European Aviation Safety Agency

Notice of Proposed Amendment 2018-08

Regular update of CS-MMEL and CS-GEN-MMEL

RMT.0499

EXECUTIVE SUMMARY

The specific objective of this Notice of Proposed Amendment (NPA) is to propose amendments to certification specifications for Master Minimum Equipment List (CS-MMEL) and for Generic Master Minimum Equipment List (CS-GEN-MMEL) following the selection of non-complex, non-controversial and mature subjects.

In particular, this NPA proposes amendments to the following items:

— Item 1: Generic safety methodology for the development of MMEL candidate items
— Item 2: Quantitative assessment criteria for aircraft certified against requirements other than CS 25/29.1309.
— Item 3: Engine time limited dispatch (TLD) update
— Item 4: Updated guidance for items involved in non-normal and emergency procedures
— Item 5: Clarification of the applicable MMEL operational suitability certification basis.
— Item 6: Additional and updated definitions
— Item 7: Updated and new items in MMEL ITEMS GUIDANCE BOOK (CS-MMEL)
— Item 8: Editorial corrections to CS-MMEL
— Item 9: Update of CS-GEN-MMEL and CS-MMEL applicability.

The proposed amendments are expected to contribute to updating CS-MMEL and CS-GEN-MMEL to reflect the state of the art of MMEL certification. Overall, this is expected to provide a moderate safety benefit, would have no social or environmental impacts, and is expected to provide some economic benefits by streamlining the certification process.

Action area:	Regular updates		
Affected rules:	CS-MMEL and related CS-GEN-MMEL		
Affected stakeholders:	— Design organisations of complex motor-powered aircraft and other design organisations dealing with changes or supplemental type certificates to these aircraft, — Design organisations of other-than-complex motor-powered aircraft		
Driver:	Efficiency/proportionality; safety	**Rulemaking group:**	No
Impact assessment:	None	**Rulemaking Procedure:**	Standard

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1. About this NPA

1.1. How this NPA was developed

The European Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EC) No 216/2008[1] (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure[2]. This rulemaking activity is included in the EASA 5-year Rulemaking Programme[3] under rulemaking task (RMT).0499. The text of this NPA has been developed by EASA. It is hereby submitted to all interested parties[4] for consultation.

1.2. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at **http://hub.easa.europa.eu/crt/**[5].

The deadline for submission of comments is **22 October 2018.**

1.3. The next steps

Following the closing of the public commenting period, EASA will review all the comments.

Based on the comments received, EASA will develop a decision amending the certification specifications (CSs) and the guidance material (GM) for CS-MMEL and CS-GEN-MMEL.

The comments received and the EASA responses to them will be reflected in a comment-response document (CRD). The CRD will be appended to the decision.

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1 Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1) (http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1467719701894&uri=CELEX:32008R0216).

2 EASA is bound to follow a structured rulemaking process as required by Article 52(1) of Regulation (EC) No 216/2008. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure).

3 http://easa.europa.eu/rulemaking/annual-programme-and-planning.php

4 In accordance with Article 52 of Regulation (EC) No 216/2008 and Articles 6(3) and 7 of the Rulemaking Procedure.

5 In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).

2. In summary — why and what

2.1. Why we need to change the rules — issue/rationale

The aviation industry is complex and rapidly evolving. Certification specifications (CSs) need to be updated regularly to ensure that they are fit for purpose, cost-effective, and can be implemented in practice.

The following items haven been identified to be proposed for an amendment to CS-MMEL and CS-GEN-MMEL:

Item 1: Generic safety methodology for the development of MMEL candidate items

The current CS-MMEL Subpart C provides requirements to ensure that an acceptable level of safety is maintained under the provisions of the MMEL. In order to achieve compliance, the applicant shall assess the consequences of the inoperative item for the flight, and also evaluate the consequences of the next worst in-flight failure and/or external event. The methods that are used to ensure that an acceptable level of safety is maintained at least at the level intended by the requirements, are, however, not specified in Book 1 of CS-MMEL. The only requirement is that the methods that are used for the justification of items is agreed with EASA (Ref. CS MMEL.145 (b)).

When the CS-MMEL initial issue was published, most of the stakeholders, who are required to comply with the OSD (Operational Suitability Data) requirements, had already established some methods to develop and justify the content of the MMEL for their aircraft. It was, therefore, judged that it was not necessary to enter into a more detailed description at the CS-MMEL level as long as the essential requirements of Subpart C of CS-MMEL were complied with. Later on, with the mandate for the OSD impact on changes to the type design and supplemental type certificate, the need for a larger number of stakeholders to develop MMEL content has arisen. Design organisation approval (DOA) holders had to develop expertise and procedures in order to meet Part 21 requirements, and ultimately to present to EASA their methods for EASA agreement, as envisaged by CS MMEL.145 (b). Experience has shown that it would be beneficial for the industry to be provided with more guidance at the CS-MMEL level to support some DOA holders in developing methods to show compliance with CS-MMEL.

Item 2: Quantitative assessment criteria for aircraft certified with requirements other than CS 25/29.1309

When the initial issue of CS-MMEL was published, guidance material for the quantitative safety assessment required by CS MMEL.145(d) was introduced based upon the Aviation Rulemaking Advisory Committee (ARAC), Airplane-level Safety Analysis Working Group (ASAWG) 'Specific Risk Tasking' Report (Rev. 5.0), dated April 2010.

However, the guidance introduced in GM 1 MMEL.145 was based on the assumption that the aircraft would be certified against CS 25/29.1309(b) or equivalent specifications.

During the commenting period of the special condition for the MMEL certification basis of non-complex single engine helicopters (SC-CS-GEN-MMEL-H), the industry alerted EASA about the fact that for all those scenarios where only CS 27.1309(b) or CS 27.1309(c) applies (i.e. no Cat A operation or IFR), the certification specification implies that the 'rotorcraft must be designed to prevent hazards to

the rotorcraft in the event of a probable malfunction or failure' (independently of the number of engines).

Consequently, applying the current CS-MMEL, which is based on the notion of hazardous and catastrophic failure conditions (with the relevant quantitative requirements), may result in discussing, in the frame of MMEL approval, safety analyses that are not required and are consequently not discussed in the frame of the certification process, or in the inability of the TCH to consider all possible candidate MMEL items.

For CS-27 multi-engined rotorcraft that are certified for Cat A operations and/or IFR operations, the notion of failure conditions that must be shown to be extremely improbable applies (refer to CS 29.1309b)2)i) as per Appendix C of CS-27).

This results in a quantitative requirement (e.g. 1E-9/FH) for catastrophic failure conditions only. Therefore, fault tree analyses and minimum cut sets may not be available for Hazardous failure conditions.

The application of the current CS-MMEL 'as is' to such rotorcraft may also result in safety analyses that are not required, and consequently in the inability of the TCH to consider all possible candidate MMEL items.

Additionally, it is worth differentiating between:

— newly certified rotorcraft for which a safety process based on the guidelines of AC 29-2C or ARP4761 may be agreed with the Authority in the frame of the certification process, and

— rotorcraft whose first TC was issued before such guidelines were published and implemented by industry.

Furthermore, following the adoption of CS-23 Amendment 5, and its AMC & GM, the safety continuum for general aviation allows compliance with 23.2500 (formerly 23.1309) to be demonstrated by using adapted safety objectives. As defined in ASTM F3230-17 (Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft), it depends on the aircraft classes.

Item 3: Engine time limited dispatch (TLD) update

Dispatch with engine faults may be assessed on one side by the engine manufacturer during engine certification, which is known as time limited dispatch (TLD), and on the other side by the aircraft manufacturer at the MMEL level. The relationship between these two activities needs to be clarified by providing specific guidance for the handling of engine faults in the MMEL and clarifying the use of TLD analysis in the development process of the MMEL.

Item 4: Updated guidance for items involved in non-normal and emergency procedures

The current GM MMEL.145(c), paragraph (b), indicates that items which are powered by an emergency bus or its equivalent, and are required to accomplish an emergency procedure, are normally not allowed. More precise guidance is needed for possible relief for technologically advanced aircraft with multiple integrated systems and or components.

Item 5: Clarification of the applicable MMEL operational suitability certification basis.

The current CS-MMEL guidance on the use of assessments that were performed for previous approvals lacks clarity regarding the capability of the applicant to base their MMEL proposal on previous approvals when there is a different MMEL certification basis.

Item 6: Additional and updated definitions

Some definitions are missing from the current CS-MMEL preamble specimen. This creates difficulties when MMEL content is proposed that is based on the guidance of other regulatory bodies (the FAA/TCCA), and this may lead to a lack of clarity and a risk of misinterpretation of the MMEL content.

Item 7: Updated and new items in MMEL ITEMS GUIDANCE BOOK (CS-MMEL, Appendix 1 to GM1 MMEL.145)

The content of this Appendix was largely based on the previous JAA TGL 26. Some items are required to be updated due to changes of terminology in the related certification or guidance material (e.g. EFB classes no longer exist). The need to add new items to provide relief guidance for newly required equipment (e.g. Aircraft Tracking Devices, Underwater Locating Devices) has arisen.

An update of the cockpit door surveillance system operational procedures is needed to provide clarification in the interpretation of the current MMEL relief.

There is also a lack of guidance material on Night Vision Imaging Systems (NVIS), like the guidance provided by the FAA in the non-controversial Policy Letter PL-127.

Item 8: Editorial corrections to CS-MMEL

Various editorial errors have been detected in the CS MMEL initial issue, and they need to be corrected.

Item 9: Update of CS-GEN-MMEL and CS-MMEL applicability

There is currently an inconsistency between the applicability of OSD MMEL at the Part 21 level and the applicability paragraph of CS-GEN-MMEL regarding ELA 1 and ELA 2.

There are currently no MMEL certification specifications for other-than-complex motor powered helicopters. However, EASA issued a special condition for some of these aircraft in 2015 in order to provide a basis for MMEL development.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2.1.

The specific objective of this NPA is to propose amendments to CS-MMEL and CS-GEN-MMEL based on the above selection of non-complex, non-controversial and mature subjects, with the ultimate goal being to increase safety.

2.3. How we want to achieve it — overview of the proposals

Item 1: Generic safety methodology for the development of MMEL candidate items

The new GM proposed in this NPA is taken from the generic MMEL development safety methodology that EASA has been using over the past two years to support compliance with CS MMEL.145 (b). In particular, DOA holders who do not have past experience with the development of MMEL justifications have been required since 19 December 2016 to address the MMEL impact of their design changes in compliance with Part 21, 21.A.93 (c). This material is, therefore, considered to be mature enough to be included in this RMT.

It is proposed to add paragraph (c) and (d) to GM4 MMEL.145(c) and create a new GM5 MMEL.145(c)(1).

Item 2: Quantitative assessment criteria for aircraft certified against requirements other than CS 25/29.1309

It is proposed to resolve the inconsistencies by updating GM1 MMEL.145(d), in line with the applicable requirements, so that CS-MMEL may be used as a certification basis for aircraft certified under a type-certification basis other than CS 25/29.1309.

A new paragraph is introduced in GM MMEL 145(d) as an alternative to the existing paragraphs, and it allows the applicant to demonstrate compliance with the CS MMEL 145(d) requirement using methods similar to those authorised during the type-design certification, thus restoring the consistency between the OSD certification basis and the type-certification basis.

Item 3: Engine time limited dispatch (TLD) update

It is proposed to include the content of EASA CM-MMEL-001 that is relevant to CS-MMEL as an update of the existing GM3 MMEL.145.

Item 4: Updated guidance for items involved in non-normal and emergency procedures

It is proposed that the current GM should be revised to indicate that relief may be granted for items that are powered by an emergency bus, provided that the applicant demonstrates by flight test, analysis, or a combination of both, that the MMEL relief neither affects the successful intended completion and outcome of the procedure, nor increases the complexity of the procedure for the crew.

Item 5: Clarification of the applicable MMEL operational suitability certification basis.

The current GM is proposed to be updated to clarify that the applicable MMEL operational suitability certification basis is determined by the aircraft type.

Item 6: Additional and updated definitions

It is proposed to introduce/update the definitions as follows:

<u>GM5 MMEL.120 Format and content of an MMEL</u>

1. Definition for ‘flight’ for rotorcraft: the lack of certainty in the current definition of flight for rotorcraft has led to different interpretations at the national level regarding the applicability of the MEL if a failure occurs during a flight to a remote location (e.g. an offshore platform). It is

proposed to clarify the definition of 'flight' for rotorcraft in the absence of any other regulation that provides such a definition for the purpose of defining the applicability of the MEL. The proposed definition is derived from the flight time definition of Part-FCL of Regulation (EU) No 1178/2011[6].

2. It is also proposed to provide guidance on how the elapsed time is to be measured if the Rectification Interval is given in flight hours. In particular, it will be indicated that the taxi time is to be accounted for.

3. The definition for 'operative' is proposed to be added based on the FAA/TCCA definition.

4. The definition for 'Day' is proposed to be added.

5. The definition for 'Extended overwater operations' is proposed to be added based on CAT.IDE.A.285 (d) of Annex IV of Regulation (EU) No 965/2012 (Part-CAT)[7]

6. The definition for the '***' symbol for optional items is proposed to be added.

7. The MMEL preamble specimen refers to the use of the '#' symbol to identify items which have been based only on European operational requirements using the associated guidance developed by EASA. It is proposed to not specify a specific symbol, but rather to leave it open to the applicant to use an alternate means to identify those items (e.g. listing them in a table as part of the MMEL preamble).

GM4 MMEL.130 Rectification Interval

8. The definition for the '#' symbol for the repair interval category reference to an associated 'considered inoperative' item is proposed to be added, consistent with the already published GM3 MMEL.130.

Item 7: Updated and new items in MMEL ITEMS GUIDANCE BOOK (CS-MMEL, Appendix 1 to GM1 MMEL.145) updates

25-65-1 Underwater Locating Device (ULD)

It is proposed to provide guidance for MMEL relief on the 8.8 kHz ULD that is required to be fitted to some large aeroplanes operated for commercial air transport over oceanic areas (refer to CAT.IDE.285 of Part-CAT) (by 1 January 2019 at the latest). The dispatch conditions and rectification interval consider the current relief provided for emergency locator transmitters (another type of system to facilitate the localisation of an accident site) and flight recorders (because by facilitating the location of aircraft wreckage, the 8.8 kHz ULD facilitates the recovery of evidence for safety investigation purposes). A rectification interval of C (10 days) is proposed, considering that the 8.8 kHz ULD is useful only in case of an accident that occurs in a remote and deep water area (whereas flight recorders are useful in most accidents), and it has no effect on the survivability of the occupants, whereas an ELT has.

[6] Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L31, 25.11.2011, p.1) (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R1178&from=EN)

[7] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0965&rid=1).

As a consequence of the introduction of the new item above, it is proposed to clarify that if a ULD is attached to a Cockpit Voice Recorder or a Flight Data Recorder that is inoperative, the associated item (CVR or FDR) has to be considered to be inoperative. This is to avoid the 8.8 kHz ULD item being referred to erroneously.

23-70-1 Flight Crew Compartment Door Surveillance System (e.g. CCTV) update

It is proposed to provide guidance for MMEL alternate procedures to be established that are consistent with the approach applied for aircraft that do not have a CDSS installed.

34-55-1 Aircraft Tracking System

It is proposed to provide guidance for MMEL relief on the aircraft tracking system required to be installed (by 16 December 2018 at the latest) on some large aeroplanes (refer to CAT.GEN.MPA.205 of Part-CAT), and on some helicopters that perform offshore operations (refer to SPA.HOFO.150 of Annex V (Part SPA) to Regulation (EU) No 965/2012). The dispatch conditions and the rectification interval consider the current relief provided for Emergency Locator Transmitters and Flight Data Recorders. A rectification interval of C (10 days) is proposed, considering that the loss of the system has no effect on the safe conduct of the flight.

However, the aircraft tracking function could have an effect on survivability, since it would enhance the detection of abnormal situations, and could help search and rescue personnel in locating an accident. In order to ensure that a means of locating the aircraft in case of an emergency remains available, it is proposed to require that at least one automatic ELT should remain operative.

46-20-1 Electronic Flight Bag (EFB) Systems update

The definition of Class 1, 2 and 3 Electronic Flight Bags is no longer current, and has been amended in AMC 20-25 to refer to installed and portable EFBs with or without installed resources. The MMEL policy has been revised accordingly.

Furthermore, additional provisions for relief have been added under 46-20-1B to ensure that when a dispatch is authorised with a single remaining EFB on board, dispatch considerations mitigate the loss of redundancy in case of a further failure in-flight.

In addition, a more flexible repair category ‘D’ is proposed under 46-20-1C when the EFB is installed but is not required to be used by the operator’s procedures.

Item 8: CS-MMEL Editorial corrections

The reference to GM1 MMEL.105(g) was omitted in the definition of a Catastrophic failure condition, and this is proposed to be corrected.

App 9 Book 2: the table of contents does not show (MC) under Headset, even though it is shown on the page for headset relief. The same applies for ATA 25 for Flight Crew Seats, Observers, and Passenger Seats. It is proposed to correct these editorial errors.

App-74 Book 2 item 30-80-2, Ice Protection System: it is proposed to correct the item numbering error.

App 90 Book 2: 33-41-1-2A should be 33-42-1-2A. It is proposed to correct this item numbering error.

App 93 Book 2: 33-50-1-3, Exit Area Lighting, should be 33-50-1-4. Everything below in 33-50-1 should be subsequently renumbered. It is proposed to correct this item numbering error.

App 120 Book2: 34-32-1 ILS (or MLS) sub-items should be 34-32-1A&B. It is proposed to correct this item numbering error.

App 143 Book 2: the second proviso under 46-20-2-2A is missing an item number, so it is proposed to correct this item numbering error.

App 152 Book 2 condition (f) to 52-11-1A: the end of the sentence is missing. It is proposed to complete it.

Item 9: Update of CS-GEN-MMEL and CS-MMEL applicability

In order to ensure consistency between the content of GM No 1 to 21A.15(d)[8] and the applicability of CS-GEN-MMEL, it is proposed to exclude ELA 1 and ELA 2 from the applicability of CS GEN.MMEL (in paragraph CS GEN.MMEL.100).

In order to incorporate the content of the special condition for other-than-complex motor powered helicopters, SC-GEN-MMEL-H, published in October 2015, it is proposed to amend the applicability of CS-GEN-MMEL to include non-complex helicopters, except helicopters that have been certified for IFR or icing conditions or according to Category A requirements. The latter are then proposed to be dealt with in the applicability of CS-MMEL, which is consequently also proposed to be modified.

The fact that an alternate method of compliance with CS MMEL.145 is proposed under item 2 above permits EASA to integrate the new applicability to other-than-complex motor powered helicopters certified for IFR or icing conditions, or according to Category A requirements. It will not create an undue burden, as the reference for the level of safety will be based on the applicable certification basis of the rotorcraft concerned.

2.4. What are the expected benefits and drawbacks of the proposals

The proposed amendments are expected to facilitate compliance with the OSD by integrating additional content in CS-MMEL and CS-GEN-MMEL. Overall, this is expected to provide a moderate safety benefit, would have no social or environmental impacts, and is expected to provide some economic benefits by streamlining the certification process.

[8] DECISION 2014/007/R OF THE EXECUTIVE DIRECTOR OF THE AGENCY of 31 January 2014 amending Acceptable Means of Compliance and Guidance Material to Part 21 of Regulation (EU) No 748/2012 (https://www.easa.europa.eu/sites/default/files/dfu/2014-007-R-ED%20Decision%202014-007-R.pdf)

3. Proposed amendments and rationale in detail

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in grey;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

3.1. Draft certification specifications (Draft EASA decision amending CS-MMEL and CS-GEN-MMEL)

Item 1: Generic safety methodology for the development of MMEL candidate items

CS MMEL.145 is amended as follows:

CS MMEL.145 Justification of MMEL items
(see GM1 MMEL.145 and GM2 MMEL.145)

(a) The justifications are provided by the applicant, along with each MMEL item.

(b) The inclusion of each item in the MMEL is justified following one or more methods, also referred to as an MMEL safety methodology, as agreed with ~~the Agency~~ EASA.

The justifications include at least a qualitative safety assessment […]

(see GM1 MMEL.145(c), GM2 MMEL.145(c), GM3 MMEL.145(c), ~~and~~ GM4 MMEL.145(c), and GM5 MMEL.145(c)(1))

(c) […]

A new GM5 MMEL(c)(1) is created as follows:

GM5 MMEL.145(c)(1) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – CONSEQUENCES OF THE PROPOSED MMEL DISPATCH CONFIGURATION

(a) Operational consequences of the proposed dispatch configuration (including any limitations and/or procedures) evaluated according to the criteria of CS MMEL.140(a) and (b), classified as No Safety Effect or Minor as per the associated type-certification basis of the aircraft definitions, are considered to be acceptable.

(b) The classification of failure conditions established in the FHA/SSA process should be used carefully, as the mitigation means associated with the proposed MMEL item may lead to the softening of the severity that was identified for type certification purposes.

For example, the failure of one item during a particular flight phase may be considered to be major due to a temporary loss of function until the flight crew performs a manual reconfiguration during the flight. But when this item is known to have failed on the ground, prior to the departure, the consequence may be less critical for the crew, and the application of the associated dispatch conditions can allow the classification to be reduced to an acceptable level.

(c) Conversely, some severities that were set up for the purpose of type certification may need to be complemented or hardened. In particular, the effects on the crew workload and potential fatigue need to be carefully assessed. Indeed, the severity of a failure that may have been

assessed as having minor effects as an in-flight failure during the Type Certification may be considered to have more than minor repercussions due to operating for several flights in some operational conditions. Some aggravating factors (e.g. the number of flights of the exposure, the flight duration, flight rules, special operations) will sometimes need to be mitigated by limitations that would normally not apply for a full-up aircraft configuration (e.g. day VFR only, instead of Day & Night VFR, types of operations).

Item 2: Quantitative assessment criteria for aircraft certified against requirements other than CS 25/29.1309

GM1 MMEL.145(d) is amended as follows:

GM1 MMEL.145(d) Justification of MMEL items

QUANTITATIVE SAFETY ASSESSMENT

[…]

(c) Notwithstanding paragraph (b), where a detailed quantitative analysis is required, a qualitative analysis may only be used for conventional and simple systems to show compliance with CS MMEL.145(d).

For simple and conventional installations (that is, those with low complexity and with similarity in the relevant attributes), it may be possible during the type design certification to assess the probability of a Hazardous or Catastrophic failure condition as being Extremely Remote (refer to the TC basis) or Extremely Improbable (refer to the TC basis), respectively, on the basis of experienced engineering judgment, using only qualitative analysis. The basis for such an assessment will be the degree of redundancy, the established independence and isolation of the channels, and the reliability record of the technology involved. Satisfactory service experience on similar systems commonly used in many aircraft may be sufficient when a close similarity is established regarding both the system design and the operating conditions.
A similar approach may be used for the justification of MMEL items. In particular:

1) For MMEL items involved in Catastrophic failure conditions:

i. It should be demonstrated that the degree of redundancy under the MMEL dispatch configuration remains adequate to ensure that the involved Catastrophic failure condition is still Extremely Improbable (refer to the applicable type-certification basis definition). This demonstration may be, in some cases, limited to the demonstration that a combination of a minimum of two independent failure(s) or external event(s) is necessary to lead to the Catastrophic failure condition. It will take into account that the reliability of the involved systems, based on experienced engineering judgment and service history, would allow the occurrence of the failure condition to continue to meet the probability range used for the type design certification.

ii. No Catastrophic failure condition should result from the failure of a single component, part, or element of a system. Experienced engineering judgment and service history should show that a Catastrophic failure condition due to a single failure mode is not a practical possibility. The logic and rationale used in the assessment should be straightforward, and should obviously substantiate that the failure mode simply would not occur unless it is associated with an unrelated failure condition that would, in itself, be Catastrophic.

iii. The MMEL entry should use standard Rectification Interval B, or a more restrictive interval, for items that leave the aircraft two independent failure(s) or external event(s) away from a Catastrophic failure condition. If there is no reduction in safety margins compared to the full-up configuration, Category C may be acceptable.

2) For MMEL items involved in Hazardous failure conditions:

i. It should be demonstrated that a degree of redundancy under the MMEL dispatch configuration remains available so that a combination of a minimum of two independent failure(s) or external event(s) is necessary to lead to the Hazardous failure condition. In such a case, there is no need to demonstrate (even qualitatively) that the failure condition remains Extremely Remote (refer to applicable type-certification basis definition) under the MMEL dispatch configuration, as the fact that no single failure or external event exists is sufficient to grant an adequate probability of occurrence under the MMEL dispatch configuration, or

ii. It should be demonstrated, using experienced engineering judgment and service history, that the single failure or external event has a probability of occurrence that is compatible with the probability range used for the type design certification, taking into account the proposed rectification interval.

iii. The MMEL entry should use standard Rectification Interval B or a more restrictive interval for items that leave the aircraft one failure(s) or external event(s) away from a Hazardous failure condition. If there is no reduction in safety margins compared to the full-up configuration, Category C may be acceptable.

Item 3: Engine time limited dispatch (TLD) update

GM 3 MMEL.145 is amended as follows:

GM3 MMEL.145 Justification of MMEL items

ELECTRONIC ENGINE CONTROL SYSTEM (EECS) FAILURES — ENGINE TIME LIMITED DISPATCH (TLD)

~~(a) In case of a turbine engine, if approval is sought for dispatch with Faults present in an Electronic Engine Control System, Compliance with CS E.1030 (Time Limited Dispatch (TLD)) should be demonstrated.~~

~~(b) These items should be allocated an 'A' category rectification interval in order to prohibit rectification interval extension.~~

1. Dispatch with Engine faults covered by a TLD report

(a) If a dispatch is sought with faults (or faults combination) that are present in an Electronic Engine Control System (EECS), a time limited dispatch (TLD) approval is required, as per Ref. [1] CS-E 1030, for faults such as EECS degraded protection or a loss of redundancy against a Loss of Thrust Control (LOTC)/Loss of Power Control (LOPC).

(b) A TLD approval is granted once the engine manufacturer has demonstrated compliance with the applicable engine certification requirements, including the verification that the LOTC/LOPC rates and Hazardous Engine Effect rates remain acceptable with the proposed rectification time limits.

(c) Engine system faults that do not have an impact on the LOTC rate, or on the compliance with the applicable engine certification requirements, may nevertheless be included as part of the TLD report. These faults are normally indicated as not being derived from the LOTC analysis in the TLD report.

(d) When taking credit on the TLD analysis to demonstrate compliance with CS-MMEL, the aircraft manufacturer should ensure that the MMEL content remains consistent with the TLD restrictions, time limitations, and other related installation requirements set by the engine manufacturer.

2. Evaluation of aircraft-level consequences for MMEL evaluation

(a) When Engine-related MMEL items are involved in aircraft level failure conditions that are classified as Hazardous or Catastrophic, compliance with the applicable requirements for qualitative and quantitative analysis should be demonstrated, as for any candidate MMEL item. Contributions from the Engine Control System to the aircraft FHA/SSA may be affected, and may need to be re-evaluated. In such cases, coordination between the aircraft and the engine manufacturers is necessary to complete the demonstration of compliance for the MMEL.

(b) It is recommended that the aircraft manufacturer's MMEL safety analysis should be made prior to the definition of the generic cockpit messages related to the TLD categories (Short Term and Long Term) in order to avoid re-design issues.

3. Dispatch with EECS faults with performance effects

(a) Particular attention should be paid to range-sensitive operations, including LROPS and ETOPS, when Engine system faults, including some that are included in the TLD analysis, could have an effect on the fuel consumption, and hence on the range, of the aircraft.

(b) Normally, degraded performance is not analysed by the engine manufacturer for LOTC, but it should be assessed by the aircraft manufacturer.

(c) Flight duration and thrust variation in case of an IFSD should be considered in the performance /range assessment. If necessary, operational limitations should be specified in the MMEL for authorised combinations of MMEL items.

4. Allocation of MMEL rectification intervals

(a) When a TLD approval is granted at the engine level, the repair limitations for Short-Term or Long-Term faults may be used by the aircraft manufacturer to support the allocation of the appropriate MMEL rectification interval.

(b) If the repair intervals are taken from the TLD analysis, the corresponding MMEL items should be allocated an 'A' category rectification interval (with no extension possible).

Item 4: Updated guidance for items involved in non-normal and emergency procedures

GM 4 MMEL.145(c) is amended as follows:

GM4 MMEL.145(c) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – ITEMS INVOLVED IN NON-NORMAL AND EMERGENCY PROCEDURES

(a) When the item is necessary for the crew to perform an existing non-normal or emergency procedure, the consequences of its unavailability should be evaluated, taking into account the potentially worsening of the severity of the in-flight failure condition.

(b) Items which are powered by an emergency bus, or equivalent, and required to accomplish an emergency procedure, are normally not allowed.

(c) Relief may be granted for items that are powered by an emergency bus, provided that the applicant demonstrates by flight test, analysis, or a combination of both, that the MMEL relief

neither affects the successful intended completion and the outcome of the procedure, nor increases the complexity of the procedure for the crew.

(d) Emergency procedures are aircraft-specific, for example, some procedures may direct the pilot to physically turn his emergency power switch to the ON position when a complete electrical failure occurs in-flight. One consequence of the selection of the emergency power ON can be that the only communications system available is the number one system, and the only navigational system available is the number one system. That configuration must not allow operations with the number one radio system on the MEL. However, other aircraft may be designed with an electrical system that will automatically select any available electrical power supply during an electrical abnormality. For such a design, it would not be appropriate to limit the radio relief to just the number two radio system, since both radios are able to be powered under any circumstances.

Item 5: Clarification of the applicable MMEL operational suitability certification basis.

GM2 MMEL.145(c) is amended as follows:

GM2 MMEL.145(c) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – PREVIOUS APPROVALS

(a) The assessment may reflect experience with previous MMEL approvals. However, a previous MMEL approval of the same item on another aircraft type does not in itself imply that the level of safety is acceptable. Therefore, additional factors which could be considered include similarity of system operation and type of operations.

(b) The applicable certification specifications often depend on the applicable type design certification basis of the aircraft model, and therefore may vary from one aircraft type/model to another.

Item 6: Additional and updated definitions

GM5 MMEL.120 is amended as follows:

GM5 MMEL.120 Format and content of MMEL

MMEL PREAMBLE

[…]

Purpose and limitations

This Master Minimum Equipment List (MMEL) is developed by the applicant and holders of the (Supplemental) Type Certificate and approved by the European Aviation Safety Agency to improve aircraft use, and thereby, to provide~~ing~~ more convenient and economic air transportation for the public. This MMEL includes those items related to airworthiness, air operations, airspace requirements and other items that ~~the Agency~~EASA finds may be inoperative, ~~and yet~~ while maintaining an acceptable level of safety ~~by~~ through appropriate conditions and limitations; it does not contain obviously required items such as wings, flaps, and rudders. In order to maintain an acceptable level of safety, the MMEL establishes limitations on the duration of, and conditions for, operation with inoperative items. Unless specifically allowed by this MMEL, an inoperative item may not be removed from the aircraft.

This MMEL includes items identified by a ~~'#'~~ (indicate here) symbol or provided in a dedicated list, which have been based only on European operational requirements, using associated guidance developed by ~~the Agency~~EASA.~~These items could be adapted to the applicable operational~~

~~requirements when these differ from the European operational requirements, if permitted by the State of the Operator, for the approval of the MEL~~. If the applicable operational requirements differ from the European operational requirements, then for the approval of the MEL, the items in the MMEL could be adapted to the applicable operational requirements, provided that is permitted by the State of the operator.

In ~~this~~ such a case, the MEL content is still considered to be in conformity with the content of this MMEL.

[…]

DEFINITIONS AND EXPLANATORY NOTES

[…]

'**Day**' or 'Daylight' means the period between the beginning of morning civil twilight and the end of evening civil twilight relevant to the local aeronautical airspace; or such other period, as may be prescribed by the appropriate authority.

[…]

'Extended overwater flight' means a flight where the aeroplane is operated over water at a distance, away from land suitable for making an emergency landing, that is greater than:

(1) the distance covered in 120 minutes at cruising speed, or 400 NM, whichever is the lesser, in the case of aeroplanes that arecapable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route, or with planned diversions; or

(2) for all other aeroplanes, the distance covered in 30 minutes at cruising speed, or 100 NM, whichever is the lesser.

[…]

'**Flight**' for the purposes of this MMEL, means;

— for aeroplanes: the period of time between the moment when an aircraft begins to move under its own power, for the purpose of preparing for take-off, until the moment the aircraft comes to a complete stop on its parking area, after the first landing.

— for helicopters: the period of time between the moment when the rotor of the helicopter starts to turn for the purpose of taking off, until the moment when the rotor is stopped after the helicopter finally comes to rest at the end of the flight.

[…]

'**Operative'** means that the system and/or component will accomplish its intended purpose and consistently functions normally within its design operating limit(s) and tolerance(s). When an MMEL item specifies that an item of equipment must be operative, it does not mean that its operational status must be verified; the item is to be considered to be operative unless it is reported or known to be malfunctioning. When an MMEL item specifies that an item of equipment must be verified as being operative, it means that it must be checked and confirmed as being operative at the interval(s) specified for that MMEL item. When an MMEL item specifies that an item of equipment must be verified, but no interval is specified, verification is only required at the time of deferral.

[…]

Triple Asterisk '* '** means an item which is not required by the regulations, but which may have been installed on some models of aircraft that are covered by this MMEL. This item may be included on the aircraft operator's MEL after it has been determined that the item has been installed on one or more of the aircraft operator's aircraft. The triple asterisk symbol, however, must not be carried forward into the

aircraft operator's MEL. It should be noted that neither this policy, nor the use of this symbol, provides the authority to install or remove an item from an aircraft.

[…]

Dash '# ' in column 2, or its equivalent in an MMEL, means that the rectification interval is not specified at the level of that item, but rather that it is specified in another MMEL item that is referred to as part of the dispatch conditions (e.g. item B is considered to be inoperative).

GM4 MMEL.130 is added as follows:

GM4 MMEL.130 Rectification Interval

If a time period is specified in flight hours for an item whose rectification interval category is A, the flight hours that are counted as part of that period should start at the commencement of taxiing prior to the first flight under the associated MEL item.

Item 7: MMEL ITEMS GUIDANCE BOOK (Appendix 1 to GM1 MMEL.145) updates

Appendix 1 to GM1 MMEL.145(d) is amended as follows:

[…]

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 23 Communications				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
23-70-1 Flight Crew Compartment Door Surveillance System (e.g. CCTV) (MC)				
23-70-1A	D	-	0	(O) May be inoperative provided that alternate procedures are established and used.

Additional considerations:

~~N/A~~ ORO.SEC.100.A of Annex III (Par-ORO) to Regulation (EU) No 965/2012 For flight crew compartment security reasons, a means should be provided to monitor, from either pilot's station, the area outside the flight crew compartment to the extent necessary to identify any persons who request entry to the flight crew compartment, and to detect any suspicious behaviour or potential threat.

The installation of a CCTV system enables compliance with the above regulation so that the pilot can monitor the area while seated at his or her station.

Means such as a spyhole, in combination with procedures that are based on the minimum number of flight crew members who have to be present in the compartment, may be used as an acceptable alternate method.

[…]

Aircraft applicability: Aeroplanes

ATA Chapter: 25 Equipment/Furnishings					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25-65-1	**Low-Frequency Underwater Locating Device (ULD) (MC)**				
25-65-1A		D	-	-	Any of this equipment that is surplus to the equipment required to be operative may be inoperative or missing.
25-65-1B		C	-	0	May be inoperative or missing.

Additional considerations:

When aeroplanes conduct extended overwater operations, they are required, under the conditions given by CAT.IDE.A.285 of Annex IV (Part-CAT) to Regulation (EU) No 965/2012, to be fitted with a securely attached underwater locating device that operates at a frequency of 8,8 kHz ± 1 kHz.

[…]

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 23 Communications					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
23-71-1	**Cockpit Voice Recorder System (MC)**				
23-71-1A		D	-	-	Any of this equipment that is surplus to the~~in excess of~~ those equipment required to be operative may be inoperative.

23-71-1B	A	-	0	May be inoperative provided that: (a) the aircraft does not exceed 8 further consecutive flights with the cockpit voice recorder inoperative, (b) a maximum of 72 hours have elapsed since the cockpit voice recorder was found to be inoperative, and (c) any Flight Data Recorder required to be carried is operative. Note 1: this alleviation is not applicable to Flight data and cockpit voice combination recorders. For those combined systems, see the entries for combination recorders in item 31-31-2. Note 2: if the means to locate the CVR remotely (using an Underwater Locating Device (ULD) or an associated Emergency Locator Transmitter (ELT) for deployable recorders) is inoperative, the associated CVR is considered to be inoperative.

Additional considerations:
N/A

[…]

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 31 Indicating/Recording Systems				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
31-31-1 Flight Data Recorder (FDR) (MC)				
31-31-1A	D	-	-	Any of this equipment that is surplus to the ~~in excess of those~~ equipment required to be operative may be inoperative provided that the FDR parameters are not required for monitoring purposes.
31-31-1B	A	-	0	May be inoperative provided that: (a) the aircraft does not exceed 8 further consecutive flights with the FDR inoperative, and (b) a maximum of 72 hours have elapsed since the FDR was found to be inoperative, and

(continued)				(c) any Cockpit Voice Recorder required to be carried is operative. Note 1: this alleviation is not applicable to flight data and cockpit voice combination recorders. For those combined systems, see the entries for flight data and cockpit voice combination recorders in item 31-31-3. Note 2: the flight data recorder is considered to be inoperative when any of the following conditions exist: (i) The loss of the flight recording function is evident to the flight crew during the pre-flight check, e.g. by means of a system status monitor; or (ii) The need for maintenance has been identified by the system monitors, where available, and the failure origin has not been identified; or (iii) Analyses of recorded data or maintenance actions have shown that more than 5 % of the total number of individual parameters (variable and discrete) required to be recorded for the particular aircraft, are not being recorded properly (refer to 31-31-1C).

ATA Chapter: 31 Indicating/Recording Systems				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
(continued)				Note 3: where improper recording affects 5 % of the required parameters or less, refer to item 31-31-4. Note 4: if the means to locate the FDR remotely (using an Underwater Locating Device (ULD) or an associated Emergency Locator Transmitter (ELT) for deployable recorders) is inoperative, the associated FDR is considered to be inoperative.

31-31-2A	A	-	0	Up to 5 % of the required parameters may be inoperative for a maximum of 90 calendar days or until the next maintenance inspection, whichever occurs first.

Additional considerations:
Cockpit voice recorders are covered under item 23-71-1.

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 31 Indicating/Recording Systems				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
31-31-2 Flight Data and Cockpit Voice Combination Recorder (MC)				
31-31-2A	D	-	-	(O) (M) Any function may be inoperative provided that: (a) the affected function is not required, and (b) the affected data is not required for monitoring purposes.
31-31-2B	A	1	0	Either the flight data recorder ~~and/~~or the cockpit voice recorder function may be inoperative provided that: (a) the other function, where required, is operative, (b) the aircraft does not exceed 8 further consecutive flights with the inoperative function, and (c) a maximum of 72 hours have elapsed since the inoperative function was found. Note 1: a flight data and cockpit voice combination recorder is a single flight recorder that combines the functions of a flight data recorder and of a cockpit voice recorder.
(continued)				

ATA Chapter: 31 Indicating/Recording Systems				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
(continued)				
31-31-2C	A	2	1	Note 2: the flight data recorder is considered to be inoperative when any of the following conditions exist: (i) The loss of the flight recording function is evident to the flight crew during the pre-flight check, e.g. by means of a system status monitor; or (ii) The need for maintenance has been identified by the system monitors, where available, and the failure origin has not been identified; or (iii) Analyses of recorded data or maintenance actions have shown that more than 5 % of the total number of individual parameters (variable and discrete) required to be recorded for the particular aircraft are not being recorded properly. Note 3: where improper recording affects 5 % of the required parameters or less, refer to item 31-31-4. Note 4: if the means to locate the Flight Data and Cockpit Voice Combination Recorder remotely (using an Underwater Locating Device (ULD) or an associated Emergency Locator Transmitter (ELT) for deployable recorders) is inoperative, the associated Flight Data and Cockpit Voice Combination Recorder is considered to be inoperative. One of the two required flight data and cockpit voice combination recorders may be inoperative for a maximum of 10 calendar days. Note: if the means to locate the Flight Data and Cockpit Voice Combination Recorder remotely (using an Underwater Locating Device (ULD) or an associated Emergency Locator Transmitter (ELT) for deployable recorders) is inoperative, the associated Flight Data and Cockpit Voice Combination Recorder is considered to be inoperative.

Additional considerations:

Cockpit voice recorders are covered under item 23-71-1.

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 34 Navigation					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34-55-1	**Aircraft Tracking Equipment**				
34-55-1A		D	-	-	Any of this equipment that is surplus to the equipment required to be operative may be inoperative.
34-55-1B		C	-	-	May be inoperative provided that at least one automatic emergency locator transmitter is operative.

Additional considerations:

An aircraft tracking system is required for helicopter offshore operations in a hostile environment, according to SPA.HOFO.150 of Annex V (Part-SPA) to Regulation (EU) No 965/2012, and for aeroplanes under the conditions given by CAT.GEN.MPA.205(a) of Annex IV (Part-CAT) to Regulation (EU) No 965/2012.

[…]

ATA 46 INFORMATION SYSTEMS

Summary of the guidance items:

Item	ATA
Electronic Flight Bag (EFB) Systems	46-20-1
~~Class 2~~ EFB Installed Resources	46-20-2
Power Connection for ~~Class 1 and Class 2~~ Portable EFB	46-20-3

Aircraft applicability: Aeroplanes & helicopters

ATA Chapter: 46 Information Systems					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
46-20-1	**Electronic Flight Bag (EFB) Systems**				
46-20-1A		C	-	0	(O) May be inoperative provided that alternate procedures are established and used where operating procedures require the use of the affected EFB.
46-20-1B		C	-	1	(O) Any of this equipment that is surplus to the one item required to be operative may be inoperative provided that alternate procedures are established and are used to ensure that the required back-up means are available to the crew.
46-20-1C		D	-	0	May be inoperative provided that procedures do not require the use of the affected EFB.
46-20-2	**~~Class 2~~ EFB Installed Resources**				
46-20-2-1	Mounting Device				
46-20-2-1A		C	-	1	(M) (O) Any of this equipment that is surplus to the one item required to be operative may be inoperative provided that the affected EFB is secured by an alternative means.
46-20-2-1B		C	-	0	(M) (O) May be inoperative provided that:

					(a) the associated EFB is used in accordance with ~~Class 1~~ Portable EFB stowage criteria, and (b) alternate procedures are established and used where operating procedures require the use of the affected EFB.
46-20-2-2	Data Connectivity				
46-20-2-2A		C	-	1	(M) (O) Any ~~in excess of one~~of this equipment that is surplus to the one item of equipment required to be operative may be inoperative provided that an alternative means of data connectivity is used.
46-20-2-2B		C	-_	0	(M) (O) May be inoperative provided that alternate procedures are established and used where operating procedures require the use of the affected EFB.
	(continued)				

ATA Chapter: 46 Information Systems					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
	(continued)				**Procedures:** (M) To give guidance reference for deactivation of the affected item, as appropriate, and to establish alternate means, as applicable. (O) To provide instructions to the flight crew for alternate procedures to be used.
46-20-3	**Power Connection for ~~Class 1 and Class 2~~ Portable EFB**				
46-20-3A		C	-	1	(M) (O) Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative provided that an alternative power source is available and can be used for the planned duration of use of the affected EFB.
46-20-3B		C	-	0	(M) (O) May be inoperative provided that alternate procedures are established and used.

				Procedures: (M) To give guidance reference for deactivation of the affected item, as appropriate, and to establish alternate means, as applicable. (O) To provide instructions to the flight crew for alternate procedures to be used.

Additional considerations:
The purpose of entry 46-20-1 is not to require the inclusion of ~~Class 1 & 2~~ portable EFBs in an operator's MEL, but it is a means of controlling any inoperative EFB equipment. Other means may also be agreed with the competent authority.

Any EFB function which operates normally may be used.

[…]

Item 8: CS-MMEL Editorial corrections

CS MMEL.105 is amended as follows:

CS MMEL.105 Definitions

(c) **'Catastrophic Failure Condition'**: as defined in the applicable Type Certification Basis. (see GM1 MMEL.105(h))

Appendix 1 to GM1 MMEL.145(d) is amended as follows:

[…]

ATA 23 COMMUNICATIONS

Summary of the guidance items:

Item	ATA
Headset (MC)	23-10-1
Audio Selector Panel	23-10-2
Flight Crew Compartment Speaker	23-10-3
HF Communications	23-11-1
VHF Communications	23-12-1
Audio Selector Panel Frequency Controls and Indications	23-13-1
Datalink (MC)	23-20-1
Public Address System	23-30-1
Datalink	23-30-2

Flight Crew Interphone System (Flight Crew Compartment Intercommunication) (MC)	23-40-1
Crew Member Interphone System (MC)	23-40-2
Flight Crew Compartment Door Surveillance System (MC)	23-70-1
Cockpit Voice Recorder (MC)	23-71-1

[…]

ATA 25 EQUIPMENT/FURNISHINGS

Summary of the guidance items:

ITEM	**ATA**
Flight Crew Seats (MC)	25-11-1
Observer Seats (MC)	25-11-2
Passenger Seats (MC)	25-21-1
Cabin Crew Seat Assembly (single or dual position)	25-21-2
Exterior Lavatory Door Ashtrays (MC)	25-40-1
Interior Lavatory Ashtrays (MC)	25-40-2
Escape Slides	25-60-1
Independent portable lights (MC)	25-60-2
Protective Breathing Equipment (PBE) (MC)	25-60-3
Megaphones (MC)	25-60-4
Life rafts	25-60-5

(MC)	
Survival Equipment (MC)	25-60-6
Emergency Flotation Equipment	25-60-7
Crash Axes and Crowbars (MC)	25-61-1
First-Aid Kits (MC)	25-62-1
Emergency Medical Kits (MC)	25-62-2
Emergency Locator Transmitter (MC)	25-63
Life jackets (MC)	25-64-1

[…]

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 30 Ice and Rain Protection					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
30-80-2	**Ice Detection System**				
30-80-~~1~~2A	System certified as an Advisory System	D	-	0	May be inoperative provided that procedures do not require its use.
30-80-~~1~~2B	System certified as a Primary Detection System	C	-	0	(O) May be inoperative provided that alternate procedures are established and used. **Procedures:** (O) To provide a procedure to the crew to determine the conditions ~~where~~in which the ice protection system must be activated manually.

[…]

Aircraft applicability: Aeroplanes & Helicopters

ATA Chapter: 33 Lights					
(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
(continued)					(b) The navigation light system is operative, and (c) The landing light system is operative. **Procedures:** (O) To provide guidance to the crew for operations of remaining lights.
33-42-1-1E	(Helicopters and other than Commercial Air Transport operations of aeroplanes)	B	-	0	May be inoperative for daylight operations.
33-42-1-2 33-4~~1~~2-1-2A	Wing-Tip/Tail Strobe Lights (if installed)	C	-	0	One or more of these may be inoperative.

[…]

ATA Chapter: 33 Lights					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
(continued)					
33-50-1-~~3~~4 33-50-1-~~3~~4A	Exit Area Lighting	-	-	-	May be inoperative provided that the associated door/exit is considered to be inoperative. Refer to item 52-22.
33-50-1-~~4~~5	Floor Proximity Lighting (Electrical or photo luminescent systems)				

33-50-1-~~4~~5-1	Individual Lights/ strips				
33-50-1-~~4~~5-1A		B	-	-	Lights/strips may be inoperative provided that: (a) all lights/strips marking right angle intersections, including cross aisles and overwing exits, are operative, (b) along each aisle axis, all lights/strips within one meter of lights/strips marking right angle intersections are operative, and (c) a minimum of lights/strips evenly distributed along each aisle axis to provide required escape guidance are operative.
33-50-1-~~4~~5-2	EXIT Markers/Identifiers				
33-50-1-~~4~~5-2A		C	-	-	Up to 50 % of the bulbs/LEDs may be inoperative in one or more signs provided that the sign remains legible.
33-50-1-~~4~~5-2B		-	-	-	One item may be inoperative provided that the associated door/exit is considered to be inoperative. Refer to item 52-22.

[…]

Aircraft applicability: Aeroplanes

ATA Chapter: 34 Navigation					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34-32-1	**ILS (or MLS) (MC)**				
34-32-~~2~~1A		B	-	0	May be inoperative under IFR operations provided that any approaches ~~and~~ or missed approaches ~~where~~ in which navigation is based on ILS are not included in the flight plan.
34-32-~~2~~1B		D	-	0	May be inoperative under VFR operations.

Additional considerations:
N/A

[…]

Additional considerations:

52-11-1 Door/exit

[…]

Condition (f): ~~In case of~~if cabin crew seats are located adjacent to an inoperative pair of exits, the operator should consider ~~a re-location of one or more cabin crew to a different zone of the cabin in order to improve~~ the best location for the affected cabin crew members, taking into account the updated emergency evacuation procedures. A re-location of cabin crew members can be envisaged, provided that sufficient cabin crew members remain at the pair of inoperative exits to orientate the passengers towards the best available exits during an evacuation.

[…]

Item 9: Update of CS-GEN-MMEL and CS-MMEL applicability

CS MMEL.100 is amended as follows:

CS MMEL.100 Applicability

These Certification Specifications for establishing the MMEL are applicable to complex motor-powered aircraft and non-complex helicopters that are certified for:
— operation under instrument flight rules (IFR),
— flight into icing conditions, or
— Category A operations. ~~and contains certification specifications for establishing the MMEL.~~

CS GEN.MMEL.100 is amended as follows:

CS GEN.MMEL.100 Applicability

~~This CS applies to other-than-complex motor-powered aeroplanes except for very light aeroplanes (VLA), light sport aeroplanes (LSA) and powered sailplanes.~~

~~This~~ These ~~CS~~ certification specifications ~~applies~~ are applicable to:
— other-than-complex motor-powered aeroplanes, except ~~for~~:
- ELA 1,
- ELA 2,
- very light aeroplanes (VLA),
- light sport aeroplanes (LSA), and
- powered sailplanes, and~~.~~

— other-than-complex motor-powered helicopters, except helicopters certificated for:
- operation under instrument flight rules (IFR),
- flight into icing conditions, or
- category A operations.

CS GEN.MMEL.110 is amended as follows:

CS GEN.MMEL.110 MMEL purpose

The MMEL is a document that lists the items which may be temporarily inoperative in association~~ed~~ with special operating conditions, limitations or procedures, as applicable, for a specific ~~aeroplane~~ aircraft type or model.

CS GEN.MMEL.120 is amended as follows:

CS GEN.MMEL.120 Types of operation

The MMEL covers all the types of operation for which the ~~aeroplane~~ aircraft type or model is certified.

CS GEN.MMEL.140 is amended as follows:

CS GEN.MMEL.140 Definitions and explanatory notes

The MMEL contains sufficient definitions and explanatory notes to provide the user (who is primarily the operator, when compiling the MEL) with a full and proper understanding of the intent and purpose of the items it contains.
Appendix III to this CS contains the definitions that are common to all MMELs. Other definitions that are specific to particular or individual ~~aeroplane~~ aircraft types are added as necessary. Also, explanatory notes are provided in sufficient detail wherever the intent and purpose of a term or phrase or abbreviation, etc., is necessary or advisable.

CS GEN.MMEL.145 is amended as follows:

CS GEN.MMEL.145 Item list

The generic MMEL includes all the items that are permitted to be inoperative.

The MMEL item list is generated by the applicant directly from the generic MMEL by selecting the items from the list in Appendix IV in accordance with their applicability to the aeroplane type.

For an ~~aeroplane~~ aircraft type with different configurations, the applicant can select all the items that are applicable to the various configurations, and add under each affected item '(if installed)'.

For the selected items, the applicant verifies they do not deviate from the ~~Aeroplane~~ Aircraft Flight Manual (AFM) Limitations and Airworthiness Directives.

The applicant also verifies that relief is not given for items that are involved in emergency procedures, unless the applicant justifies that the emergency procedure can be fulfilled without the failed item (e.g. VHF Communication Systems).

Consistency of terminology and of means of identification ~~means~~should be maintained, as far as possible, with the existing ~~aeroplane~~ aircraft documentation.

Appendices I, II and IV of CS-GEN-MMEL Book 1 are amended as follows:

APPENDICES

Appendix I — MMEL cover page, control page and general section

1. Cover page:

[Supplemental/Type Certificate Holder Name]

[~~Aeroplane~~ Aircraft Type]

MASTER MINIMUM EQUIPMENT LIST

ORIGINAL: [Effective date]

(and if applicable)
REVISION [Number]: [Effective date]

[Supplemental/Type Certificate Holder document reference]

2. Control page:

MASTER MINIMUM EQUIPMENT LIST

Type:
[~~Aeroplane~~ Aircraft type/model]

(and if applicable)
[~~Aeroplane~~ Aircraft commercial name]

ORIGINAL ISSUE: [Effective date]

(and if applicable)
REVISION [Number]: [Effective date]

This Master Minimum Equipment List (MMEL) is issued by [Supplemental/Type Certificate Holder name] at the above revision and is approved by the European Aviation Safety Agency (EASA) as the basis for the preparation and approval of an individual operator's Minimum Equipment List (MEL) for aircraft of this model, as certified by and operated under the jurisdiction of EASA Member States' national authorities.

Issue: [Revision number]

Date: [Date of approval by ~~the Agency~~EASA]

Signed by: [EASA's signature and stamp]

[...]

Appendix II — Preamble

PREAMBLE

Introduction

The following is applicable for operators under European air operations regulations (Part-CAT, Part-NCO, Part-SPO, respectively Annex IV, VII, and VIII of Regulation (EU) No 965/2012). Paragraph 1.c.2 of Annex I to Article 5 (Essential requirements for airworthiness) of Regulation (EC) No 216/2008 (hereinafter referred to as the 'Basic Regulation') requires that all the equipment items installed on an ~~aeroplane~~ aircraft that are required for type certification or by operating rules shall be operative. However, paragraph 2.a.3 of Annex IV to Article 8 (Essential requirements for air operations) of the Basic Regulation also allows the use of a Minimum Equipment List (MEL) where compliance with certain equipment requirements is not necessary in the interest of safety under all operating conditions. Experience has shown that with the various levels of redundancy designed into ~~aeroplane~~ aircraft, the operation of every system or installed item may not be necessary when the remaining operative equipment can provide an acceptable level of safety.

Purpose and limitations

This Master Minimum Equipment List (MMEL) is developed by the Type Certificate Holder or the Supplemental Type Certificate Holder, and is approved by ~~the Agency~~EASA. This MMEL includes those items that are related to airworthiness and air operations regulations, and other items that ~~the Agency~~EASA finds may be inoperative, ~~and yet~~ while maintaining an acceptable level of safety ~~by~~through appropriate conditions and limitations; it does not contain obviously required items such as wings, flaps, ~~and~~ rudders, gearboxes, and rotors. In order to maintain an acceptable level of safety, the MMEL establishes limitations on the duration of, and conditions for, operations with inoperative items. Unless specifically permitted by this MMEL, an inoperative item may not be removed from the ~~aeroplane~~ aircraft.

Utilisation

The MMEL is the basis for the development of the individual operator's MEL, which takes into consideration the operator's particular ~~aeroplane~~ aircraft equipment configuration and operational conditions.

An operator's MEL may differ in format from the MMEL, but shall not be less restrictive than the MMEL. The individual operator's MEL, when approved or declared as applicable, allows operation of the ~~aeroplane~~ aircraft with inoperative items for a certain period of time until rectification can be accomplished.
The MEL cannot deviate from Airworthiness Directives or any other additional mandatory requirements. It is important to remember that all items that are related to airworthiness and operational regulations of the ~~aeroplane~~ aircraft but are not listed on the MMEL shall be operative.

Suitable conditions and limitations in the form of placards, maintenance procedures, crew operating procedures and other restrictions as prescribed in this MMEL shall be specified in the MEL to ensure that an acceptable level of safety is maintained. It is important ~~that~~for rectifications to be accomplished at the earliest opportunity.

When an item is discovered to be inoperative, it is reported by making an entry in the continuing airworthiness record system or the operator's technical log, as applicable. Following sufficient fault identification, the item is then either rectified or may be deferred by following the MEL or another approved means of compliance that is acceptable to the competent authority and ~~the Agency~~EASA prior to further operation. MEL conditions and limitations do not relieve the operator from

determining that the ~~aeroplane~~ aircraft is in a condition for safe operation with the items that are inoperative.

Prior to operation, any inoperative item should be made known to the crew in accordance with the continuing airworthiness requirements. For commercial air transport, acceptance by the crew of the inoperative items is required.

Operators shall establish a controlled and sound rectification programme that includes~~ing~~ the parts, personnel, facilities, procedures and schedules to ensure timely rectification.

Operators should include guidance in the MEL to deal with any failures which occur between the commencement of the flight and the start of the take-off.

When developing the MEL, compliance is required with the stated intent of the preamble, the definitions and the conditions and limitations specified in this MMEL~~is required~~.

Multiple inoperative items

Operators are responsible for exercising the necessary operational control to ensure that an acceptable level of safety is maintained. The exposure to additional failures during continued operation with inoperative items shall also be considered. Wherever possible, account has been taken in this MMEL of multiple inoperative items. However, it is unlikely that all possible combinations of this nature have been accounted for. Therefore, when operating with multiple inoperative items, the inter-relationships between those items and the effect on ~~aeroplane~~ aircraft operations and the crew workload shall be considered.

Rectification intervals

For commercial operations under Part-CAT (Annex IV of Regulation (EU) No 965/2012) or Part-SPO (Annex VIII of Regulation (EU) No 965/2012), ~~the~~operators may be allowed by their competent authority a one-time extension of the applicable rectification intervals B, C or D for the same duration as that specified in their MEL.

This extension policy is only applicable when the applicant has taken it into account during the development of this document.

For operations under Part-NCO (Annex VII of Regulation (EU) No 965/2012), the rectification intervals indicated in the item list are only recommended, and should be taken as guidelines ~~as~~for the maximum period of time during which an item would remain inoperative. It is important ~~that~~for repairs to be accomplished at the earliest opportunity.

Appendix III — Definitions and explanatory notes

(a) The systems in the MMEL are described and identified in accordance with the numbering system used in the ~~aeroplane~~ aircraft manufacturer's documentation.

(b) [...]

(3) **Number installed** — column No 3 — is the number (quantity) of items normally installed in the ~~aeroplane~~ aircraft. This number represents the ~~aeroplane~~ aircraft configuration that was considered in developing this MMEL. Should the number be a variable or not applicable, a number is not required; a '–' is then inserted.

Where the MMEL shows that a variable number may be installed, the MEL should reflect the actual number installed, if applicable.

[...]

(d) Applicability: when a variant of a page is required for certain ~~aeroplanes~~ aircraft, the special applicability is indicated at the lower part of the relevant page, as well as in the list of effective pages.

(e) Definitions for the purpose of this MMEL:

'~~Aeroplane~~ Aircraft Flight Manual (AFM)' ~~**or**~~ is the document required for type certification and approved by ~~the Agency~~EASA.

[…]

'Commencement of flight' is the point when an aeroplane begins to move under its own power for the purpose of preparing for take-off, or the point when the rotors of a helicopter start to turn for the purpose of taking off.

[…]

'Day of discovery' means the calendar day ~~that~~ when a malfunction was recorded in the ~~aeroplane~~ aircraft maintenance record/logbook.

'Flight' (for the purposes of this MMEL): a flight is the period of time between the moment when an ~~aeroplane~~ aircraft begins to move by its own means, for the purpose of preparing for take-off, until the moment the aeroplane comes to a complete stop on its parking area, after the first landing.

'Icing conditions' means an atmospheric environment that may cause ice to form on the ~~aeroplane~~ aircraft or in the engine(s), as defined in the AFM.

'If installed' means that the item is either optional or is not required to be installed on all ~~aeroplane~~ aircraft covered by the MMEL.

[…]

'Master Minimum Equipment List (MMEL)' means a document approved by ~~the Agency~~EASA that establishes the ~~aeroplane~~ aircraft items that are allowed to be inoperative under the conditions specified ~~there~~in that document for a specific type of ~~aeroplane~~ aircraft.

'Minimum Equipment List (MEL)' means a document approved by or declared to the competent authority, as applicable, that authorises an operator to dispatch an ~~aeroplane~~ aircraft with ~~aeroplane~~ aircraft items that are inoperative under the conditions specified ~~there~~in the document.

[…]

Appendix IV — Item list

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 21 Air conditioning					**PAGE: 21-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
21-20-1	**Fresh air ventilation outlets**				
21-20-1A	(ALL)	C	–	1	Any ~~in excess of one~~of this equipment that is surplus to the equipment required to be operative may be inoperative.
21-30-1	**Pressurisation controller**				
21-30-1A	(CAT aeroplanes operations)	C	–	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing oxygen use~~the use of oxygen are complied with. *(O) Procedures must be established to ensure the aeroplane is operated unpressurised.*
21-30-1B	(NCO/SPO aeroplanes operations)	D	–	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing~~ the use of oxygen ~~use~~are complied with. *(O) Procedures must be established to ensure that the aeroplane is operated with the cabin unpressurised.*
	(continued)				

ATA CHAPTER: 21 Air conditioning					**PAGE: 21-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
21-30-2	**Outflow/safety valves**				
21-30-2A	(CAT aeroplanes operations)	C	–	–	(M)(O) May be inoperative provided that: (a) the affected valve(s) is (are) secured OPEN or removed, (b) the flight is conducted with the cabin unpressurised, and (c) the regulations that require~~ing~~ the use of oxygen ~~use~~are complied with. *(M) Procedures must be established to secure the valve(s) open or remove it (them).* *(O) Procedures must be established to ensure that the aeroplane is operated with the cabin unpressurised.*
21-30-2B	(NCO/SPO aeroplanes operations)	D	–	–	(M)(O) May be inoperative provided that: (a) the affected valve(s) is(are) secured OPEN or removed, (b) the flight is conducted with the cabin unpressurised, and (c) the regulations that require~~ing~~ the use of oxygen ~~use~~are complied with. *(M) Procedures must be established to secure the valve(s) open or remove it (them).* *(O) Procedures must be established to ensure the aeroplane is operated with the cabin unpressurised.*
	(continued)				

ATA CHAPTER: 21 Air conditioning					**PAGE: 21-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
21-30-3	**Cabin altitude indicator**				
21-30-3A	(ALL aeroplanes operations)	D	1	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing~~ the use of oxygen ~~use~~ are complied with. *(O) Procedures must be established to ensure the aeroplane is operated with the cabin unpressurised.*
21-30-4	**Cabin altitude warning system**				
21-30-4A	(ALL aeroplanes operations)	C	1	0	May be inoperative provided that the flight is conducted at or below the cabin altitude warning limit, but not above 10 000 feet AMSL.
21-30-4B	(ALL aeroplanes operations)	D	1	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing~~ the use of oxygen ~~use~~are complied with. *(O) Procedures must be established to ensure that the aeroplane is operated with the cabin unpressurised.*
	(continued)				

ATA CHAPTER: 21 Air conditioning						**PAGE: 21-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
21-30-5	**Cabin rate of climb indicator**					
21-30-5A	(ALL aeroplanes operations)	D	1	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing~~ the use of oxygen ~~use~~are complied with. *(O) Procedures must be established to ensure that the aeroplane is operated with the cabin unpressurised.*	
21-30-6	**Differential pressure indicator**					
21-30-6A	(ALL aeroplanes operations)	D	1	0	(O) May be inoperative provided that: (a) the flight is conducted with the cabin unpressurised, and (b) the regulations that require~~ing oxygen use~~the use of oxygen are complied with. *(O) Procedures must be established to ensure that the aeroplane is operated with the cabin unpressurised.*	
21-40-1	**Heating system**					
21-40-1A	(CAT/SPO)	C	–	0	May be inoperative.	
21-40-1B	(NCO) (continued)	D	–	0	May be inoperative.	

ATA CHAPTER: 21 Air conditioning					**PAGE: 21-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
21-50-1	**Air conditioning system**				
21-50-1A	(CAT/SPO)	C	1	0	(M) May be inoperative. *(M) Procedures must be established to ensure that the inoperative air conditioning system does not have any adverse effect on engine operation, pressurisation or the cooling of instruments~~cooling~~.*
21-50-1B	(NCO)	D	1	0	(M) May be inoperative. *(M) Procedures must be established to ensure that the inoperative air conditioning system does not have any adverse effect on engine operation, pressurisation or the cooling of instruments~~cooling~~.*

Additional considerations:

— **21-20-1A Fresh air ventilation outlets:** cockpit and cabin compartments must be suitably ventilated through an adequate supply of fresh air.

— For unpressurised flights, the (O) procedure should indicate that when on-board oxygen ~~on-board~~ is not sufficient or oxygen is not used, the flight shall be performed at or below 10 000 ft above mean sea level (AMSL).

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 22 Auto-flight					**PAGE: 22-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
22-10-1	**Autopilot/Stability Augmentation System (SAS)**				
22-10-1A	(SPO/NCO)	D	–	0	(M)(O) May be inoperative provided that: (a) the Autopilot/SAS is deactivated as applicable, (b) the AFM limitations are observed, and (c) operations do not depend upon its use. *(M) Procedures must be established to ensure that the autopilot/SAS will not engage during the flight.* *(O) Procedures must establish any applicable restrictions (e.g. approach and landing minima, en-route operations, etc.).*
22-10-1B	(CAT)	B	–	0	(M)(O) May be inoperative provided that: (a) the autopilot/SAS is deactivated as applicable, (b) the flight is conducted under VFR for single pilot operations, (c) AFM limitations are observed, and (d) operations do not depend upon its use. *(M) Procedures must be established to ensure that the autopilot will not engage during the flight.*
	(continued)				

ATA CHAPTER: 22 Auto-flight					**PAGE: 22-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				*(O) Procedures must establish any applicable restrictions (e.g. approach and landing minima, en-route operations, etc.).*
22-10-2	**Autopilot/SAS disconnect functions — Quick release controls**				
22-10-2A	(ALL)	C	–	1	(O) Any ~~in excess of~~ of this equipment that is surplus to the one item of equipment required to be operative ~~one~~ may be inoperative provided that: (a) the operative one is on the pilot flying side, and (b) the approach and landing minima do not require the use of the autopilot. *(O) Procedures must establish any applicable restrictions (e.g. approach and landing minima, en-route operations, etc.).*
22-10-2B	(ALL)	B	–	0	May be inoperative provided that the autopilot/SAS is not used (refer to item 22-10-1).
	(continued)				

ATA CHAPTER: 22 Auto-flight					**PAGE: 22-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
22-10-4	**Yaw damper**				
22-10-4A	(ALL aeroplanes)	C	1	0	(M) May be inoperative provided that the yaw damper is independent and unrelated to autopilot operation. *(M) Procedures must be established to ensure that no electrical or mechanical fault exists that would have an adverse effect on any flight control system.*

ATA CHAPTER: 22 Auto-flight				**PAGE: 22-x**
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)				
22-10-4B (ALL aeroplanes)	-	1	0	May be inoperative provided that the autopilot is not used (refer to item 22-10-1).

Additional considerations:

— **22-10-1 Autopilot/SAS:** any increase in crew workload has to be considered for the intended operations. Any additional limitations, such as the flight duration, may result from this consideration.

— **22-10-1B Autopilot/SAS:** depending upon the use of the autopilot/SAS in routine procedures, single pilot CAT operations may be restricted to day VMC only.

— **22-10-4 Yaw damper:** AFM limitations must be complied with, if any.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 23 Communications						**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
23-10-1	**Headsets**					
23-10-1A	(NCO)	D	–	0	May be inoperative or missing provided that procedures do not depend upon its use.	
23-10-1B	(ALL)	D	–	–	Any ~~in excess of~~ of this equipment that is surplus to the one item of equipment required to be operative ~~one~~ for each flight crew member may be inoperative or missing. Note: a headset consists of a communication device which includes two earphones to receive and a microphone to transmit audio signals to the aircraft~~aeroplane's~~ communication system.	

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 23 Communications						**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
23-10-2	**Audio selector panels**					
23-10-2A	(ALL)	D	–	–	Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ for each flight crew member may be inoperative or missing.	
23-10-2B	(ALL)	D	–	0	(O) May be inoperative provided that: (a) the flight is conducted under VFR, and (b) alternate procedures are established and used for ensuring the required communication.	
	(continued)					

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					*(O) Procedures must be established to ensure the required communication.*

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
23-10-3	**Flight crew compartment speakers**				
23-10-3A	(SPO/NCO)	C	–	0	(O) May be inoperative provided that alternate means are available and used for ensuring the required communication. *(O) Procedures must be established to ensure the required communication*
23-10-3B	(CAT)	C	–	0	May be inoperative provided that: (a) one headset is operative and used by each flight crew member, and (b) a spare operative headset is readily available in the flight crew compartment.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
23-10-4	**Handheld microphones**				
23-10-4A	(SPO/NCO)	C	–	0	May be inoperative provided that each flight crew member has and uses an operative ~~one~~ headset ~~is operative and used by each flight crew member~~.

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
23-10-4B	(CAT)	C	–	0	May be inoperative provided that: (a) each flight crew member has and uses an operative headset~~one headset is operative and used by each flight crew membe~~, and (b) a spare operative headset is readily available in the flight crew compartment.
	(continued)				

Aircraft applicability: Aeroplanes

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
23-10-5	**Stick/yoke mounted push-to-talk switches**				
23-10-5A	(NCO)	D	–	0	May be inoperative provided that the associated handheld microphone is operative.
23-10-5B	(SPO/CAT)	D	–	0	May be inoperative provided that: (a) the flight is conducted under day VFR, and (b) the associated handheld micro-phone is operative.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 23 Communications					**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
23-11-1	**Long range communication systems**				

ATA CHAPTER: 23 Communications						**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
23-11-1A	(ALL)	D	–	–	Any ~~in excess of those~~ of this equipment that is surplus to the one item of equipment required to be operative may be inoperative.	
23-12-1	**VHF communication systems**					
23-12-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative may be inoperative.	
23-20-1	**Datalink**					
23-20-1A	(ALL)	D	–	0	May be inoperative provided that procedures do not require its use.	
	(continued)					

ATA CHAPTER: 23 Communications						**PAGE: 23-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
23-30-1	**Public address system**					
23-30-1A	(ALL)	D	1	0	May be inoperative provided that procedures do not depend upon its use.	
23-30-1B	(ALL)	C	1	0	(O) May be inoperative provided that alternate procedures are established and used. *(O) Procedures must be established to provide alternate means for communication between the flight crew compartment and the cabin, in normal and emergency situations.*	
23-40-1	**Flight crew interphone system**					
23-40-1	(ALL)	D	-	-	Any ~~in~~of this equipment that is surplus to the equipment ~~excess of those~~ required to be operative may be inoperative.	

Additional considerations:

— **23-10-2 Audio selection panels:** There may be components of the audio control panel that are inoperative; however, the panel is still adequate for flight. The item does not address sub-components, and it is considered to be the pilot-in-command's decision to dispatch with necessary equipment that is operative.

— **23-10-3 Flight crew compartment speakers:** It should be ensured that the affected flight crew compartment speaker is not used for crew intercommunication when smoke masks are used unless single pilot operations are conducted. Indeed, with smoke masks on, a typical installation has the pilot talking through the co-pilot's speaker and the co-pilot through the pilot's speaker. If there are emergency procedures (e.g. smoke) which require the crew to establish communication, then relief for both cannot be granted, but depending on the flight test results, relief for one may be possible.

All aural alerts, messages and other communications which are normally routed through the flight crew compartment speakers should remain audible through the headsets.

— **23-30-1 Public address system:** 23-30-1B: ~~The a~~Alternate procedures will have to be developed to account for any procedures that are based on the use of the public address system, particularly in areas such as lavatories.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 24 Electrical					**PAGE: 24-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
24-40-1	**External power system**				
28-40-1A	(ALL)	D	1	0	May be inoperative.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
25-11-1	**Flight crew compartment seats**				
25-11-1-1	**Power adjustments**				
25-11-1-1A	(ALL)	D	–	0	May be inoperative.
25-11-1-2	**Manual adjustments**				
25-11-1-2-1	Horizontal				
25-11-1-2-1A	(ALL)	C	–	0	(M) May be inoperative provided that: (a) the affected seat is secured and locked, (b) the position is acceptable to the flight crew member, and (c) the seat position when the seat is used allows full travel of the flight controls. *(M) Procedures must be established to secure the seat position.*
25-11-1-2-2	Vertical				
25-11-1-2-2A	(ALL)	C	–	0	May be inoperative provided that the associated power adjustment of the affected seat is operative.
	(continued)				

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
25-11-1-2-2B	(ALL)	C	–	0	(M) May be inoperative provided that: (a) the affected seat is secured or locked, and (b) the position is acceptable to the flight crew member. *(M) Procedures must be established to secure the seat position.*
25-11-1-3	**Other adjustments except horizontal and vertical adjustments**				
25-11-1-3A	(ALL)	C	–	0	(M) May be inoperative provided that: (a) the affected seat is secured or locked, and (b) the position is acceptable to the flight crew member. Note: if an inoperative armrest hinders an emergency evacuation or any other flight crew compartment duties, it should be removed. *(M) Procedures must be established to secure the seat position.*
(continued)					

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
25-11-1-4	**Safety harnesses**				
25-11-1-4A	(ALL)	C	–	1	Any ~~in excess of~~ of this equipment that is surplus to the one item of equipment required to be operative ~~one~~ may be inoperative provided that: (a) the flight is conducted in single pilot operations, and (b) the affected seat is not occupied.
25-11-1-5	**Crew seat armrest**				
25-11-1-5A	(ALL)	C	–	0	(M) May be inoperative provided that: (a) it does~~n't~~ not hinder emergency egress, and (b) it does~~n't~~ not block access to the flight controls or restrict any other flight deck duties. *(M) Procedures must be established to remove an inoperative armrest if it may harm the crew member.*
25-21-1	**Passenger seats**				
25-21-1A	(ALL)	D	–	–	(M) May be inoperative provided that: (a) the inoperative seat does not block an emergency exit, (b) the inoperative seat does not restrict any passenger from access to the main aeroplane aisle, and (c) the affected seat(s) are blocked and placarded 'DO NOT OCCUPY'.
(continued)					

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					Note: a seat with an inoperative or missing occupant restraint system (seat belt, safety harness, as applicable) is considered to be inoperative. *(M) Procedures must be established to:* — *provide guidance for identifying the affected seat(s), and* — *provide a practical means of prohibiting the use of the affected seat(s).*
25-21-1-1 25-21-1-1A	Recline functions (ALL)	D	–	–	(M) May be inoperative and the seat may be occupied provided that the seat is secured in the take-off and landing position. *(M) Procedures must be established to provide a practical means of securing the seat in the take-off and landing position.*
25-21-1-1B	(ALL)	C	–	–	May be inoperative provided that the seat back is immovable in the take-off and landing position.
25-21-1-2	Under seat baggage restraining bars (continued)				

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
25-21-1-2A	(ALL)	D	–	–	May be inoperative or missing provided that: (a) baggage is not stowed under the associated seat, and (b) the associated seat is placarded 'DO NOT STOW BAGGAGE UNDER THIS SEAT'.
25-21-1-3	Passenger seat armrests with recline control mechanism				
25-21-1-3A	(ALL)	D	–	–	(M) May be inoperative, damaged or missing, provided that: (a) the armrest does not block an emergency exit, (b) the armrest is not in such a position that it restricts any passengers from accessing the aeroplane's aisle, and (c) if the armrest is missing, the associated seat is secured in the full upright position. *(M) Procedures must be established to provide a practical means of securing the associated seat in the full upright position.* *(M) Procedures must be established to remove any damaged armrest which may harm the passenger.*
(continued)					

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
25-21-1-4	Passenger seat armrests without recline control mechanism				
25-21-1-4A	(ALL)	D	–	–	(M) May be inoperative, damaged or missing, provided that: (a) the armrest does not block an emergency exit, and (b) the armrest is not in such a position that it restricts any passengers from accessing the aeroplane's aisle. *(M) Procedures must be established to remove any damaged armrest which may harm the passenger.*
25-21-1-5	Swivel/travel mechanisms				
25-21-1-5A	(ALL)	D	–	–	(M) May be inoperative provided that: (a) the associated seat is secured in the take-off and landing position, and (b) the associated seat does not restrict emergency egress. *(M) Procedures must be established to provide a practical means of securing the associated seat in the take-off and landing position.*
	(continued)				

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
25-21-1-5B	(ALL)	C	–	–	May be inoperative provided that the associated seat is immovable in the take-off and landing position.
25-60-1	**Electrical torches/flashlights (incl. holders)**				
25-60-1A	(SPO/NCO)	D	–	0	May be inoperative or missing for daylight operations.
25-60-1B	(ALL)	C	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative for the intended flight may be inoperative or missing.
25-60-2	**Life rafts**				
25-60-2A	(ALL)	D	–	–	(M) Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative for the intended flight may be inoperative or missing, provided that the inoperative unit is removed from the aeroplane, and its installed location is placarded as inoperative; or is removed from the installed location, secured out of sight, and the inoperative unit and its installed location are placarded as inoperative. *(M) Procedures must be established to:* — *provide instructions to placard the inoperative unit and its installed location, and* — *secure the inoperative unit in an out-of-sight location if possible.*
	(continued)				

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued) **25-60-3**	**Survival equipment**				
25-60-A	(ALL)	D	–	–	(M) Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative for the intended flight may be inoperative or missing provided that the inoperative unit is removed from the aeroplane and its installed location is placarded as inoperative; or is removed from the installed location, secured out of sight, and the inoperative unit and its installed location are placarded as inoperative. *(M) Procedures must be established to:* — *provide instructions to placard the inoperative unit and its installed location, and* — *secure the inoperative unit in an out-of-sight location.*

Aircraft applicability: Helicopters

ATA Chapter: 25 Equipment/Furnishings					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25-60-7	**Emergency Flotation Equipment**				
25-60-7A	(Other than commercial air transport operations)	D	-	0	Any of this equipment that is surplus to the equipment required to be operative may be inoperative.
25-60-7B		D	-	0	May be inoperative for flights over land (including take-offs and landings).
25-60-7C	(Performance Class 1)	C	-	0	May be inoperative for flights over water at a distance from land not beyond 10 minutes flying time, at normal cruise speed.
25-60-7D	(Performance Class 2)	C	-	0	May be inoperative provided that: (a) take-offs and landings are not performed over water, and (b) en route operations are not conducted over water at a distance from land that is beyond 10 minutes flying time, at normal cruise speed.
25-60-7E	(Performance Class 3)	C	-	0	May be inoperative provided that: (a) take-offs and landings are not performed over water, and (b) flights are not conducted over water beyond the safe forced-landing distance.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
25-61-1	**Crash axes and crowbars**				
25-61-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative may be inoperative or missing.
25-62-1	**First-aid kits**				
25-62-1A	(ALL)	D	–	1	Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be incomplete or missing.
(continued)					

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
25-63	**Emergency locator transmitters**				
25-63-1	**Automatic emergency locator transmitters ELT(AF)/ELT(AP)/ELT(AD)**				
25-63-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative may be inoperative.
25-63-1B	(ALL aeroplanes)	A	–	0	May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.
25-63-1C	ELT(AF)/ELT(AP) (ALL Helicopters)	A	-	0	May be inoperative provided that: (a) the helicopter is not operated for more than 6 hours after the ELT was found to be inoperative, and (b) a maximum of 24 hours have elapsed since the ELT was found to be inoperative.
25-63-1D	ELT(AD) (ALL helicopters)	C	-	0	May be inoperative for overland operations, or overwater operations at a distance from land that is not beyond 10 minutes flying time at normal cruise speed.
25-63-2	**Survival emergency locator transmitters ELT(S)**				
25-63-2A	(NCO)	D	–	0	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative may be inoperative or missing.

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
25-63-2B	(CAT/SPO)	D	–	–	(M) Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative for the intended flight may be inoperative or missing provided that the inoperative unit is removed from the aeroplane and its installed location is placarded as inoperative; or is removed from the installed location, secured out of sight, and the inoperative unit and its installed location are placarded as inoperative. *(M) Procedures must be established to:* — *provide instructions to placard the inoperative unit and its installed location,* — *secure the inoperative unit in an out-of-sight location.*
(continued)					

ATA CHAPTER: 25 Equipment and furnishings					**PAGE: 25-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
25-63-2C	(NCO)	A	–	0	May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.
25-63-3	**Personal locator beacons (PLB)**				
25-63-3A	(NCO)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative may be inoperative or missing.
25-63-3A	(NCO)	A	–	0	May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.
25-64-1	**Life jackets (or equivalent individual floatation devices)**				
25-64-1A	(ALL)	D	–	–	(M) Any of this equipment that is surplus to the equipment in excess of those required to be operative for the intended flight may be inoperative or missing provided that:

ATA CHAPTER: 25 Equipment and furnishings				**PAGE: 25-x**
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)				(a) the required distribution of operative units is maintained throughout the aeroplane, and (b) the inoperative unit is removed from the aeroplane and its installed location is placarded as inoperative; or is removed from the installed location, secured out of sight, and the inoperative unit and its installed location are placarded as inoperative. *(M) Procedures must be established to:* — *provide instructions to placard the inoperative unit and its installed location, and* — *secure the inoperative unit in an out-of-sight location.*

Additional considerations:

— **25-11-1-4 Flight crew compartment seats — safety harnesses:** padding may be part of the ETSO/TSO, and if it is, padding is, therefore, required.

— **25-21-1 Passenger seats:**

- 25-21-1A:

  Any damage to passenger seats and components must not be detrimental to passenger safety.

  This item and the associated sub-items do not include tray tables that may, if they are inoperative in the non-stowed position, render the seat by itself or the seat row (behind the seat to which the tray table is attached) inoperative. A tray table that is inoperative in the stowed position is considered ~~as~~to be a passenger convenience item.

  For single aisle configurations, the affected seat(s) may include the seat behind and/or the adjacent outboard seats.

- 25-21-1-1:

  Any damage to passenger seats and components must not be detrimental to passenger safety.

  The seat reclined position can be failed in the take-off and landing position other than the full upright position, ~~when~~ if the seat has been certified for~~to~~ this alternate position.

- 25-21-1-2:

Any damage to passenger seats and components must not be detrimental to passenger safety.

The certification basis of the seat or seat assembly will need to be verified to determine whether an inoperative or missing under-seat baggage restraining bar affects the integrity of the seat.

- 25-21-1-3/4/5:

  Any damage to passenger seats and components must not be detrimental to passenger safety.

— **25-60-7 Emergency Flotation Equipment:** the need for additional deactivation/securing conditions should be considered, based on the design of the system.

- **25-63-1 Automatic emergency locator transmitters ELT(AF)/ELT(AP)/ELT(AD) and 25-63-2 Survival emergency locator transmitters ELT(S):**

  An emergency locator transmitter (ELT) is a generic term describing equipment which broadcasts distinctive signals on designated frequencies and, depending on the application, may be activated by impact or manually. An ELT is one of the following:

  An automatic fixed (ELT(AF)): an automatically activated ELT which is permanently attached to an ~~aeroplane~~ aircraft;

  An automatic portable (ELT(AP)): an automatically activated ELT which is rigidly attached to an ~~aeroplane~~ aircraft, but is readily removable from the ~~aeroplane~~ aircraft;

  An automatic deployable (ELT(AD)): an ELT which is rigidly attached to the ~~aeroplane~~ aircraft and which is automatically deployed and activated by impact and, in some cases, also by hydrostatic sensors. Manual deployment is also provided; and

  A survival ELT (ELT(S)): an ELT which is removable from an ~~aeroplane~~ aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors.

  An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed to be attached to a life raft or a survivor.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 26 Fire protection					**PAGE: 26-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
26-24-1	**Hand fire extinguishers**				
26-24-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative by the operating rules may be inoperative or missing.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 26 Fire protection					**PAGE: 26-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
25-60-1	**Protective breathing equipment (PBE)**				
25-60-1A	(ALL)	D	–	–	Any ~~in excess~~ of this equipment that is surplus to the equipment ~~of those~~ required to be operative may be inoperative or missing provided that the inoperative PBE is placarded as inoperative and is removed. Note: inoperative PBE units may be subject to dangerous goods requirements.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 27 Flight controls					**PAGE: 27-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
27-10-1	**Aileron trim tab position indication**				
27-10-1A	(ALL)	C	1	0	(O) May be inoperative provided that: (a) the tab is visually checked for the full range of operation, (b) the operation of the tab ~~operation~~is not restricted, and (c) the tab is positioned to the NEUTRAL (or recommended AFM setting) and the appropriate setting is verified by visual inspection prior to each departure.
27-20-1	**Rudder trim tab position indication**				
27-20-1A	(ALL)	C	1	0	(O) May be inoperative provided that: (a) the tab is visually checked for the full range of operation, (b) the operation of the tab ~~operation~~is not restricted, and (c) the tab is positioned to the NEUTRAL (or recommended AFM setting), and the appropriate setting is verified by visual inspection prior to each departure.
	(continued)				

ATA CHAPTER: 27 Flight controls					**PAGE: 27-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
27-30-1	**Elevator trim tab position indication**				
27-30-1A	(ALL)	C	1	0	(O) May be inoperative provided that: (a) the tab is visually checked for the full range of operation, (b) the operation of the tab ~~operation~~is not restricted, and (c) the tab is positioned to the NEUTRAL (or recommended AFM setting), and the appropriate setting is verified by visual inspection prior to each departure.
27-31-1	**Electric elevator trim system**				
27-31-1A	(ALL)	C	1	0	(M) May be inoperative provided that: (a) the manual trim is checked to be operative, and (b) the electric trim is deactivated. *(M) Procedures must be established to:* — *deactivate the electric trim system, and* — *ensure that the manual trim is not affected.*
	(continued)				

ATA CHAPTER: 27 Flight controls					**PAGE: 27-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
27-50-1	**Flaps position indication**				
27-50-1A	(ALL)	C	1	0	(O) May be inoperative provided that: (a) prior to each flight, the flaps are visually checked for their full travel, (b) the operation of the flaps ~~operation~~ is not restricted, and (c) the flaps are visually checked for their proper setting prior to each departure.
27-70-1	**Gust lock**				
27-70-1A	(ALL)	C	1	0	(M) May be inoperative provided that the gust lock is secured in the unlocked position. *(M) Procedures must be established to secure the gust lock in the unlocked position*.

Additional considerations:

— **27-31-1 Electric elevator trim system:** the autopilot, if installed, may have to be disconnected.

— **27-50-1 Flaps position indication:** the crew should be able to visually check the position of the flaps ~~position~~ without having to leave the flight deck.

— **27-70-1 Gust lock:** AFM limitations, if any, must be respected with the ~~inoperative~~gust lock inoperative. Any other systems that are impacted by the gust lock that is failed in the locked position need to be considered.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 28 Fuel					**PAGE: 28-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
28-40-1 28-40-1A	**Fuel quantity indication** (ALL)	C	–	1	(O) Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative provided that a reliable means is established to determine that the fuel quantity on board meets the regulatory requirements for the flight. *(O) Procedures must be established to determine that the fuel quantity on board meets the regulatory requirements for flight.*

Additional considerations:

— **28-40-1 Fuel quantity indication:** this proposal is made for tanks with interconnected outlets that function~~ing~~ as a single tank, such that individual tanks cannot be isolated. Fuel migration from one wing to the other also needs ~~also~~to be considered.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 30 Ice & rain protection					**PAGE: 30-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
30-00-1	**Inertial separators – Position indicating system**				
30-00-1A	(CAT/SPO)	B	–	0	May be inoperative provided that operations are not conducted in known or forecasted icing conditions.
30-00-1A	(NCO)	C	–	0	May be inoperative provided that operations are not conducted in known or forecasted icing conditions.
30-10-1	**Airframe aerodynamic surface ice protection**				
30-10-1A	(CAT/SPO)	B	–	0	One or more of these may be inoperative provided that operations are not conducted in known or forecasted icing conditions.
30-10-1B	(NCO)	C	–	0	One or more of these may be inoperative provided that operations are not conducted in known or forecasted icing conditions.
	(continued)				

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 30 Ice & rain protection					**PAGE: 30-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
30-31-1	**Pitot heating system**				
30-31-1A	(CAT)	B	–	1	(O) Any of this equipment that is surplus to the one item of equipment ~~in excess of one~~ required to be operative may be inoperative provided that: (a) operations are conducted under day VMC, (b) operations are not conducted in visible moisture or into known or forecasted icing conditions, and (c) the operative pitot heater is verified as being operative prior to each flight. *(O) Procedures must be established for the required pre-flight check.*
30-31-1B	(CAT)	B	–	0	One or more of these may be inoperative provided that: (a) operations are conducted under day VFR, and (b) operations are not conducted in visible moisture or into known or forecasted icing conditions.
30-31-1C	(NCO/SPO)	B	–	0	May be inoperative provided that: (a) operations are conducted under VFR, and (b) operations are not conducted in visible moisture or into known or forecasted icing conditions.
	(continued)				

ATA CHAPTER: 30 Ice & rain protection					**PAGE: 30-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
30-31-3	**Static port heating system**				
30-31-3A	(CAT)	C	–	0	May be inoperative provided that: (a) operations are conducted under day VFR, and (b) operations are not conducted in known or forecasted icing conditions.
30-31-3B	(CAT)	B	–	1	(O) Any of this equipment that is surplus to the one item of equipment ~~in excess of one~~ required to be operative may be inoperative provided that: (a) operations are conducted under day VMC, (b) operations are not conducted in visible moisture or into known or forecasted icing conditions, and (c) the operative static port heater is verified as being operative prior to each flight. *(O) Procedures must be established for required pre-flight check.*
30-31-3C	(NCO/SPO)	C	–	0	One or more of these may be inoperative provided that: (a) operations are conducted under day VFR, and (b) operations are not conducted in known or forecasted icing conditions.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 30 Ice & rain protection					**PAGE: 30-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
30-32-1	**Stall warning mounting plate heater**				
30-32-1A	(ALL)	B	–	0	One or more of these may be inoperative provided that: (a) operations are conducted under day VMC, and (b) operations are not conducted in known or forecasted icing conditions.
30-41-1	**Windshield heating/De-icing system**				
30-41-1A	(ALL)	C	–	0	May be inoperative provided that operations are not conducted in known or forecasted icing conditions.
30-61-1	**Propeller de-ice/anti-ice system**				
30-61-1A	(CAT/SPO)	B	–	0	One or more of these may be inoperative provided that operations are not conducted in known or forecasted icing conditions.
30-61-1B	(NCO)	C	–	0	One or more of these may be inoperative provided that operations are not conducted in known or forecasted icing conditions.

Additional considerations:

— Relief for the above-mentioned items should be further restricted or removed when the loss of the heating/anti-icing system would impact other systems which are integrated with the considered item.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 31 Indicating/Recording systems					**PAGE: 31-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
31-21-1	**Clock**				
31-21-1A	(ALL)	C	–	0	May be inoperative provided that an accurate timepiece is operative ~~o~~in the flight crew compartment, and that it indicates~~ing~~ the time in hours, minutes and seconds. Note: on the basis that the timepiece required does not need to be approved, an accurate pilot's wristwatch which indicates hours, minutes and seconds is acceptable.
31-22-1	**Hour meter**				
31-22-1A	(ALL)	D	1	0	(O) May be inoperative provided that a procedure is established to record the flight time. *(O) Procedures must be established to record the flight time.*

Aircraft applicability: Aeroplanes

ATA CHAPTER: 32 Landing gear					**PAGE: 32-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
32-40-1	**Parking brake**				
32-40-1A	(ALL)	C	1	0	(O) May be inoperative provided that a procedure is established to prevent any movement of the aeroplane when it is stopped or parked. *(O) Procedures must be established to prevent any movement of the aeroplane when it is stopped or parked.*

Additional considerations:

— **32-40-1 Parking brake:** this item is only applicable to aeroplanes for which the parking brake is not required by certification.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 33 Lights					**PAGE: 33-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
33-10-1	**Flight crew compartment lighting** (Excluding internally lighted buttons/switches, emergency lights and annunciations)				
33-10-1A	(ALL)	C	–	0	May be inoperative for daylight operations.
33-10-1B	(ALL)	C	–	–	Individual lights may be inoperative provided that: (a) sufficient lighting is operative to make each required instrument control and other device for which it is provided easily readable, and (b) the lighting configuration at dispatch is acceptable to the flight crew.
33-20-1	**Passenger compartment lighting**				
33-20-1A	(ALL)	D	–	0	May be inoperative provided that passengers are not carried when the aircraft operates~~ing~~ at night.
33-20-1B	(ALL)	C	–	–	Individual lights may be inoperative provided that the lighting configuration at dispatch is acceptable to the flight crew.
	(continued)				

ATA CHAPTER: 33 Lights						**PAGE: 33-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
33-20-2	**Cabin signs (Fasten seat belt/No smoking)**					
33-20-2A	(ALL)	C	-	0	(O) May be inoperative provided that alternate procedures are established and used for briefing passengers.	
33-20-2B	(ALL)	D	–	0	May be inoperative provided that no passenger is carried.	
33-41-1	**Navigation/ Position lights**					
33-41-1A	(ALL)	C	–	0	One or more of these may be inoperative for daylight operations.	
33-41-1B	(ALL)	C	–	–	Any ~~in excess~~ of this equipment that is surplus to the equipment ~~of those~~ required to be operative may be inoperative for night operations.	
33-42-1	**Anti-collision light system**					
33-42-1A	(CAT aeroplanes and ALL helicopters)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment ~~of one~~ required to be operative may be inoperative.	
33-42-1B	(NCO/SPO aeroplanes)	C	–	0	One or more of these may be inoperative for daylight operations.	
	(continued)					

Aircraft applicability: Aeroplanes

ATA CHAPTER: 33 Lights						**PAGE: 33-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
33-43-1	**Wing illumination light**					
33-43-1A	(ALL)	D	1	0	May be inoperative for daylight operations.	
33-43-1B	(ALL)	C	1	0	May be inoperative provided that operations are not conducted at night into known or forecast icing conditions.	

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 33 Lights						**PAGE: 33-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
33-44-1	**Landing lights**					
33-44-1A	(CAT aeroplanes)	B	–	–	50 % of landing lights may be inoperative for night operations.	
33-44-1B	(NCO/SPO)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment ~~of one~~ required to be operative may be inoperative for night operation.	
33-44-1C	(ALL)	C	–	0	One or more of these may be inoperative for daylight operations.	

Additional considerations:

— **33-10-1B Flight deck lighting:** emergency lighting might need to be taken into consideration.

— **33-20-1C Passenger compartment lighting:** no reference is available for the level of required illumination in the cabin.

— **33-20-2 Cabin signs:** a passenger address system might have to be considered.

— **33-42-1 Anti-collision light system:** strobe lights can be considered ~~as~~ to be anti-collision lights only if that was granted by the certification.

— **33-44-1 Landing lights:** alternate dispatch conditions may be proposed that are based on the use of taxi lights if they are adequate for the intent of the purpose.

— **Additional optional lights:** additional dispatch relief could be given for optional lights (external courtesy/utility lights, tail logo lights, recognition lights).

— **Lighted switches/buttons:** additional relief could be given on a case-by-case basis ~~in~~ for a dedicated item.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-10-1	**Primary airspeed indication**				Note: a standby airspeed indication is not considered ~~as~~ to be a primary airspeed indication by this guidance.
34-10-1A	(CAT)	C	–	–	May be inoperative provided that: (a) a primary independent airspeed indication is available at each required pilot's station, and (b) a standby airspeed indication is available.
34-10-1B	(NCO/SPO)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the ~~of~~ one item of equipment required to be operative that is available at the pilot's station may be inoperative, provided it is not associated with emergency procedures.
34-10-2	**Primary altitude indication**				Note: a secondary/standby altitude indication is not considered ~~as~~ to be a primary altitude indication.
34-10-2A	(CAT)	B	–	–	May be inoperative provided that: (a) the flight is conducted under VFR, (b) an independent altitude indication is available at each required pilot's station, and (c) an additional independent altitude indication is operative for single pilot operations. Note: for single pilot operations, a secondary/standby or off-side indication may satisfy condition (b) or (c) if the visibility requirements are met.
(continued)					

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
34-10-2B	(CAT)	B	–	–	May be inoperative provided that: (a) the flight is conducted under VFR in sight of the surface, and (b) a primary altitude indication is available at each required pilot's station.
34-10-2C	(NCO/SPO)	C	–	–	May be inoperative provided that: (a) the flight is conducted under VFR, and (b) an altitude indication is available at each required pilot's station. Note: for single pilot operations, a secondary/standby or off-side indication may satisfy condition (b) if the visibility requirements are met.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-10-3	**Turn and slip indicator**				
34-10-3-1	**Turn indication**				
34-10-3-1A	(CAT)	B	–	0	May be inoperative for single pilot operations provided that operations are conducted under day VFR.
34-10-3-1B	(ALL)	C	–	0	May be inoperative for single pilot operations provided that a standby attitude indication is operative.
34-10-3-1C	(NCO/SPO)	C	–	0	May be inoperative for single pilot operations provided that operations are conducted under day VFR.

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(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)				

ATA CHAPTER: 34 Navigation				PAGE: 34-x
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)				
34-10-3-1D (ALL)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative provided that: (a) the operative turn indication is on the pilot flying side, and (b) the primary attitude indications are operative at each required pilot's station.
34-10-3-1E (ALL)	B	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative provided that: (a) operations are conducted under day VMC, and (b) the primary attitude indications are operative at each required pilot's station.

Aircraft applicability: Helicopters

ATA CHAPTER: 34 Navigation				PAGE: 34-x
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-10-3 Turn and slip indicator				
34-10-3-2 **Turn indication**				

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(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-10-3-2A	B	–	0	May be inoperative provided that at least one slip indicator is operative on the pilot flying side.

Aircraft applicability: Aeroplanes & Helicopters

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
34-10-3-2	**Slip indicator**					
34-10-3-2A	(ALL)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative provided that the operative slip indicator is on the pilot flying side.	
34-10-3-2B	(NCO/SPO aeroplanes)	D	–	0	May be inoperative provided that operations are conducted under day VFR.	

Aircraft applicability: Aeroplanes & Helicopters

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
34-10-4	**Vertical speed indicator**					
34-10-4A	(CAT)	C	–	1	Any of this equipment that is surplus to the one item of equipment required to be operative ~~Any in excess of one~~ may be inoperative provided that the operative VSI is on the pilot flying side.	
34-10-4B	(NCO/SPO) (continued)	C	–	0	May be inoperative for day VFR operations.	

Aircraft applicability: Aeroplanes & Helicopters

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
(continued)						

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
34-10-5	**Outside Air Temperature (OAT) indicator**					
34-10-5A	(ALL)	C	–	0	(O) May be inoperative provided that another air temperature indication is operative that is convertible into OAT. *(O) Procedures must be established to provide guidance to the crew to convert the alternate temperature indication into OAT.*	
34-10-5B	(ALL)	C	–	0	May be inoperative provided that: (a) operations are conducted under VFR, (b) operations are not conducted in known or forecasted icing conditions, and (c) weather reports indicate that at ~~any~~ points on the route that is intended to be flown, the OAT is within the aeroplane's operating temperature limitations.	
34-15-1	**Altitude alerting system**					
34-15-1A	(ALL)	C	–	0	(O) May be inoperative provided that the altitude alerting system is not part of the equipment required for the intended operation. *(O) Procedures must be established to specify any applicable restriction for operations that require~~ing a~~ a specific approval.*	
	(continued)					

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
34-15-2	**Radio altimeter**					

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(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
34-15-2A	(ALL)	C	–	0	May be inoperative provided that the approach minima or the operating procedures are not dependent upon its use.	

Aircraft applicability: Helicopters

ATA Chapter: 34 Navigation					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34-15-3	**Radio Altimeter with an Audio Voice Warning (or equivalent)**				
34-15-3A		A	-	0	(O) May be inoperative provided that: (a) the helicopter is not operated for more than 6 hours over water since after the time when the radio altimeter was found to be inoperative, (b) a maximum of 24 hours have elapsed since the radio altimeter was found to be inoperative, (c) the helicopter is not operated over water at an altitude of less than 500 feet except during take-offs and landings, and (d) the helicopter does not descend below an altitude of 500 feet on approach to a landing over water unless the landing site is clearly visible to the pilot. **Procedures** (O) To provide operational procedures to the flight crew to ensure that the applicable dispatch conditions are satisfied.

Aircraft applicability: Aeroplanes & Helicopters

(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-20-1	**Stabilised direction indication**				
34-20-1A	(CAT)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative for single pilot operations provided that: (a) a stabilised direction indication is operative on the pilot flying side, and (b) a magnetic/standby compass is operative.
34-20-1B	(CAT)	B	–	1	(O) Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative provided that: (a) operations are conducted under day VFR, (b) the stabilised direction indication is displayed at each required pilot's station, and (c) a magnetic/standby compass is operative. *(O) Procedures must be established to ensure that there is an adequate configuration of the displays in accordance with the above condition (b).*
	(continued)				

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
34-20-1C	(NCO/SPO)	C	–	1	Any ~~in excess~~ of this equipment that is surplus to the one item of equipment required to be operative ~~of one~~ may be inoperative provided that a stabilised direction indication is operative on the pilot flying side.
34-20-1D	(NCO/SPO)	C	–	0	May be inoperative on the pilot flying side for day VFR operations, in sight of the surface with an adequate external attitude reference.
34-20-2	**Primary attitude indication**				Note: a secondary/standby attitude indication is not considered ~~as~~ to be a primary indication.
34-20-2A	(CAT)	C	–	1	Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative for single pilot operations provided that the primary attitude indication is operative on the pilot flying side.
34-20-2B	(CAT)	B	–	1	(O) Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative provided that: (a) operations are conducted under VFR, (b) the primary attitude indication is displayed at~~on~~ both pilots' stations, and (c) a standby attitude indication is ~~working~~ operative. *(O) Procedures must be established to ensure that there is an adequate configuration of the displays in accordance with the above condition (b).*
(continued)					

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
34-20-2C	(NCO/SPO)	C	–	1	Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative for single pilot operations provided that the primary attitude indication is operative on the pilot flying side.
34-20-2D	(NCO/SPO)	B	–	0	May be inoperative provided that: (a) operations are conducted under VFR, and (b) a standby attitude indication is operative.
34-20-2E	(CAT)	B	–	0	May be inoperative for single pilot operations provided that: (a) operations are conducted under day VFR in sight of the surface with an adequate external attitude reference, and (b) a standby attitude indication is operative.
34-20-2F	(NCO/SPO)	C	–	0	May be inoperative for single pilot operations provided that operations are conducted under day VFR and in sight of the surface with an adequate external attitude reference.
34-20-2G	(Helicopters with MCTOM < 3 175 kg)	C	-	0	May be inoperative provided that: (a) operations are conducted under day VFR, and (b) operations are not conducted over water and out of sight of land, and (c) visibility is more than 1 500 m.
34-20-3	**Standby attitude indication**				
34-20-3A	(ALL)	C	–	0	May be inoperative provided that the primary attitude indication is not provided through an electronic display indicator.

ATA CHAPTER: 34 Navigation				PAGE: 34-x
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
34-20-3B (Helicopters) (continued)	C	–	0	May be inoperative for single pilot operations provided that operations are conducted under day VFR and in sight of the surface with an adequate external attitude reference.

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
34-22-1	**Magnetic/Standby compass**					
34-22-1A	(ALL aeroplanes and helicopters)	B	–	0	May be inoperative for single pilot operations provided that: (a) a stabilised direction indication is operative on the pilot flying side, and (b) another source of magnetic heading is available and visible by the pilot flying.	
34-22-1B	(ALL aeroplanes)	B	–	0	May be inoperative provided that: (a) operations are conducted under day VFR, and (b) two independent stabilised direction indications are operative.	
34-22-1C	(ALL aeroplanes)	B	–	0	May be inoperative provided that: (a) two independent stabilised direction indications are operative, and (b) another source of magnetic heading is available and visible by the pilot flying.	
34-22-1D	(ALL helicopters)	B	–	0	May be inoperative provided that: (a) operations are conducted under day VFR, and (b) the flight is conducted over routes that are navigated by reference to visual landmarks.	
34-22-1E	(ALL helicopters)	B	–	0	May be inoperative provided that: (a) two independent stabilised direction indications are operative, and (b) the flight is conducted over routes that are navigated by reference to visual landmarks.	
34-31-1	**Marker beacon**					
34-31-1A	(ALL aeroplanes)	C	–	0	May be inoperative under IFR operations provided that the approach procedures do not require marker fixes.	

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
34-31-1B	(ALL aeroplanes and helicopters) (continued)	D	–	0	May be inoperative under VFR operations.	

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
34-32-1	**Approach aids (e.g. ILS, Satellite-Based Augmentation System (SBAS))**				
34-32-1A	(ALL aeroplanes)	B	–	0	May be inoperative under IFR operations provided that approaches and missed approaches, ~~where~~ in which navigation is based on the affected item, are not included in the flight plan.
34-32-1B	(ALL aeroplanes and helicopters)	D	–	0	May be inoperative under VFR operations.
34-40-1	**Airborne collision avoidance system (ACAS)**				
34-40-1A	(CAT)	C	–	0	(O)(M) May be inoperative provided that: (a) the ACAS is deactivated, and (b) operating procedures do not require its use. *(O) Procedures must be established to provide alternate crew procedures, as applicable.* *(M) Procedures must be established to deactivate the ACAS.*
	(continued)				

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
34-40-1B	(NCO/SPO)	D	–	0	(O)(M) May be inoperative provided that: (a) the ACAS is deactivated, and (b) operations are not conducted in an airspace where the ACAS is required. *(M) Procedures must be established to deactivate the ACAS.*	
34-41-1	**Weather detection system** (Antenna, transceiver, controllers, displays)					
34-41-1A	(CAT unpressurised ~~aeroplanes~~/SPO unpressurised ~~aeroplanes~~/NCO aeroplanes and helicopters)	D	–	0	May be inoperative.	
34-41-1B	(CAT pressurised aeroplanes/SPO pressurised aeroplanes)	C	–	0	May be inoperative provided that operations are conducted in day VMC.	
34-41-1C	(CAT pressurised aeroplanes/SPO pressurised aeroplanes)	C	–	0	May be inoperative provided that no thunderstorms or other potentially hazardous weather conditions, regarded as detectable with the airborne weather detection system, are forecasted along the intended flight route.	
	(continued)					

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
	(continued)					
34-41-1-1	Wind shear detection/Warning system predictive function					
34-41-1-1A	(ALL)	C	–	0	May be inoperative.	

Aircraft applicability: Aeroplanes

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
34-43-1	**Terrain awareness warning system (Class B TAWS)**					
34-43-1A	(ALL)	D	–	0	May be inoperative.	
34-43-1-1	Modes 1 and 3					
34-43-1-1A	(ALL)	C	–	0	One or more modes may be inoperative provided that the forward looking terrain avoidance (FLTA) and premature descent alert (PDA) functions are operative.	
34-43-1-2	Glideslope deviation (Mode 5)					
34-43-1-2A	(ALL)	B	–	0	May be inoperative.	
34-43-1-2B	(ALL)	C	–	0	May be inoperative for day VMC only.	
34-43-1-3	FLTA and PDA functions (continued)					

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
34-43-1-3A	(ALL)	B	–	0	May be inoperative provided that: (a) modes 1 and 3 are operative, and (b) the approach procedures do not require its use.
34-43-1-4	Advisory call-outs				
34-43-1-4A	(ALL)	C	–	0	(O) May be inoperative provided that: (a) low visibility approaches that require~~ing~~ the use of affected call-outs are not performed, and (b) alternate procedures are established and used. Note: check flight manual limitations for approach minima. *(O) Procedures must be established to provide alternate crew procedures, as applicable.*
(continued)					

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
34-51-1	**Navigation systems (based on VOR, DME, ADF, Global Navigation Satellite System, Inertial Navigation System)**				
34-51-1A	(CAT)	C	–	–	(O) One or more of these may be inoperative provided that: (a) the navigation systems required for each segment of the intended flight route are operative, and (b) alternate procedures are established and used, where applicable. *(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.*
34-51-1B	(NCO/SPO)	D	–	–	(O) One or more of these may be inoperative provided that: (a) the navigation systems required for each segment of the intended flight route are operative, and (b) alternate procedures are established and used, where applicable. (O) Procedures must be established to give alternate procedures in case the existing operational procedures are affected.
	(continued)				

ATA CHAPTER: 34 Navigation					PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
34-54-1	**Secondary Surveillance Radar (SSR) transponder mode A/C**				
34-54-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment ~~in excess of those~~ required to be operative by the airspace may be inoperative.
34-54-2	**SSR transponder mode S**				
34-54-2A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment required to be operative ~~in excess of those required~~ for the intended flight route may be inoperative. Note : an SSR transponder with an operative Mode S function is defined as a transponder which can provide, at least, elementary surveillance capability.
34-54-2B	(ALL)	C	–	0	One or more of these may be inoperative provided that permission is obtained from the Air Navigation Service Provider(s) when required for the intended flight route.
(continued)					

ATA CHAPTER: 34 Navigation				PAGE: 34-x
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)				Note 1: an SSR transponder with an operative mode S function is defined as a transponder which can provide, at least, elementary surveillance capability. Note 2: elementary surveillance (ELS) capability (Mode S including aeroplane identification and pressure altitude reporting) is required in European Mode S designated airspace. Note 3: altitude reporting, provided by an SSR transponder Mode S function, is required for ACAS II operations. Refer to item 34-40-1 for flight with ACAS II inoperative. Note 4: altitude reporting, provided by an SSR transponder Mode S function, is required for flight into RVSM airspace.
(continued)				

ATA CHAPTER: 34 Navigation						PAGE: 34-x
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions	
(continued)						
34-54-2-1	**Enhanced surveillance functions**					
34-54-2-1A	(ALL)	D	–	0	One or more downlinked aircraft parameters (DAPs) which provide enhanced surveillance may be inoperative when they are not required for the intended flight route.	
34-54-2-1B	(ALL)	C	–	0	One or more downlinked aircraft parameters (DAPs) which provide enhanced surveillance may be inoperative when they are required for the intended flight route. Note: enhanced surveillance capability is required in Mode S enhanced notified airspace.	
34-54-2-2	**Extended squitter (ADS-B out) transmissions**					
34-54-2-2A	(ALL)	D	–	0	One or more extended squitter transmissions may be inoperative when they are not required for the intended flight route.	
(continued)						

ATA CHAPTER: 34 Navigation				PAGE: 34-x
(1) System & sequence numbers item	(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued) 34-54-2-2B (ALL)	C	–	0	One or more extended squitter transmissions may be inoperative when they are required for the intended flight route.

Additional considerations:

— **34-10-5 OAT indicator:** this item applies to reciprocating engine-powered aeroplanes of more than 2 722 kg (6 000 lb) maximum weight and turbine engine-powered aeroplanes.

— **34-15-03 Radio Altimeter with an Audio Voice Warning**: in addition to the equipment required by CAT.IDE.H.145 of Annex IV (Part-CAT) to Regulation (EU) No 965/2012, helicopters involved in NVIS operations shall be equipped with a radio altimeter and a low height warning system that gives visual and audio warnings that are selectable by the pilot and are discernible during NVIS operation.

— **34-20-2A Primary attitude indication:** for electronic cockpits, the standby horizon must be operative.

— **34-51-1 Navigation systems:** the listed items are applicable to simple avionics architectures. In cases of more complex or more integrated architectures, the dispatch conditions need to be adapted accordingly.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 35 Oxygen					**PAGE: 35-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
35-00-1	**Supplemental oxygen system** **Non-pressurised aircraft ~~aeroplanes~~**				
35-00-1A	(ALL)	D	–	–	Any of this equipment that is surplus to the equipment required to be operative ~~in excess of those required~~ may be inoperative.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 35 Oxygen					**PAGE: 35-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
35-10-1	**Flight crew fixed oxygen system** (Supplemental)				
35-10-1-1	Flight deck pressure indications				
35-10-1-1A	(ALL)	C	–	–	(O)(M) One or more of these may be inoperative provided that a procedure is used to ensure that the oxygen supply is above the minimum for the intended flight. *(O)/(M) Procedures must be established to provide an alternate means to compute the available oxygen quantity, e.g. using the pressure gauge located on the bottle.*
	(continued)				

ATA CHAPTER: 35 Oxygen					**PAGE: 35-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
	(continued)				
35-10-1-2	Bottle gauges				
35-10-1-2A	(ALL)	C	–	0	One or more of these may be inoperative provided that the associated flight deck pressure indication is operative.
35-10-1-3	Additional oxygen masks (e.g. supernumerary)				
35-10-1-3A	(ALL)	D	–	–	Any ~~in excess of~~ of this equipment that is surplus to the equipment required to be operative ~~those required~~ may be inoperative.
35-20-1	**Passenger oxygen system**				
	(Supplemental oxygen)				
35-20-1A	(ALL)	C	–	0	(O)(M) May be inoperative provided that: (a) the maximum altitude is limited to 10 000 ft pressure altitude, (b) an adequate supply of fresh air is provided to the cabin, and (c) the passengers are appropriately briefed. *(O)/(M) Procedures must be established to set the aeroplane in a configuration that provides~~ing~~ an adequate supply of fresh air to the cabin.* *(O) Procedures must be established to provide a passenger briefing in accordance with the dispatch configuration.*
35-20-1B	(ALL)	D	–	0	May be inoperative provided that no cabin occupant is carried.

Additional considerations:

— **35-20-1 Passenger oxygen system:** fresh air is non-recirculated air.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 38 Water/Waste					**PAGE: 38-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
38-30-1	**Lavatory waste system**				
38-30-1A	(ALL)	D	1	0	(M) May be inoperative provided that: (a) any waste is drained and the system is inspected for leakage, (b) the system components are deactivated, and (c) lavatory access, if applicable, is closed and placarded 'INOPERATIVE — DO NOT USE' or the affected lavatory system is placarded 'INOP – DO NOT USE'. *(M) Procedures must be established to drain, inspect and deactivate the system.*
38-30-2	**Pilot relief tube**				
38-30-2A	(ALL)	D	-	0	May be missing or inoperative provided that it is not used.

Aircraft applicability: Aeroplanes & Helicopters

ATA CHAPTER: 46 Information systems					**PAGE: 46-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
46-20-1	**Electronic Flight Bag (EFB) Systems**				
46-20-1A	~~(ALL)~~	C	-	0	(O) May be inoperative provided that alternate procedures are established and used where operating procedures require the use of the affected EFB.
46-20-1B	~~(ALL)~~	C	-	1	(O) Any of this equipment that is surplus to the one item of equipment required to be operative may be inoperative provided that alternate procedures are established and used to ensure that the required backup means are available to the crew.
46-20-1C		D	-	0	May be inoperative provided that procedures do not require the use of the affected EFB.
46-20-2	**~~Class 2~~ EFB Installed Resources**				
46-20-2-1	Mounting Device				
46-20-2-1A	~~(ALL)~~	C	-	1	(M) (O) Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative provided that the affected EFB is secured by an alternative means.
46-20-2-1B	~~(ALL)~~	C	-	0	(M) (O) May be inoperative provided that: (a) the associated EFB is used in accordance with the Portable EFB stowage criteria, and (b) alternate procedures are established and used where operating procedures require the use of the affected EFB.
46-20-2-2	Data Connectivity [...] (continued)				

ATA CHAPTER: 46 Information systems					**PAGE: 46-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
(continued)					
46-20-3	**Power Connection for ~~class 1 and class 2~~ Portable EFB**				
46-20-3A	~~(ALL)~~	C	-	1	(M) (O) Any of this equipment that is surplus to the one item of equipment required to be operative ~~in excess of one~~ may be inoperative provided that an alternative power source is available and can be used for the planned duration of use of the affected EFB.
46-20-3B	~~(ALL)~~	C	-	0	(M) (O) May be inoperative provided that alternate procedures are established and used. **Procedures:** *For all entries in ATA 46:* *(M) Procedures must be established to give guidance reference for the deactivation of the affected item, as appropriate, and to provide alternate means, as applicable.* *(O) Procedures must be established to provide instructions to the crew for alternate procedures to be used.*

Additional considerations:
The purpose of entry 46-20-1 is not to require the inclusion of ~~class 1 & 2~~ portable EFBs in an operator's MEL, but it is a means of controlling inoperative EFB equipment. Other means may also be agreed with the competent authority.
Any EFB function which operates normally may be used.

Aircraft applicability: Aeroplanes

ATA CHAPTER: 52 Doors					**PAGE: 52-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
52-10-1	**Door key locks**				
52-10-1	(ALL)	D	–	–	(M) May be inoperative provided that the lock is secured in the UNLOCKED position. *(M) Procedures must be established to secure the lock in the unlocked position.*
52-70-1	**Cabin door warning light**				
52-70-1A	(ALL)	C	1	0	(O) May be inoperative provided that: (a) a flight crew member confirms by visual inspection that all doors are properly closed and locked prior to each departure, (b) the doors are not reopened again prior to departure, (c) the 'Fasten Seat Belt' sign remains ON, and (d) the passengers are briefed prior to each departure to have their seat belts fastened during the entire flight. *(O) Procedures must be established to brief the passengers prior to each departure.*

Aircraft applicability: Aeroplanes

ATA CHAPTER: 61 Propellers					**PAGE: 61-x**
(1) System & sequence numbers item		(2) Rectification interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or exceptions
61-20-1	**Propeller synchrophasing system**				
61-20-1A	(ALL)	C	1	0	May be inoperative.

4. Impact assessment (IA)

The proposed amendments are expected to contribute to updating CS-MMEL and CS-GEN-MMEL. Overall, this would provide a moderate safety benefit, would have no social or environmental impacts, and would provide some economic benefits by streamlining the certification process. There is no need to develop a regulatory impact assessment (RIA).

5. Proposed actions to support implementation

N/A

6. References

6.1. Related regulations

N/A

6.2. Affected decisions

— ED Decision 2014/004/R of the Executive Director of the Agency of 31 January 2014 adopting Certification Specifications and Guidance Material for Master Minimum Equipment List 'CS-MMEL – Initial issue'

— ED Decision 2014/005/R adopting Certification Specifications and Guidance Material for Generic Master Minimum Equipment List 'CS-GEN-MMEL — Initial issue'

6.3. Reference documents

SC-CS-GEN-MMEL-H Special Condition to define the MMEL requirements as Certification Basis for non-complex motor-powered helicopters, published for consultation on 8 October 2015 (https://www.easa.europa.eu/document-library/product-certification-consultations/sc-cs-gen-mmel-h-special-condition-define-mmel)