condition that must exist. For a proviso that operations must be conducted under VFR, an operation under an IFR flight plan is not permitted, regardless of the weather conditions. When reference is made to visual meteorological conditions (VMC), operations may be conducted under an IFR flight plan, but only in VMC.

16.0 DEMONSTRATION PHASE

A demonstration phase is normally not required for an MEL approval. When an operator is developing an MEL in conjunction with original certification for initial issuance of an operating certificate, or when instituting service with a new aircraft type, a demonstration of the operator's ability to use an MEL may be conducted during any required aircraft demonstration flight.

17.0 MEL USE IN SERVICE

17.1 General

This section contains specific direction, guidance, and procedures for operators on the revision, administration, and policy application for administering MELs that have been approved for use under the provisions of the Regulations.

17.2 Revision Procedures

17.2.1 Revisions to an MEL. Either the operator or the Authority may initiate revisions to an operator’s MEL. Operator initiated revisions may be equal to or more restrictive than the Master Minimum Equipment List (MMEL). It is not necessary for an operator to submit an entire MEL when requesting the approval of a revision. The minimum submission would consist of only the affected pages; the approval by the Authority may only consist of

specific items. These items are approved within a controlled process, and the operator will produce the final MEL document. If the revision results in individual pages either being added or deleted, a revised table of contents page is also required. The issuance of an airworthiness directive (AD) will not be the basis for change to an operator's MEL unless this results in appropriate changes to the MMEL.

17.2.2 MEL Revision Initiated by an Operator. An operator initiated MEL revision will normally fit into one of the following three categories:

a. Operators may propose changes to an MEL that are equal to, or more restrictive than, the MMEL. These revisions are approved by the Authority using the same procedures, as those required for an original MEL approval;

b. Items Requiring an MMEL Change. Operators may request changes to an MEL for systems or components that have yet to be identified in the MMEL. However, the MEL cannot be revised until the MMEL has been revised to permit the proposed MEL change. The most common instance of a revision request of this type occurs when an operator installs additional equipment on an aircraft and provisions for that equipment are not included on the current MMEL;

c. Major Aircraft Modifications. Major aircraft modifications, such as a supplemental type certificate (STC), a major alteration or a type certificate (TC) amendment, may invalidate the MEL for that aircraft. Operators should review the MEL to assess the impact of any planned modification and should immediately notify the Authority of these modifications and the impact on the MEL. The Authority should obtain guidance from the State of aircraft design, to determine if a revision to the MMEL is required.

17.2.3 **MEL Revisions Initiated by the Authority**. The Authority may initiate an MEL revision that is not based on a revision to the MMEL.

17.3 Availability of MEL for Flight Crewmembers

17.3.1 Flight crewmembers must have direct access to the MEL at all times prior to flight. Regulations require that the operator carry the MEL aboard each aircraft.

17.3.2 The operator may choose to use some system of access to the MEL other than the MEL document. For example, the flight crew may obtain access

to the MEL through the ARINC Communications Addressing and Reporting System (ACARS). The critical element in approving an alternate form of access is whether or not the flight crew has a direct means of access to the appropriate information in the MEL, specifically "O" and "M" procedures.

17.3.3 Direct access should not be construed to mean access through telephone or radio conversations with maintenance or other personnel. If the operator chooses to provide the flight crew with access to the MEL by other than printed means, the method must be approved in the operator's MEL programme.

18.0 Occasionally an AD may apply to an item of equipment that may be authorized to be inoperative under the MEL. The item shall not simply be deferred under the MEL in order to avoid or delay compliance with the AD or an Authority approved alternate means of compliance with the AD. In all cases, when an AD has been issued, the operator must comply fully with the terms of the AD or an Authority approved alternate means of compliance with the AD.

18.1 When the MEL authorizes a component of a system to be inoperative, only that component may be affected. When a system is authorized to be inoperative, individual components of that system may also be inoperative. Any warning or caution systems associated with that system must be operative unless specific relief is authorized in the MEL. The operator must consider the interrelationship of inoperative components.

18.1.2 This consideration must include the following:

a. The interrelationship of one piece of equipment on another;
b. The crew workload;
c. The operation of the aircraft;
d. The flight restrictions.

18.2 Repair Categories

18.2.1 When an item of equipment becomes inoperative, and repair is deferred under an MEL, the operator must make repairs as specified by the associated repair category designator ("A," "B," "C," or "D") and the operator's MEL management system.

18.2.2 In the event that more items are installed then those that are required for normal operation, the "C" repair category may be used. For example, if one altitude alerting system is required and the associated repair category is "B," but there are two such systems installed, failure of the first system could be deferred as specified for a "C" category item (10 days). Failure of the remaining system would limit at least one system to the repair category for the "B" category item (3 days). See the definitions section of the MEL for an explanation of repair categories.

19.0 CONFIGURATION DEVIATION LISTS

19.1 General

This section contains information for operators concerning the development and approval processes of configuration deviation lists (CDL). Transport aircraft may be approved for operations with missing secondary airframe and engine parts. Approval for operating with these parts missing would be authorised by the State of aircraft design. Evaluation and approval of CDLs are functions of the State of aircraft design.

19.2 Development and Approval of a CDL

An aircraft manufacturer develops a proposed CDL for a specific aircraft type. For United States (U.S.) certificated aeroplanes, the CDL, once approved, is incorporated into the limitations section of the aeroplane flight manual (AFM) as an appendix. For manufacturers outside the U.S., the CDL may be a stand-alone document and part of the Structure Repair Manual, or another manufacturer's document. Some operators may choose to attach a copy of the CDL to their MEL for easy and ready reference by flight crews.

19.3 Use of the CDL – Operators must follow the CDL limitations when operating with a configuration deviation. Operators are required to observe the following:

19.3.1 The limitations in the CDL when operating with certain equipment missing (except as noted in the appendix to the approved flight manual);

19.3.2 The flight operations, restrictions, or limitations that are associated with each missing airframe and engine part;

19.3.3 Any placard(s) required by the CDL describing associated limitations, which must be affixed in the cockpit in clear view of the pilot in command (PIC) and other appropriate crewmembers.

19.4 Operational Control

The operator shall develop appropriate procedures for the PIC and, if appropriate, procedures for notifying Dispatch of the CDL missing parts by an appropriate notation in the aircraft technical logbook or other acceptable means.

Director Safety Regulation