



**COMMENT RESPONSE DOCUMENT (CRD)
TO NOTICE OF PROPOSED AMENDMENT (NPA) 2011-11**

***on Certification Specifications and Guidance Material related to the development
of a Master Minimum Equipment List (MMEL)***

'CS-MMEL'

**Reactions to this CRD should be submitted via the CRT
by clicking the 'add a general reaction' button.
Please indicate clearly the applicable paragraph.**

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Executive summary

This CRD includes the comments, responses and amended rule text to the NPA introducing CS-MMEL. CS-MMEL is part of the Operational Suitability Data concept in Part 21 mandating the development of a Master Minimum Equipment List (MMEL) for all types.

The CS-MMEL contains the Certification Specifications for establishing the MMEL for complex motor-powered aircraft, and has been derived from existing JAA reference documents in the field (JAR-MMEL/MEL amendment 1, JAA MMEL Procedures Manual version 2 and JAA Administrative & Guidance Material, Section 4: Operations, Part Three: Temporary Guidance Leaflet 26).

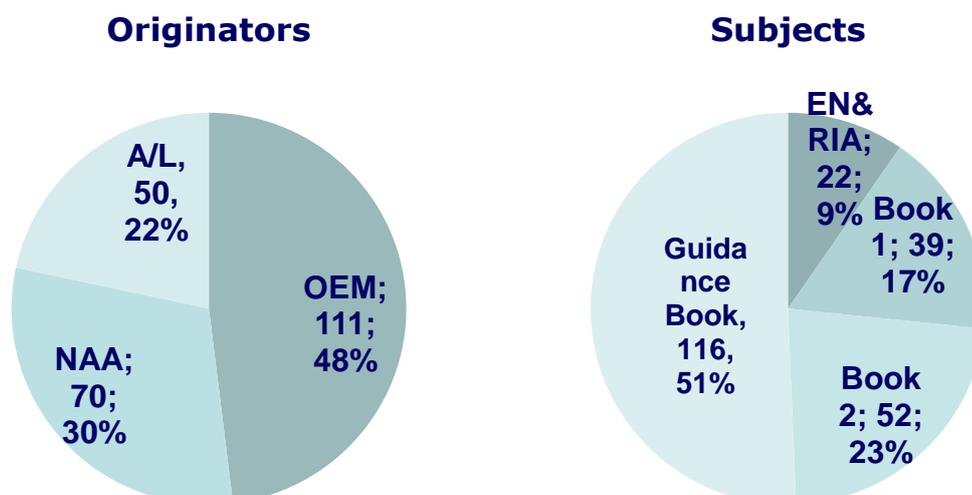
A. Explanatory Note

I. General

1. The purpose of the Notice of Proposed Amendment (NPA) 2011-11, dated 28 June 2011 was to propose Certification Specifications (CSs) and Guidance Material (GM) to address the Master Minimum Equipment List (MMEL) as part of the concept of Operational Suitability Data (OSD) introduced in the Regulation (EC) No 216/2008 as part of the 1st extension package that will be required by an amendment to Commission Regulation (EC) No 1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations.

II. Consultation

2. The draft Executive Director Decision on Certification Specifications and Guidance Material related to the development of MMEL was published on the web site (<http://www.easa.europa.eu>) on 28 June 2011.
3. By the closing date of 31 October 2011, the European Aviation Safety Agency ('the Agency') had received 232 comments from 25 National Aviation Authorities, professional organisations and private companies.
4. The repartition of the comments by originators and by subjects can be summarised by the following charts:



A/L: Airlines, Aviation Personnel Associations; NAA: National Aviation Authorities; OEM: Aircraft Manufacturer and STC holders.

5. In order to handle these comments, the Agency established a comment review group. This group was composed of members of the drafting group. It contained experts from manufacturing industry, operator associations, aviation personnel associations, the Agency and national aviation authorities. The review group met on 21-22 March 2012. All main issues were extensively discussed in the group and even though full consensus on all issues could not be achieved, the Agency drafted the CRD and the resulting text taking into account all the views of the individual experts. The main issues discussed during the review group meeting and reflected in the CRD are described in the following.

6. CS-MMEL applicability to a given MMEL project.

Summary of comments:

As the MMEL is now handled in the frame of the Part-21 and its development will be subject to a Certification Specification, it is not clear if all MMEL projects will have to comply in the future with all the different CS-MMEL paragraphs. How will the CS-MMEL certification basis of a given MMEL project be determined in accordance with the new Part 21 OSD concept?

Response to comments:

The MMEL is part of the OSD which will be included in the Type Certificate of the aircraft. Certification Specifications have been developed stipulating the applicable technical provisions. Once retained in the operational suitability data certification basis, any change to the CS-MMEL will be managed in a similar fashion as for the other CS applicable to the type design. The tracking tools to specify under which operational suitability certification basis an MMEL has been approved will be specified in the Agency's internal procedures.

7. Level of Safety – as intended by the applicable requirements

Summary of comments:

As per the current CS-MMEL: 'MMEL items are prepared to ensure that an acceptable level of safety as intended by the applicable requirements is maintained'. A commentator asked where are the applicable requirements defined for the purpose of the above CS paragraph.

Response to comments:

Interpretative material is added in the associated GM to the related CS-MMEL paragraph to specify that the applicable requirements to be considered for MMEL development include the Type Certification Basis requirements and any operational requirement (including airspace requirements) applicable to the considered item. Furthermore, it is clarified that (b) 'As intended' means that strict compliance with the applicable requirement(s) may not be ensured provided that appropriate mitigation means are proposed ensuring an acceptable level of safety is maintained in line with the overall intent of the requirement(s).

8. Approval status of MMEL operational and maintenance procedures

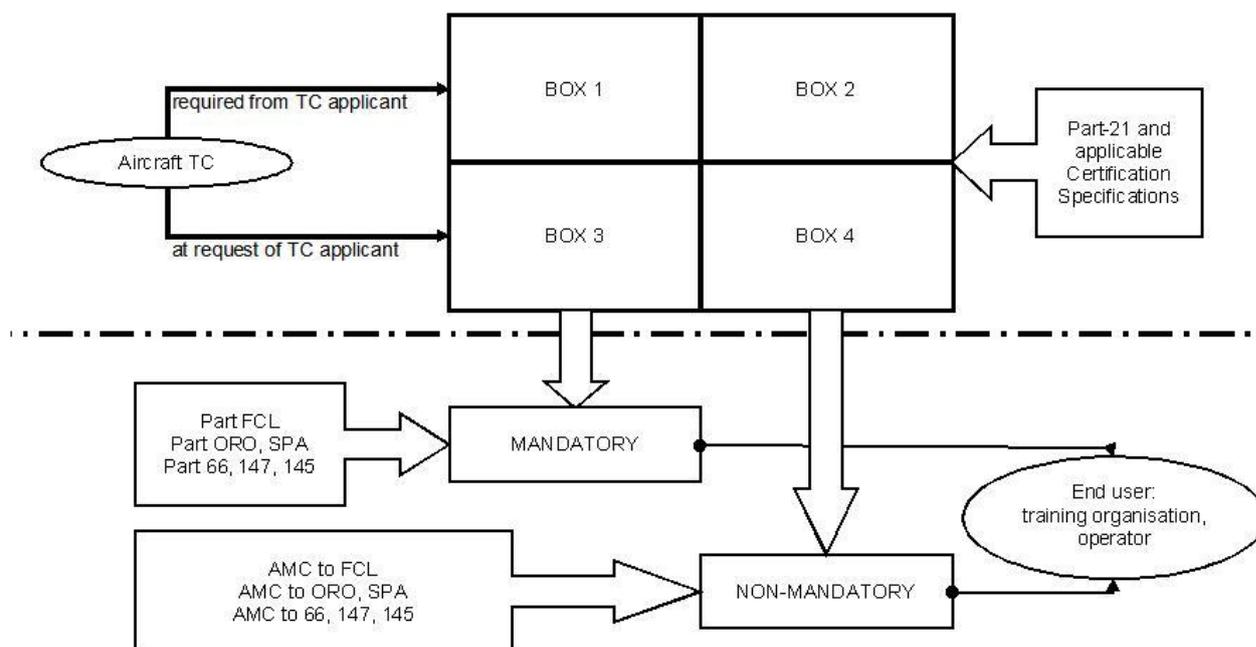
Summary of comments:

It is believed by commentators that operational and maintenance procedures (O)&(M) associated with MMEL items should not be approved by the Agency and their development process are out of the scope of the Agency. Their non-availability shall not preclude the approval of associated MMEL entries. Any requirement or guidance material on the (O)&(M) should be staying at ORO.MLR.105 level only.

Response to comments:

The nature of the (O)&(M) and the current MEL procedures in place at operator's level are supporting the use of the BOX2 type of data as per the OSD boxes concept. Indeed the content of the procedures as issued by the applicant ((S)TC holder) is considered as a non-mandatory data and having the status of a recommendation for the end user. Procedures may be updated at MEL level, subject to the compliance with applicable continuing airworthiness and operational requirements.

Operational and maintenance procedures referenced in the MMEL are required to comply with dedicated CS paragraphs and are therefore considered to be part of the OSD data associated with the MMEL.



9. Criteria for evaluation of MMEL item failure consequences

Summary of comments:

The NPA proposed CS MMEL.145 (c)(1) & (c)(2) paragraphs require that both the consequences of the proposed MMEL dispatch configuration and the consequences of the next worst safety-related failure or external event, if applicable are subject to a qualitative assessment as part of the substantiation.

Furthermore, the assessment shall ensure that the consequences of the proposed MMEL dispatch configuration 'only result in a slight reduction of the aircraft functional capabilities and/or safety margins, or in a slight increase in crew workload, or in a slight discomfort to occupants'. This criterion corresponds to the Minor Failure Condition as defined in CS 25.1309.

Also, it is specified in the NPA that the consequences of the next worst safety-related failure or external event do not normally lead to potentially hazardous or catastrophic failure condition.

It is judged not necessary by the Industry to introduce such provisions that will imply a systematic categorisation of the consequences of the failure which is not required today. The assessment of the acceptability of a given item based on the analysis of the consequences of the dispatch configuration and the consequences of the next worst failure or event in-flight should be left to the judgement of the evaluator. Such assessment of acceptability should be based on the justifications provided by the applicant and not necessarily need a systematic categorisation.

Response to comments:

Although it is acknowledged that the evaluation of the overall consequences of the MMEL configuration should be assessed by adequate use of operational and engineering judgement and should not be confused with the categorisation of failure conditions used for the certification of the aircraft against CS XX.1309 provisions, the Agency also considers that there is a need to specify at CS-MMEL level to which extent the effects of the considered dispatch configuration may impact the safe conduct of the flight by the crew and the safety of the occupants.

The criteria for 'acceptability' should be reflected at justification level. Therefore, the applicable requirements to be taken into account by the assessment should be properly

identified in order to ensure the CS-MMEL 140 Level of Safety is complied with. This should be reflected at some stage in the justifications provided by the applicant.

In order to address the above and to account for the comments of the review group it is therefore proposed to amend CS MMEL.145 (b) to delete the reference to minor failure condition and to replace it by a reference CS MMEL.140, which should be used as a criterion for the qualitative assessment.

10. MMEL, non-normal and emergency procedures compatibility

Summary of comments:

The proposed CS MMEL.140(b) coming from FAA Policy Letter (PL) 63 is not considered appropriate. A system can be fed in emergency, although not necessary, only because the emergency busbar is physically very close to the system to be powered. A system can be required in an emergency procedure, when it is available, but its non-availability will not impair the correct accomplishment of the procedure.

Response to comments:

In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as guidance material to CS MMEL.145 (c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.

11. Criteria for acceptability of D (120 days) rectification interval category.

Summary of comments:

The proposed criteria required to be fulfilled prior to authorising an MMEL item to be given a rectification interval category D are judged too stringent by some commentators who believe a safe operation can be achieved when one or all criteria are not fulfilled based on operational consideration.

Response to comments:

It is believed by the Agency that the current criteria defined in CS MMEL.130 applicable to rectification interval category D are already allowing room for interpretation so that it is not always excluded to have D category granted based on specific considerations.

The criterion for category D classification is maintained at CS level with a modified paragraph (1) to specify the workload shall not be 'adversely' affected.

12. One-time extension programme for rectification interval category B, C & D.

Summary of comments:

Limiting the extension of rectification interval to one-time only is not accepted by some commentators who argued that the rectification intervals were introduced in MMELs for the sole purpose of avoiding downgraded maintenance and to incite the operators in carrying the repairs in a reasonable period of time. They were in no case set up as time limitations for justifying MMEL items.

Response to comments:

ORO.MLR.105(f) procedure for extension only foresee a one-time extension of the rectification interval B,C and D.

Although a safe operation can be demonstrated when dispatching a given aircraft for a period of time exceeding twice the time associated to the corresponding rectification

interval, the operation of the aircraft is no longer covered by the scope of the MMEL/MEL system.

Other regulatory procedures may then be used to allow continuous operation of the aircraft based on appropriate records but these are beyond the scope of the MMEL.

13. Non-safety related equipment

Summary of comments:

Commentators believe the voluntary inclusion of non-safety related equipment into an MMEL should not be subject to compliance with CS-MMEL.

Response to comments:

The 'non-safety related items' will be further defined in Part-ORO (GM1-OR.MLR.105(a) Minimum Equipment List (MEL)). Once the decision to cover a non-safety related item in the MMEL is taken by the applicant, then it should be subject to the same requirements as any other MMEL item.

14. Guidance Book issues – European specific operational related items

Summary of comments:

The guidance provided in appendix 1 to GM1 MMEL.145 of the NPA is sometimes reflecting the specific European operational requirements. Some manufacturers expressed their concerns regarding the use of their type specific MMEL by third country operators, which may consequently at the level of the operator MEL, be bounded by an MMEL which is based on operational requirements which may not directly apply to a non-European operator.

Those items were typically addressed by the generic reference to 'As required by regulations' up to now in the Agency accepted MMELs. The use of the TGL 26 was then allowing the EU operators to select their MEL content as appropriate. Third country operators could use different content, as agreed with their competent authority.

Response to comments:

In order not to constraint the third country operators using the Agency approved MMELs, it is proposed to enable the identification of the MMEL items which have been based on European operational requirements using the associated guidance developed by the Agency. Provisions will be introduced in the MMEL preamble to permit these items to be adapted to the applicable operational requirements when these differ from the European operational requirements. In this case, the MEL content is still considered to be in conformity with the content of this MMEL.

15. Guidance Book issues – TGL 26 inherited rectification intervals

Summary of comments:

The guidance provided in Appendix 1 to GM1 MMEL.145 of the NPA is not always felt adapted to the specific design of some products as expressed by some manufacturers. Also the legacy of TGL 26 is criticised regarding the established rectification intervals A which have now been upgraded at CS-MMEL level and may be difficult to challenge once an applicant wishes to include a corresponding item in its MMEL.

Response to comments:

The proposed rectification interval referred to in the comments has been transposed from existing TGL 26 content as it was adopted by the JAA. The intent was to ensure smooth transition from the existing situation to the future one by not preventing industry to continue using the existing relief that has been accepted by most of the competent authorities as a basis for the MEL content. As explained in the Explanatory Note, an

equivalent basis for relief can still be made available to the operators, if supported by the (S)TC holder, at MMEL level. Alternate rectification intervals may also be acceptable provided that robust and comprehensible rationales are made available by the applicant. These could be used at a later stage as material to update the guidance material as published in the CS-MMEL Book 2.

III. Update of the Decision on organisation requirements for MEL (Part-ORO)

16. Background

During the comment period of the NPA 2011-11, a consistency check among several regulations currently being drafted or already published has highlighted the need for changes/clarifications in the operator's requirements for MEL. This need was re-inforced by some comments received for the CS-MMEL and by a safety recommendation (SPAN-2011-033). Moreover, certain JAR-MMEL/MEL and TGL 26 elements are not fully addressed in CS-MMEL, since they are strictly related to MEL issues, or not clear enough. MEL requirements are in fact covered by the organisations requirements laid down in Part-ORO (namely in ORO.MLR.105).

17. Description of changes:

All AMCs and GMs dealing with MEL are presented to give the reader a complete overview of the subject.

Amended or added text is shown with grey shading: **new**

Deleted text is shown with a strike through: ~~deleted~~.

An AMC to ORO.GEN is also amended. Content changes are the following:

AMC1 ORO.GEN.110 on MEL training programme for personnel dealing with MEL use is added to transpose existing material from TGL 26.

AMC1 ORO.MLR.105(d) on MEL format is added to transpose ACJ-JAR-MMEL/MEL.065.

AMC1 ORO.MLR.105(d)(1) on MEL preamble is added to clarify certain differences between MMEL and MEL, to transpose JAR-MMEL/MEL.005, JAR-MMEL/MEL.070 and TGL 26 2.12 and to respond to the safety recommendation SR SPAN-2011-033 requiring to identify the origin of malfunction before using the MEL.

AMC1 ORO.MLR.105(d)(3) and GM1 ORO.MLR.105(d)(3) on MEL scope are added to transpose JAR-MMEL/MEL.055, ACJ-JAR-MMEL/MEL.055 and ACJ JAR-MMEL/MEL.040/080.

GM3 ORO.MLR.105(d)(3) on the purpose of the MEL is added.

IV. Publication of the CRD

18. All comments received have been acknowledged and incorporated into this Comment Response Document (CRD) with the responses of the Agency.

19. In responding to comments, a standard terminology has been applied to attest the Agency's acceptance of the comment. This terminology is as follows:

- **Accepted** – The comment is agreed by the Agency and any proposed amendment is wholly transferred to the revised text.
- **Partially Accepted** – Either the comment is only agreed in part by the Agency, or the comment is agreed by the Agency but any proposed amendment is partially transferred to the revised text.
- **Noted** – The comment is acknowledged by the Agency but no change to the existing text is considered necessary.

- **Not Accepted** - The comment or proposed amendment is not shared by the Agency
20. The resulting text published with this CRD does not include the following supporting material originally contained in the NPA Appendix I to GM1 MMEL.145:
- Existing TGL 26 text shown in comparison with the proposed EASA guidance for MMEL items
 - Regulatory references
 - Explanatory notes
21. The Executive Director Decision on Certification Specifications and Guidance Material related to the development of a Master Minimum Equipment List (MMEL) will be issued at least two months after the publication of this CRD to allow for any possible reactions of stakeholders regarding possible misunderstandings of the comments received and answers provided.
22. Such reactions should be received by the Agency not later than **10 September 2012** and should be submitted using the Comment-Response Tool at <http://hub.easa.europa.eu/crt>.

B. Comments and responses to NPA 2011-11

(General Comments)	-
comment	<p>4 comment by: <i>Association of Dutch Aviation Technicians NVLT</i></p> <p>Before a technical complaint will be deferred according the MEL, to our opinion the source of the failure must be known, this statement should be in the MEL and proper trouble shoot procedures should be established for the persons involved.</p> <p>Due the fact that source of the failure must be known before a technical complaint can be deferred according the MEL, it is very important to acknowledge that all actions which are leading to the determination of the source of the failure should be considered as "maintenance". F.i. the Aircraft Maintenance Manual A.M.M. has to be consulted for limits, trouble shoot procedures, tests etc. As the definition of "maintenance" is mentioned in COMMISSION REGULATION (EC) No 2042/2003 Article 2, Definitions (h). It is obvious that this "maintenance" has to be justified by a certificate of release to service C.R.S. see 145.A.50 Certification of maintenance.</p>
response	<p>Noted</p> <p>An AMC to Part-ORO (subpart MLR) -will specify that the operator should provide guidance on fault identification for the appropriate application of the MEL.</p> <p>Such guidance would determine whether or not an action falling under the definition of maintenance under regulation (EC) 2042/2003 is required.</p>
comment	<p>30 comment by: <i>Association of Dutch Aviation Technicians NVLT</i></p> <p>Pls. establish a procedure in the MEL for a "repetitive complaint", it is now unclear how to use the MEL in a case a complaint reoccurs after a flight. F.i. if a complaint has been solved in the A.T.L. and the next flight or day the complaint reoccurred and the A/C can be dispatched according the MEL, which date for the deferment of the complaint should be used?</p>
response	<p>Noted</p> <p>Repetitive defects, including MEL items, should be managed in accordance with the continuing airworthiness management procedures established by the operator in its CAME.</p>
comment	<p>100 comment by: <i>AIRBUS</i></p> <p><u>Comments applicable to the complete Draft Decision CS-MMEL:</u></p> <p><u>Comment 1</u>): The terminology "Certification-Specification" is now used by EASA for the document addressing the MMEL. EASA should confirm if, in addition to the domain of airworthiness, this terminology is also valid for the scope of Operations (like the MMEL), and ATM.</p> <p><u>Comment 2</u>): Although the MMEL is not a certification document, it is not clear if all MMEL Projects will have in the future to namely comply with ALL the different CS-MMEL-XXX similarly to what happens for the certification documents in the certification process or not. As already said many time, and again, since the MMEL is not a certification document but an operational</p>

document, it would be then completely inappropriate to be obliged to comply with a similar process as for the certification documents that, in addition to obviously increase significantly the workload of the Agency and the applicant, will not bring any added value.

response

Not Accepted

The MMEL is part of the Operational Suitability Data which will be included in the Type Certificate of the aircraft. Therefore, as a logical consequences of that Certification Specifications have been developed to specify the applicable requirements which, once retained in the operational suitability data certification basis, will act in a similar fashion as the other CS applicable to the Type Design. We acknowledge the fact the MMEL is the basis for elaborating the Operator's MEL which is part of the Operation's Manual, however, we do not share the Commenter's statement that the MMEL is not a certification document but only an operational document, as it also provides the means to ensure the aircraft is in an airworthy condition for all the types of operations intended.

comment

125 comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

The Swedish Transport Agency find the proposal acceptable and agree without any comments.

response

Noted

comment

157 comment by: *Swiss International Airlines / Bruno Pfister*

SWISS Intl Air Lines takes note of the NPA 2011-11 without objections.

response

Noted

comment

158 comment by: *AIRBUS*

General comments on the complete NPA:

- Adequate time was missing to carefully review the complete NPA for bringing all the necessary comments. Sufficient sessions of the Review Group will be then necessary for reviewing in details all comments received. Such approach will also benefit to the Agency by finally resulting in the publication of a new rule that would be well accepted by the aviation community thanks to appropriate involvement in all preparation steps and resulting appropriate decisions.

- The MMEL is not a standalone document usable as it is for operations but it is the necessary guidelines for preparing the operators' MEL. Both the MMEL and the MEL are then documents that are necessarily linked and must be then consistent. Therefore, it is NOT AT ALL APPROPRIATE having separated the regulations applicable to the MMEL and those applicable to the MEL. This will obviously lead to increasing inconsistencies between the regulations applicable to each document and also to the documents themselves.

This is strictly for avoiding such potentially RISKY situation that the regulations applicable to the MMEL and those applicable to the MEL were defined and published by the JAA in a SINGLE document, the JAR-MMEL/MEL, following the recommendation of the JAR-MMEL/MEL Steering Group.

Today, it is understood that all the regulations applicable to the MMELs will be

in the CS-MMEL.

In which document(s) all the regulations applicable to the MELs will be included?

response

Noted

The comment on the lack of time to review the NPA is noted. The Agency normal period of 3 months was extended by an additional month and we regret all the necessary comments could not be provided. We invite the Commenter to provide those comments as soon as available as we believe at least all the necessary comments should be taken into account and reviewed as part of the review group sessions.

The MMEL is part of the Operational Suitability Data which will be included in the Type Certificate of the aircraft. Therefore, as a logical consequences of that, Certification Specifications have been developed to specify the applicable requirements which, once retained in the operational suitability data certification basis, will act in a similar fashion as the other CS applicable to the Type Design.

The rules applicable to the development and use of the MEL are by nature applicable to the Operator's and their competent Authorities. As a consequence of this they are logically hosted by Part-ORO and Part-CAT at the level of implementing rules and associated AMCs and GMs. The rules applicable to the MEL are implementing rules to the essential requirements specified in the Basic Regulation (BR) 216/2008 Annex IV article 8.a.3. Article 8 of the BR applies to "Air operations". The MMEL is referred to in Article 5 "Airworthiness" of the BR.

comment

193

comment by: AIRBUS

Background on TGL 26:

The purpose of the Guidance Document for MEL Policy (TGL 26) was to give operators the guidance necessary to develop the MEL provisions for equipment, and conditions for its unserviceability, in order that JAR-OPS 1 and 3 and JAR-MMEL/MEL are properly complied with.

Application of this TGL was to ensure a harmonisation of MELs among "JAA operators" and assist Authorities in the MEL evaluation and approval.

It was also clearly expressed that the TGL 26 was a guidance material only, and should not be used to overwrite the MMEL unless specifically agreed with the operator's Authority. A dedicated flow diagram for the use of TGL 26 in a MEL was also included (refer to Section 1, Appendix 1 of TGL 26) to assist Operators and NAA.

response

Noted

comment

198

comment by: DGAC FRANCE

General Context for French DGAC 's comments:

The CS-MMEL drafting process is based on the principle to keep the JAR MMEL/MEL elements relevant for the MMEL.

The Agency runs two processes, one to splitting the JAR into the CS-MMEL scope on one side, and the second process being the preparation of the

regulation applicable for the operator's MEL approval. Although not intentional, the Agency may introduce inconsistencies between the outputs of those two processes. We may end up with items put at MMEL level, therefore becoming mandatory at MEL level. It could put undue burden at the MEL level preparation, preventing any flexibility on the MEL elaboration based on local environment of the operation (airspace outside EU with different rules, non EU operator of EU registered a/c, ...) and approval by operator's authority.

The regulation package (rules, AMC's, guidance books) to be applicable for the MEL approval is not fully available and commented.

The French DGAC comments on the CS-MMEL proposal are made within this context.

response

Noted

comment

199 comment by: *DGAC FRANCE*

We raise the important point:

The GM N° 3 to 21A 15(d) for OSD concept contains the concept of BOXES (Box 1, Box 2, Box 3 and Box 4).

The purpose of this concept is to avoid confusion on what is mandatory versus recommended

(on a voluntary basis for the applicant) for the operator .

As it is not implemented within CS-MMEL proposal, the whole MMEL package could appear mandatory. It seems that some items are not meant to be mandatory.

DGAC France considers it is very important that the Agency should rework the NPA in order to accommodate that principle of OSD. It shall be done for book 1 and book 2.

As examples of above comment, we note:

a) In GM 2 -CS-MMEL 110 "Non safety related items need not to be in the MMEL, unless so desired by the applicant".

It shall be clear that these items may not be submitted to the requirements of book 1;

b) Items which should be included in the MMEL are directly impacting the aircraft airworthiness or the occupants' safety for the intended flight.

Equipments as the DFDR, the CVR or QAR are not necessary to ensure the safety for the intended flight. When the manufacturer includes these items in the MMEL it is to have the item "available", but "open" within the MEL, so there are discussion between operator and his authority.

So it is "available" for MEL purpose, otherwise without the item in the MMEL, no one may be authorised to insert a new item in the MEL.

response

Partially Accepted

It is not foreseen that a National Authority could allow alleviation to any OPS

rule at MEL level if this alleviation is not approved at MMEL level by EASA.

MMEL having "as required by regulations" statement have to be interpreted to refer to the OPS rules in the future. Before the extension of the EASA scope to Operations rules, each EASA member state could have a different regulation and a unique alleviation at MMEL level was not envisaged because of these differences in the implementation of the JARs, even in JAA Member States. Now that the operational requirements have been streamlined, EASA believes that the most efficient and standardised way to determine the flexibility provisions against an established, common set of operational requirement is to have it available in a standardised manner at MMEL level as EASA will have control on the MMEL but not on the MELs.

In order not to constraint the third country operators using the EASA MMELs, it is proposed to enable the identification of the MMEL items which have been based on European operational requirements using the associated guidance developed by the Agency. Provisions will be introduced in the MMEL preamble to permit these items to be adapted to the applicable operational requirements when these differ from the European operational requirements. In this case the MEL content is still considered to be in conformity with the content of this MMEL.

comment

217 comment by: *European Sailplane Manufacturers*

The European sailplane manufacturer appreciate that in NPA 2011-11 "CS-MMEL" the applicability is limited to complex motor-powered aircraft.

Thereby only aeroplanes (and rotorcraft / tiltrotors) fulfilling the definition of a complex motor-powered aircraft will have to comply with CS-MMEL.

As stated already in earlier comments regarding the rulemaking task 21.039 we do not consider introduction of this regulation as necessary or as helpful into the sectors of sport and recreational aviation.

Therefore we concur with CS-MMEL-100 Applicability which makes use of CS-MMEL for sailplanes / powered sailplanes / typical small aeroplanes not necessary.

response

Noted

For non-complex aeroplanes, EASA is however developing a generic MMEL concept as the requirement to have an MEL is applicable to all aircraft operated for commercial purposes (Basic Regulation 216/2008 Annex IV 8.a.3). The principle of the generic MMEL will reduce the (S)TC holder burden for developing an MMEL to meet the requirement of (EC) 1702 Part-21 Operational Suitability Data. For sailplanes and balloons, the need to have an MEL is currently being reviewed as part of the dedicated rulemaking task.

comment

219 comment by: *Dassault Aviation*

General comments on the complete NPA:

- Even though 6 meetings were held on the MMEL subject, only the two final meetings were devoted to the review of the MMEL Guidance Book contained in Book 2, it is felt that an adequate time was missing to carefully review the complete NPA for bringing all the necessary comments. Sufficient sessions of

the Review Group will be then necessary for reviewing in details all comments received. Such approach will also benefit to the Agency by finally resulting in the publication of a new rule that would be well accepted by the aviation community thanks to appropriate involvement in all preparation steps and resulting appropriate decisions.

- The MMEL is not a standalone document usable as it is for operations but it is the necessary guidelines for preparing the operators' MEL. Both the MMEL and the MEL are then documents that are necessarily linked and must be then consistent. Therefore, as stated during the rulemaking activities, it was not appropriate to separate the regulations applicable to the MMEL and those applicable to the MEL. This will lead to potentially and evidently increase inconsistencies between the regulations applicable to each document and also to the documents themselves.

response

Noted

EASA believes a one year period of time since the MMEL guidance book was circulated within the 21.039 Task CS-MMEL subgroup would normally have allowed interested parties to comment on its content. Furthermore, the NPA comment period was extended by one month following some request from stakeholders.

The rules governing the MEL have to be applied to the Operators themselves and their oversight Authorities. This is the reason why the rules on MELs have been included in Part-ORO and Part-ARO in accordance with the structure of EASA implementing rules for air operations.

A. Explanatory Note - I. General

p. 4

comment

191 comment by: *European Cockpit Association*

General comment: Accepting that the CS-MMEL will only be used by sufficiently experienced NAA-officers and representatives of the operators to compile a MEL, the EASA-approach to summarize TGL 26-content might be acceptable if the result, the MEL, used by maintenance and flightcrew delivers easy to access, timely, unambiguous hints for a decision to dispatch or repair. It would not be acceptable if the resulting text forces flightcrew to ask further documents in order to derive a decision whether a failed item is acceptable for the flight or not.

response

Noted

The intent of the CS-MMEL is to be used during the evaluation of the MMEL submitted by (S)TC holders and conducted by EASA. A content similar to the previous TGL 26 may be selected at MMEL level thus making it readily available for Operator's to include it at MEL level.

A. Explanatory Note - IV. Content of the draft decision

p. 5-7

comment

3 comment by: *Association of Dutch Aviation Technicians NVLT*

Pls. specify to which maintenance personnel EASA is referring, certifying staff?

response

Noted

The duties and responsibilities of maintenance certifying staff in the frame of the MEL application is managed in accordance with the continuing airworthiness

management procedures.

comment

7 comment by: *Arturo Brazal*

Point 10 states that OSD approved items (MMEL) will be used by the operators to establish their MEL. I miss a flow diagram, similar to that included in TGL26, in order to clarify the use of CS-MMEL book 2 for operators to establish their MEL's.

response

Not Accepted

The intent of the CS-MMEL is to be used during the evaluation of the MMEL submitted by (S)TC holders and conducted by EASA. A content similar to the previous TGL 26 may be selected at MMEL level thus making it readily available for Operator's to include it at MEL level.

The GM to CS-MMEL is not intended to be used by operators to establish their MEL.

comment

8 comment by: *Arturo Brazal*

Last paragraph of point 19 states that the material in Book 2 provides guidance to the applicant (commonly TC holder) to fulfill standards in Book 1 (justification of MMEL items). Does it mean that all the MMEL entries have to be specified, including the dispatch conditions from Book 2 if it is the case?

I mean, is the OSD MMEL a MMEL proposal (by the applicant), which may be completed with CS-MMEL Book 2 in order that operators establish their MEL's (the operators can use the MMEL plus the CS-MMEL Book 2 to prepare their MEL), or is the OSD MMEL a self-contained document (which may have taken into account Book 2 for the dispatch conditions of some items)?

response

Noted

The OSD MMEL should be as far as possible customized to reflect the alleviation to the appropriate applicable operational requirements (Commercial or not). A reference to the appropriate requirements may however still be retained at MMEL level in the form of "Any in excess of those required by the operational requirements". This will mean that only excess items can be provided with relief at MEL level. This type of entry is expected to be accompanied with an adequate rectification interval at MMEL level.

A. Explanatory Note - V. Regulatory Impact Assessment

p. 7

comment

194 comment by: *AIRBUS*

RIA for TGL 26

RIA § 1.1

In the RIA under § 1.1 description of the issue, EASA states:

"relief in this document has been expanded over the years to the extent where a lot of the relief is clearly no longer meeting the intent of the operational rules, even though it may be considered to achieve an acceptable level of safety"

Under this paragraph, when it is said that relief is no longer meeting the

intended operational rules, does EASA refers to EU-OPS or to the future framework? No example is given to support the rationale and it is therefore considered as highly questionable and not adequate for the RIA.

RIA § 2. Objectives

In this § it is stated:

"The specific objective of this proposal is to maintain relief offered to operators today, but by including appropriate relief directly at MMEL level. This would then legally allow operators to continue to use relief that is below the prescribed equipage in the operational rules..."

This approach seems basically a good idea, however EASA should not forget one of the main change that affects the status of the MMEL in the new regulatory framework compared to the current situation. In other words, the MMEL is now one of the OSD elements, and consequently the MMEL becomes a full certification document that will be attached to the TCDS. In the context where Airbus Aircraft certification is handled by EASA, and then this EASA certification becomes the reference for any other Type Certification validation, this would mean that the MMEL from EASA becomes the sole MMEL reference worldwide. As a consequence, applying the TGL 26 principles at MMEL level with the above objective is NOT acceptable, because when doing that way, only the European Operational rules are taken care of, and solutions proposed may not fit the other Authorities (worldwide) Operational rules.

Consequently, and as already stated several times by OEMs during the setting up of the CS-MMEL (refer to minutes of CS-MMEL Subgroup) Airbus recommends to keep the guidance material at Operator level, as an AMC to Part-ORO (Paragraph ORO.MLR.105 (MEL)) so as to standardize at European level as intended while keeping the flexibility for non European operators that will be required to use the "European EASA approved MMEL" in the new TC Validation system, as MMEL will be part of TC data under the name OSD.

RIA § 3. Table 1: Selected policy options

Option 1

This option is understandable, and can be supported provided that EASA objective of maintaining flexibility for operators and ensuring that accepted relief is compatible with the aircraft design and applicable airworthiness requirements is fulfilled. Today with the current MMEL guidance book proposal, Airbus considers that flexibility for operators is not maintained.

Option 2

Transfer content of TGL 26 into guidance material to the OPS IR is fully supported by Airbus, as it allows keeping flexibility for all operators, bearing in mind the new certification status of MMEL that will become the "worldwide MMEL reference" in the OSD scheme.

Airbus understand EASA concern relative to the fact that there will be a need to revisit the current content so as to align it with the new operational rules, and also assess any potential conflict with design and airworthiness requirements.

The proposed MMEL Guidance represent a huge effort and Airbus would like to encourage EASA to consider setting up a dedicated working group involving Operators, OEMs, EASA so as to deeply review this very good document with the following objectives:

- Keeping within the CS-MMEL only what is applicable at OEM level,
- Transferring to an AMC to ORO.MLR.105 MEL all other provisions, as relief

request from IR-OPS is under the Operator responsibility.

This new option (a kind of combination of options 1 & 2) would ensure a harmonisation of MELs among "EU operators" and assist Authorities in the MEL evaluation and approval, while keeping the necessary flexibility for non EU Operators that would have to use the "EASA MMEL" because of the new Certification status of the MMEL (OSD element part of TC data).

RIA § 4.1 Safety impact

In this § it is stated:

"Option 2 cannot ensure an acceptable level of safety as the operator would be proposing the level of relief based on generic proposal, ..."

Airbus CANNOT agree with such a statement, as this would mean that the practices that have been in place since the last 30 years are unsafe, and this is not the case. Consequently the rationale for disregarding Option 2 is not acceptable.

RIA § 5. Conclusion and preferred option

§ 5 reads:

"Option 1 is the preferred option as it allows for an acceptable level of safety to be ensured. It also allows a standardised approach for all applicants and provides a better foundation for potential harmonisation between different regulatory authorities."

Based on above comments, Airbus cannot agree with EASA conclusion.

Not enough time was allowed for reviewing the entire guidance book (more than 300 pages). In addition, for a number of dedicated items/recommended methodology, a lot of work has been conducted by EASA in isolation, not at working group level. Airbus does recognize the huge effort put into this document, and would like to recommend EASA to reconvene a dedicated working group involving Operators, OEMs, EASA so as to deeply review this MMEL Guidance book with the following objectives:

- Keeping within the CS-MMEL only what is applicable at OEM level,
- Transferring to an AMC to ORO.MLR.105 MEL all other provisions, as relief request from IR-OPS is under the Operator responsibility.

Such approach will also benefit to the Agency by finally resulting in the publication of new rules and guidance material that would be well accepted by the aviation community thanks to appropriate involvement in all preparation steps and resulting appropriate decisions.

Partially Accepted

The TGL 26 was based on JAR-OPS1/3 subpart K & L interpretation. As the equivalent air operations regulations have been developed by the Agency in Part-CAT (Commercial air transport), Part-NCC (Non-Commercial Complex), Part-NCO (Non-commercial non-complex), Part-SPO (technical requirements for commercial and non-commercial specialised operations) and Part-SPA (Operations requiring Special Approval), there is a need to bring consistency between the material contained in TGL 26 and the new rules.

Alleviation to a prescriptive EU rule can only be approved at Agency level and thus needs to be part of the MMEL approved document. The option to have a

response

permissive EU rules embedding the MEL relief has not been retained. Furthermore, as aircraft systems become more and more integrated, the specificities of each particular design need to be reflected on a case-by-case basis. This is hardly possible in a generic document like the TGL 26 was. Therefore it is expected that the MMEL will offer more accurate vehicle to provide a level of relief reflecting the installation, even for item required by operational regulations.

In order not to constraint the third-country operators, provisions will be included in the preamble of EASA MMELs to enable variations in the level of relief for operational only items so that the local regulations could be reflected, in agreement with the Authorities approving the MEL.

comment

246 comment by: *Dassault Aviation*

General comments

The purpose of the Guidance Document for MEL Policy (TGL 26) was to give operators the guidance necessary to develop the MEL provisions for equipment, and conditions for its unserviceability, in order that JAR-OPS 1 and 3 and JAR-MMEL/MEL are properly complied with.

Application of this TGL should ensure a harmonisation of MELs among "JAA operators" and assist Authorities in the MEL evaluation and approval.

It was also clearly expressed that the TGL 26 is guidance material only, and should not be used to overwrite the MMEL unless specifically agreed with the operator's Authority. A dedicated flow diagram for the use of TGL 26 in a MEL was also included (refer to Section 1, Appendix 1 of TGL 26) to assist Operators and NAA.

Consequently, and as already stated several times by OEMs during the working sessions of the CS-MMEL (refer to minutes of CS-MMEL Subgroup) Dassault Aviation recommends to keep most of the guidance material at Operator levels, as an AMC to Part ORO-MLR 105 (MEL) so as to standardize at European level as intended.

An undesired effect of the EASA proposal would be to bind to European Air Rules those Authorities that accept EASA MMEL as their reference while having different Air Rules. As a TC Holder, we encourage the use of our MMEL as reference but we also have to keep it open to the necessary flexibility for non European operators.

Therefore, Dassault Aviation does not agree with EASA conclusion and the option supported by Dassault is to transfer the huge effort put into those guidances pertaining to Air Ops into a guidance material to the OPS IR as it allows keeping flexibility for all worldwide operators while ensuring harmonization at European level. Others more related to Type Design may stay in CS-MMEL.

Dassault recommends that this Guidance material splitting is made under a group review involving Operators, TC Holder and Industries.

response

Partially Accepted

See answer to comment 194

A. Explanatory Note - V(a) Regulatory Impact Assessment for Temporary Guidance Leaflet (TGL 26)	p. 8-10
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comment

9 comment by: *Arturo Brazal*

The last paragraph of point 2 states that 'only equipment which are given relief at MMEL level may be then included in the MEL'. Does it includes items in Book 2 even if they are not defined in the MMEL? in which terms is this possible?

response

Noted

Only items that have a dedicated entry into the MMEL can be proposed for relief at MEL level, unless they are non-safety related items. The Book 2 Guidance material is aimed at MMEL and not at MEL as proposed in the NPA. Guidance on non-safety related items will be provided in Part-ORO.

comment

37 comment by: *Trafi*

3. Identification of options: (page 9) Supporting option No 1 policy.

response

Noted

comment

86 comment by: *Cessna Aircraft Company*

2. Objectives : "The specific objective of this proposal is to maintain relief offered to operators today, but by including appropriate relief directly at MMEL level..." Cessna feels that the restriction on operators that their MEL can only have relief that the MMEL has provided for seems overly conservative and may cause significant effort and cost on the part of the TC holder to accommodate unique, requested relief for single aircraft or small fleet operators. We suggest language requiring that any MEL item would meet all the requirements of an MMEL item, be noted as not covered by the MMEL (i.e. unique to that MEL) and be approved by the proper authority.

response

Not Accepted

The intent of the proposal is to have at least a standardised level of relief available at (S)TC holder MMEL level that should offer the most flexible approach while maintaining an acceptable level of safety. If an operator wishes to develop alternative relief at MEL level, in agreement with the competent Authority approving the MEL, there is no rule prohibiting this to happen, provided the alternate MEL item is not less restrictive than the MMEL (as per BR Annex IV 8.a.3 (iii)). Any operator specific equipment added by STC would be responsibility of STC holder to get acceptable relief approved.

comment

207 comment by: *DGAC FRANCE***APPENDIX 1 to GM1-CS-MMEL-145: MMEL ITEMS GUIDANCE BOOK**

I – Justification of comment:

1) As a general point, DGAC France believes that the analysis accomplished so far is very useful and gather a list of information that may be used to clarify the alleviations to be delivered at the final step, i.e. at the MEL level. This collection represents a good basis for further work to be conducted.

2) Regarding the Explanatory note V (a), the Agency has chosen the Option 1 presented in its §3. DGAC-France disagrees on this choice.

The discussion is focused on those items where it was marked "as required by Operational Requirements" in the MMEL.

In §1.1 , the agency states "*However, relief in this document has been expanded over the years to the extent where a lot of the relief is clearly no longer meeting the intent of the operational rules, even though it may be considered to achieve an acceptable level of safety.* »

Then, the agency concludes that « *Therefore, legally dispatching under the aforementioned statement which is defined as 'means that the listed item of equipment is subject to certain provisions (restrictive or permissive) expressed in the applicable operational requirements', and using TGL 26 (or equivalent) is no longer acceptable.* »

Therefore EASA propose to control at MMEL discussion, ie between TC Holder and authority of design all discussion, removing any flexibility and discussion between operator and operator authority.

The principle use of this document was to provide operators with acceptable MEL entries, particularly where the item was marked 'in the MMEL, while meeting the intent of the operational rules.

EASA is basically saying that with interpretations of the TGL 26, operator's authorities may have authorised operations in contradiction with the OPS rules.

We consider this argument is not valid to justify moving the control of the compliance of the ops rules to the MMEL level. If there are some issues at operation level, with MEL interpretation that EASA find not acceptable, it shall be dealt with OPS IR for European States. And States outside EU keep their right to decide what is applicable for their companies.

3) DGAC France concurs that a certain number of items contained in the TGL 26 had reached a sufficiently matured state to be incorporated in the MMEL. But it was possible for the MMEL applicant to select them on a voluntary basis. We believe it shall remain as it was.

It is abusive to state that time has come to include **all** the TGL 26 items in the MMEL document.

On the other hand, the inclusion in MMEL of immature position or of positions which may change in the near future will impose an unnecessary burden to all operators. EASA may say that the CS can be amended as often as necessary by a decision. But each time it is then amended, all already approved and used MEL would have to be assessed again against a new CS-MMEL to see if new items would be worth to take into account. This top level approach is effort consuming for all operators.

4) One can understand that EASA finds attractive to imagine "one unique" book to gather positions on all the concerned items.

But there is the risk to mix a great variety of situations.

A MMEL applicant may agree to include an item which is fully dependant upon

the airworthiness process, he has not to impose via the MMEL a position for an item which is fully dependant upon ATC, local space or even local regulations.

The last one can only be approved at the MEL level.

5) The idea of a unique book which attempts to encompass all the situations for all categories of aircraft: small helicopter, medium size and big helicopter, small aeroplane, business aeroplane, medium and big transport aircraft, for all the operational situations and spaces, is a utopia.

On paper, some will say it is presented as a pure guidance (GM). But it is eventually so detailed by principle to encompass all situations, that there is no longer flexibility. On a large aircraft MMEL certification process currently run, on a voluntary basis from the applicant, the agency already showed the intent to have it imposed in totality without any discussion, adaptation, nor choice. So the intended guidance material (GM) becomes as a matter of fact mandatory.

6) In the establishment process this document is clearly oriented to serve for large aircraft MMEL project, such as those produced by Airbus or Boeing.

The more you consider smaller aircrafts operated outside the European airspace, in different climate conditions and different aeronautical environment, the more you see certain items are extremely and uselessly restrictive. We would say, in such an extent that an aircraft may be grounded outside of any technical and safety related reasons. We insist to state that flexibility may be managed at the MEL level, still within safety.

7) For any equipment, mounted voluntarily on an individual aircraft, that is not mandatory for the aircraft type or category and not mandatory to enter certain airspace, alleviation shall always be given with a "D" repair interval. It is not the case in this proposal.

The document is absolutely not adapted for remote (from Europe and its specific ATC and space regulations) short to medium range operations.

II - Conclusion in order to propose another solution:

DGAC propose to retain preferably a variant of option 2 with adaptations.

- Transfer into a document to be created, the TGL 26 equipments listed in part K and L

(or the new equivalents of subpart K and L) of the regulation.

Evidently, this new TGL 26 needs to be worked out in the appropriate area, and shall have an updating process to adapt timely to the OPS, ATC, Space regulations.

- The MMEL applicant may keep the possibility to include one item of the new TGL 26 in a MMEL project.

- Keep the rest (current proposed MMEL Guidance Book minus new TGL 26 to be created) in the MMEL Guidance Book to be presented as a guidance for the work of the OEBs in charge of the MMEL examination process. Nevertheless, a number of items are still to be worked on in the appropriate area: example : the method for passenger number reduction for the item Doors is not adapted to the small and medium size aeroplanes.

Aim of that approach is truly finding a adequate balance between what can be requested at the MMEL approval step and what would be a guidance at the MEL approval step, to achieve the expected harmonisation between MEL users and a MEL use in conformity with ops rules .

III - Detailed comments:

DGAC run the exercise to see how this proposal would take into account:

- FANS 1/A in oceanic and remote area
 - FANS A applications such as:
 - CPDLC
 - ADS-C
- RNP 4
- ETOPS 207'

Based on that, and as examples, DGAC provides with some detailed comments. DGAC France does not pretend those comments are exhaustive. We believe some more work , at a group level, is necessary to continue on the recommended approach:

ATA 23:

23-xx-xx: SATCOM

There is no mention of such an item. And SATCOM is MANDATORY for such operations. Please, add an item about SATCOM which is mandatory for ETOPS 207'.

ATA 25:

Those following items are dealing with ashtrays in ATR aircrafts. In ATR, there is only a lavatory. So, the dispatch condition is limited to the following ones which are very restrictive in particular for the airplanes which had only one lavatory such the ATR.

25-40-1A: **A - 0 ou C - 0**: One or more may be inoperative or missing provided that repairs are made within 10 consecutive calendar days.

A - 0 (3 days)

25-40-2A: ~~B - 0~~ replaced by **A-0 ou C-0**: One or more may be inoperative or missing provided that associated lavatory fire-extinguishing system, when installed, is operative

ATA 34:

Some aircraft are not fitted with wind shear detection/prediction systems such as ATR for example. It's an option for some aircrafts.

34-41-1: Weather detection system

34-41-1-1: wind shear detection/warning system predictive function

Add (if installed)

34-41-2: wind shear detection/ warning system

34-41-2-1: reactive function

Add (if installed)

34-51-1A: it could be interesting to decompose navigation systems by navigation systems for the following reasons:

- a) Trend to digital documentation. It will be better to decompose item by item.
- b) All the navigation systems don't have the same objectives. For example, there are Short Range Navigation Systems and Long Range Navigation Systems.
- c) Easy to be adapted to specific navigation airspace requirements (Cf PBN/OACI)

ATA 35:

For this specific item, it is depend on the type of aircraft and type of operations. ATR is limited to FL250.

35-50-1: First Aid Oxygen:

In OPS 1.760, there was some information about the way the calculation has to be done. In this Guidance Material, a lot of information is not provided.

The way to calculate the oxygen needs was specified in OPS 1.760: "An operator shallabove 25000'. The amount of oxygen shall be calculated using an average flow rate of at least 3l (Standard Temperature Pressure Dry)/minute/person....for 2% of the passengers carried."

ATA 46

46-20-2: Class 2 EFB

Some Class 2 EFBs are composed of a Display Unit and a Docking Station.

Please add those items in the MEL. In some case of a failure of Display Unit, it's still possible to use an EFB as a class 1 by removing the laptop from the Docking Station.

ATA 52:

52-22: Emergency exit

Is the base of the calculation relevant for all kind of aircrafts? It seems that the way to calculate is very restrictive for some aircrafts compared to other ones.

Partially Accepted

Alleviation to a prescriptive EU rule can only be approved at Agency level and thus needs to be part of the MMEL approved document. The option to have a

response

permissive EU rules embedding the MEL relief has not been retained.

Furthermore, as aircraft systems become more and more integrated, the specificities of each particular design need to be reflected on a case-by-case basis. This is hardly possible in a generic document like the TGL 26 was. Therefore, it is expected that the MMEL will offer more accurate vehicle to provide a level of relief reflecting the installation, even for item required by operational regulations.

In order not to constraint the third-country operators, provisions will be included in the preamble of EASA MMELs to enable variations in the level of relief for operational only items so that the local regulations could be reflected, in agreement with the Authorities approving the MEL.

As clearly specified in GM1 MMEL.145:

(b) The guidance material provided in Appendix 1 to GM1 MMEL.145 is as an acceptable basis for the development of associated MMEL items justifications. The main purpose of this guidance material is to standardise the level of relief granted in MMELs, in particular when dealing with items that are subject to operational requirements.

(c) This guidance material is not intended to cancel the need to comply with CS MMEL.140 and CS MMEL.145 but is intended to alleviate this task by allowing the applicant to refer to this material as part of the MMEL justifications. The availability of a guidance material for an item does not prevent the applicant to prepare alternate MMEL content.

The above interpretative material has been added on purpose to avoid any misuse of the material. Any misuse as pointed out in the comment should be reported to the Agency for investigation.

Smaller aircraft (at least non-complex) are not mandated to use the CS-MMEL but may use the generic MMEL.

Comments on specific items of the guidance book are addressed later in the CRD as they were duplicated in individual comments.

comment

221

comment by: *Boeing*

Page: 10

Section: **Conclusion and preferred Option**

This section states:

Option 1 is the preferred option as it allows for an acceptable level of safety to be ensured. It also allows a standardised approach for all applicants and provides a better foundation for potential harmonisation between different regulatory authorities.

GENERAL COMMENT: Boeing wholly supports an MMEL development process that is fully harmonized between regulatory authorities. We appreciate EASA's efforts to establish a standardized approach and look forward to working with EASA, as well as other affected parties, to establish a harmonized MMEL development process.

response

Noted

comment

56 comment by: AIRBUS

CS-MMEL-105 Definitions

The definitions of 'Hazardous' and 'Catastrophic' should be added (directly or by reference to AMC 25.1309 and relevant AMC for rotorcraft) in the paragraph CS-MMEL-105.

response

Accepted

The definitions have been added.

comment

103 comment by: AIRBUS

- Contrary to the **JAR-MMEL/MEL**, there is no information on the **CS-MMEL "Effectivity"** (When the **CS-MMEL** becomes applicable (initial version and revisions)).

- Also, it should be indicated somewhere that this **CS-MMEL** will not be applied retrospectively and that the MMELs and the MELs existing prior to the **date of effectivity (TBD)** of the **CS-MMEL** will continue to remain valid and applicable.

response

Not Accepted

The CS-MMEL becomes effective as soon as it will be included as part of the Operational Suitability certification basis as defined in Part 21A.17B proposed in Opinion 07/2011. There is therefore no need to have an effectivity date at CS level.

comment

104 comment by: AIRBUS

CS-MMEL-100 Applicability

The title "**Applicability**" is not appropriate because this section does not indicate the applicability of the **CS-MMEL**. It indicates only what the **CS-MMEL** contains and for what purpose (**...certification specifications for establishing the MMEL...**).

With the title "**Applicability**", this section should indicate to which aircraft types the **CS-MMEL** is applicable (new or/and variants to already certified ones).

response

Not Accepted

The applicability of the CS is for complex motor-powered aircraft. The compliance to CS-MMEL is required once included in the Operational Suitability Certification Basis. Affected aircraft will be defined in the Part-21 regulation defining the OSD requirements.

comment

105 comment by: AIRBUS

CS-MMEL-105 Definitions**General considerations:**

Some definitions are given in the **CS-MMEL-105**, others definitions are given in the **GM3-CS-MMEL-120 Format and content of MMEL** (page 24 of 378),

and some are given in both the **CS-MMEL-105** and the **GM3-CS-MMEL-120**. What is the rationale to decide that some definitions are covered only in the **CS-MMEL-105**, some others are covered only in the **GM3-CS-MMEL-120**, and some others are covered in both?

Definitions:

§ (a) '**Calendar day**': this defines what a "**calendar day**" is but there is no definition of what is a "**day**" although the word "**day**" is used in the **CS-MMEL-130 Rectification Interval** (page 16 of 378).

- If "**calendar day**" and "**day**" have the same meaning, this should be highlighted.

- If not, the definition of what a "**day**" is should be given here.

§ (e) '**Item**': it should be written "**..., an instrument, equipment, function, system, or component**". By giving the list of what is called "**item**", this should simplify the writing of the **CS-MMEL** with only the use of the word "**item**". As a matter of fact, this is the case in the definition of **(d) 'Inoperative'** where the word "**item**" is used. Unfortunately, this is not the case everywhere in the **CS-MMEL** that is not consistent and may lead to confuse the reader.

The following new definition is necessary since the word "**Agency**" is used everywhere:

§ (?) '**Agency**' is the European Aviation Safety Agency (hereinafter referred to as 'the Agency').

response

Accepted

The definitions given in CS MMEL.105 are limited to terms used in Book 1 of the CS-MMEL. Other definitions are provided in the preamble of the MMEL to define terms potentially used in the MMEL documents. The reference to day in the definition of rectification interval category A is changed to mention calendar day or flight day. Definition of flight day is added to CS MMEL.105.

Definition of item is extended to incorporate "system or component" Agency reference is clarified.

comment

200 comment by: DGAC FRANCE

CS-MMEL 105 (e)

DGAC France is of the opinion that the definition of "item" should also include the words "system" and "component".

The word "system" appears in the aircraft's description or is included in some ECAM alerts.

The word "component" is also used in the aeronautical literature.

If the "item" definition were to be amended as proposed, it would allow deleting the GM 1 to 105(e) (a) which becomes unnecessary.

response

Accepted

The definition of item is updated to include system and component. The GM is kept for clarity purpose.

comment

220 comment by: *Dassault Aviation*

As the proposed CS-MMEL significantly differs from the rules that were used to set up the former MMEL (JAR MMEL/MEL), one might ask the question of the requirement level upgrade to CS-MMEL when revising a MMEL revision (Cf. 21.101 in the certification process). As debated by the MMEL group, it should be indicated that this CS-MMEL will not be applied retrospectively and that the MMELs and the MELs existing prior to the date of effectivity (TBD) of the CS-MMEL will continue to remain valid and applicable. Position is also valid for subsequent MMEL revision or Change.

response

Noted

There is no automatic retroactive compliance to CS-MMEL requested for MMEL or revision of MMEL that would have been grandfathered at CS-MMEL level. The management of the change to OSD element is dealt with at Part-21 level.

comment

223 comment by: *Dassault Aviation*

CS-MMEL § 105 definitions page #15

General considerations:

One may find definitions in the CS-MMEL-105, others in GM3-CS-MMEL-120 Format and content of MMEL (page 24 of 378), and some are given in both the CS-MMEL-105 and the GM3-CS-MMEL-120. Suggestion is to gather all definitions in a given area.

Definitions:

§ (a) 'Calendar day': this defines what a "calendar day" is but there is no definition of what is a "day" although the word "day" is used in the CS-MMEL-130 Rectification Interval (page 16 of 378).

- If "calendar day" and "day" have the same meaning, this should be highlighted.

- If not, the definition of what a "day" is should be given here.

§ (e) 'Item': it should be written "..., an instrument, equipment, function, system, or component". By giving the list of what is called "item", this should simplify the writing of the CS-MMEL with only the use of the word "item". As a matter of fact, this is the case in the definition of (d) 'Inoperative' where the word "item" is used. Unfortunately, this is not the case everywhere in the CS-MMEL that is not consistent and may lead to confuse the reader.

response

Accepted

The terms used in Book1 are defined in CS MMEL.105. The other definitions shown in the GM3 MMEL.120 are those commonly used in MMEL content.

The reference to day in the definition of rectification interval category A is changed to mention calendar day or flight day. Definition of flight day is added to CS MMEL.105.

Definition of item is extended to incorporate "system or component".

B. DRAFT DECISION - CS-MMEL - Book 1 - Subpart B - MASTER MINIMUM p. 16-17

EQUIPMENT LIST

comment

5 comment by: *Association of Dutch Aviation Technicians NVLT*

In order of the maintenance procedures in the MEL, f.i. resetting of circuit breakers.

Pls. clarify if resetting of circuit breakers has to be considered as maintenance. I would refer to the recommendation in the EASA Safety Information Bulletin SIB No.: 2009-07 Issued: 27 March 2009 "Resetting Tripped Circuit Breakers" where is mentioned that A reset should only be done after consulting the relevant documentary resources e.g. the quick reference handbook (QRH), the minimum equipment list (MEL), the aircraft flight manual (AFM), the company operations manual, and/or maintenance manuals.

To our opinion due the fact that resetting of circuit breakers has to be performed according the maintenance manuals these actions should be considered as "maintenance" and has to be certified.

response

Noted

Although the MMEL may require the deactivation of a system by means of pulling circuit breakers, there is no requirement to systematically have this action tagged as a maintenance procedure with "(M)" symbol in the MMEL.

GM1 MMEL.120 (j) provides some guidance to the decision on whether the necessary procedure can be assigned as an (O) or an (M).

comment

57 comment by: *AIRBUS***CS-MMEL-120 Format and content of the MMEL**

For consistency reasons of terms used in AD, CS-25, CS-MMEL and other CS, the text of CS-MMEL-120(b)(1) should refer to "effective date" instead of "date of applicability".

response

Accepted

Change is made in line with the comment.

comment

93 comment by: *Transport Canada Civil Aviation Standards Branch***Referenced Section: CS-MMEL-120 Format and content of the MMEL**

Editorial comment. It is proposed to revise paragraph (b)(2) as indicated below.

TCCA Proposal:

(b) Each MMEL contains the following:

...

(2) Relevant preamble based on Appendix A to CS-MMEL-120, ~~the~~ definitions and, if appropriate, ~~the~~ clarifying notes which adequately reflect the scope, extent and purpose of the list.

response

Accepted.

Changes is made in line with the comment.

comment

106 comment by: *AIRBUS***CS-MMEL-120 Format and Content of the MMEL**

§ (a) The word "**Agency**" is used but it is explained nowhere what is the "Agency". This should be covered in the **CS-MMEL-105 Definitions**. It is not explained what is "**a format acceptable to the Agency**". How will a manufacturer know in advance that its format will be acceptable by the Agency? See a proposal in the **CS-MMEL-105 Definitions** § (?).

§ (b)(1) The approval status refers to a **date of approval** and a **date of applicability**. Another date is also necessary that is the **date of publication** which is generally different.

§ (b)(2) The **Appendix A to the CS-MMEL-120** cannot be found in the NPA. It should refer to the **GM3-CS-MMEL-120** instead.

§ (b)(3) It is written: "**The list of items, including for each item:**". In reality, the list given is not applicable for each item and the following should be considered:

- **The rectification interval category:** It should be written, "**The rectification interval category, when relevant**". This is because, for quick decision making, the MMEL can list items that refer to other documents like the Airplane Flight Manual (AFM), the Weight and Balance Manual (WBM), the Flight Crew Operating Manual (FCOM), for which a rectification interval is not relevant.

Also, an item can refer to another item (X may be inoperative provided Y is considered inoperative. Refer to Y). The rectification interval for the item X is not relevant since the conditions of the item Y apply including the rectification interval. This is also consistent with the **GM1-CS-MMEL-120(f)**.

Last, the non-safety related items do not need rectifications intervals when there is a need to cover them in the MMEL.

- **The number installed:** It should be written, "**The number installed or a dash when there is a variable number**". This is also consistent with the **GM1-CS-MMEL-120(g)**.

- **The number required:** It should be written, "**The number required for dispatch or a dash when there is a variable number**". This is also consistent with the **GM1-CS-MMEL-120(g)**.

- **The operational procedures symbols:** It should be written, "**The operational procedures symbols when applicable**". Some items have no operational procedures associated with.

- **The maintenance procedures symbols, associated dispatch conditions identifying the intent and periodicity of its performance:** It should be written, "**The maintenance procedures symbols when applicable**". Some items have no maintenance procedures associated with.

Also, the text "**associated dispatch condition identifying the intent and periodicity of its performance**" is not understood, should be clarified, and seems to be misplaced. It should be including in the paragraph "**any associated condition and limitation**" (See below).

- **Placarding instructions:** What does that mean? Generally there is only a

symbol to underline that a placard must be placed. This should read: "**Placarding symbols**". Also it is possible to indicate in a generic manner in the preamble that the items must be placarded.

- **Any associated conditions and limitations**: This should read, "**Any associated dispatch conditions, including the intent and periodicity of the maintenance procedures when relevant**".

response

Partially Accepted

The rectification interval category requirement is maintained as it is required for each item for which the MMEL is granting the dispatch. If reference to other document is made to the extent that the MMEL is no more the dispatch document, then these items are not considered MMEL items and are just reminders for the operators pointing to other documents.

The Agency is defined at first occurrence in the document.

Date of applicability is changed to effective date for consistency with other rules. The date of publication is not managed at CS-MMEL level. Various change to the text to address the applicability of MMEL content items.

comment

107

comment by: AIRBUS

CS-MMEL-125 Operational and Maintenance Procedures

As written "**The operational or maintenance procedures are prepared to ensure compliance with the associated MMEL items dispatch conditions.**" it seems that the operational and/or the maintenance procedures are necessary for all MMEL items, which is not at all the case.

This text should be reworded as follows for clarification: "**The operational and/or maintenance procedures are necessary to support certain MMEL items. ~~are prepared to ensure compliance with the associated dispatch conditions.~~ However, the procedures themselves will not be subject to approval.**"

response

Partially Accepted

"if any" is added to the text for clarity to take the comment into account.

comment

108

comment by: AIRBUS

CS-MMEL-130 Rectification Interval**General Comments:**

- It is written: "**A rectification interval is established for each MMEL item in accordance...**". This should be written, "**A rectification interval is established for each MMEL item, when relevant, in accordance...**". The reason is explained in the **CS-MMEL-120 Format and Content of the MMEL § (b)(3) The rectification interval category** above.

- A new category is missing in between C and D. Since **C** is considered as being not enough and **D** is considered as being too long, very often the category **A** is used (and obviously misused because no appropriate category exists). This use

is not appropriate because the **A** cannot be extended and the **A** let's suppose that the associated item is critical although this is the contrary. This leads the NAAs to refuse an extension when necessary, although they could have given it, and the operators that the MMEL contains a lot of critical items. The creation of this new should be then considered for permitting the category **A** to be adequately used.

§ (a) Category A: The word "**day**" is used but is not defined in the **CS-MMEL-105**. The **JAR-MMEL/MEL.040 Rectification Intervals** clearly indicated "**calendar day**". What is the rationale for this not clear change?

- If the word "**day**" used in the **CS-MMEL-130** means "**calendar day**", it should then be written "**calendar day**" here.

- If the word "**day**" has a different meaning than "**calendar day**", the word "**day**" should be defined in the **CS-MMEL-105**.

§ (d) Category D: Under the definition of the Category, the paragraph:

"Items in this category meet the following criteria:

(1) the absence of the item does not affect crew workload;

(2) the crew do not rely on the function of that item on a routine or continuous basis; and

(3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item."

is misplaced in the **CS-MMEL.130** that gives the definitions of the Rectification Intervals and NOT to which criteria they will meet. The appropriate place is in the **GM1-CS-MMEL-130** Rectification Interval in page 30 of 378. Also it must be highlighted that the category D is not limited here to optional items, and must not be limited to optional items, and then applies to all types of items, optionally or basically installed.

response

Partially Accepted

See comment 106 for rectification interval applicability.

The reference to day in the definition of rectification interval category A is changed to mention calendar day or flight day. Definition of flight day is added to CS MMEL.105.

See also comment 223.

comment

109

comment by: *AIRBUS*

CS-MMEL-135 Rectification Interval Extension

The text: "**The MMEL indicates when the rectification interval extension as defined in Part-AR and Part-OR is applicable.**" is misleading because the **Part-AR (in fact ARO.OPS.205 (b))** and the **Part-OR (in fact ORO.MLR.105 (f))** both refer to the MEL and NOT the MMEL. How can the MMEL define when the Rectification Interval Extension is applicable based on Parts that are applicable to the MEL only and NOT the MMEL?

This is the reason why the **JAR-MMEL/MEL – SUBPART B – MMEL** was not containing any information on the Rectification Interval Extension. This was obviously covered in the **JAR-MMEL/MEL – SUBPART C – MEL (JAR-**

MMEL/MEL.081).

The **CS-MMEL-135 Rectification Integral Extension** is then misplaced in the **CS-MMEL** and should be removed from the CS-MMEL and transferred to the appropriate document dealing only with the MEL.

Also what are the rationales to limit the category **B**, **C**, and **D** to a one time extension? On which acceptable considerations such restriction is based on? As a matter of fact, in operations, it is very often possible to allow more than one time extension without impairing the safety of the intended flight. As written this definitely cuts the possibility to the NAAs to allow more than one time extension when necessary to continue safe operations when, for example, spare parts are not available. This is not consistent with what is done by the FAA.

response

Partially Accepted

References to Part-ARO and Part-ORO are removed. However, the CS-MMEL still needs to define the prerequisites at MMEL development level to enable safe use of the extension program by the operators.

The (S)TC holder may choose not to cover this and in this case the operators will not be able to use the rectification interval extension provisions in the OPS rules.

comment

192

comment by: AIRBUS

CS-MMEL-110 MMEL Purpose

It is written: "**The MMEL is a document that lists the items which may be temporarily inoperative under specified conditions for a specific aircraft type.**"

- "...**specified conditions for a...**" It should be indicated, somewhere in the CS-MMEL, what are these "**specified**" conditions and where they can be found.

- "...**for a specific aircraft type.**" It should be given, somewhere in the CS-MMEL, the definition of what is a "**specific aircraft type**".

- For "**non-safety-related items**", that may be listed in the MMEL according to the applicant wish, it should be clearly indicated in the **CS-MMEL-100** that the **CS-MMEL** does not apply to "**non-safety-related items**" by saying: "**The MMEL is a document that lists the items which may be temporarily inoperative under specified conditions for a specific aircraft type. When listed in the MMEL as desired by the applicant, the requirements of the CS-MMEL are obviously not applicable to non-safety-related items.**"

response

Partially Accepted

MMEL definition is updated in line with the ICAO definition and 'specified conditions' is deleted.

If a (S)TC holder chooses to include non-safety related items in its MMEL, the compliance to CS-MMEL is required, even if the showing of compliance requires little or no effort in this particular case.

comment

201

comment by: DGAC FRANCE

CS- MMEL 120 (b) (3)

For each item, these requirements ask for some information; Among those, the two bullets "the operational procedure symbol" and "the maintenance procedure...." Seem to be mandatory in all cases. It seems to DGAC France that those are not always provided for some items. It shall therefore be added in CS-MMEL120 b 3 after those two bullets the following words:

"where relevant";

response

Accepted

"if applicable" is added for clarity purpose.

comment

205

comment by: *DGAC FRANCE***CS-MMEL 130**

As written in GM 1 to CS-MMEL 120, the point (f) raises the side issue about documenting the RI.

According to CS-MMEL 130, only some letters are used to fill that RI. It does not give the possibility to use a different symbol (in general "-") in such a case.

This is not possible in a strict application of the CS-MMEL 120 (b) (3) and CS-MMEL 130.

As a consequence, DGAC France recommends completing CS-MMEL 130 with another symbol to be used, in the RI column or box, when a reference to another item or document permits to find the applicable RI.

response

Partially Accepted

If a '-' is used and the reference to another item which contains a RI is included, then the item is considered to have an RI. GM3 MMEL.130 is added to clarify such cases.

comment

226

comment by: *Dassault Aviation*

CS-MMEL-120 Format and Content of the MMEL page #16:

"a format acceptable to the Agency". : a five-column paper format is provided. How "full electronic MMEL" format will be accepted by the Agency (EASA)?

§ (b)(1) The approval status refers to a date of approval and a date of applicability. It is understood that date of applicability might be the date of publication by the TC Holder.

§ (b)(2) The Appendix A to the CS-MMEL-120 cannot be found in the NPA. It should refer to the GM3-CS-MMEL-120 instead.

§ (b)(3) It is written: "The list of items, including for each item:". As not all the list of items is applicable to each MMEL item (there is not always a M procedure), it should be mentioned "when relevant".

response

Partially Accepted

Full electronic MMEL is acceptable. Effective date is used for consistency with the associated operational rules. Erroneous references are corrected. "if

applicable" is added for clarity purpose.

comment

227 comment by: *Dassault Aviation*

CS-MMEL-110 MMEL Purpose page #16

It should be clearly indicated that CS-MMEL provides an alternate safety level to the one required by CS-25 and other requirements. This is the counterpart of CS-140 when applied to other than 25.1309 requirements.

- For "non-safety-related items", that may be listed in the MMEL according to the applicant wish, it should be clearly indicated in the CS-MMEL-100 that the CS-MMEL does not apply to "non-safety-related items" by saying: "The MMEL is a document that lists the items which may be temporarily inoperative under specified conditions for a specific aircraft type. When listed in the MMEL as desired by the applicant, the requirements of the CS-MMEL are obviously not applicable to non-safety-related items." requirements.

response

Accepted

Additional interpretative material has been added to **GM1 MMEL.140 Level of safety** to clarify the subject of compliance with airworthiness certification specifications.

Partially Accepted

See also comment 192.

comment

228 comment by: *Dassault Aviation*

CS-MMEL-120 Format and Content of the MMEL page #16

- Placarding instructions: Falcon MMEL got rid of this requirement by stating that any inoperative item should be placarded. In very specific cases, TC Holder provides with placarding instruction but this is not to generalize to the entire MMEL. To cover all cases, it is proposed to use: "Placarding symbols".

response

Partially Accepted

Alternative wording is proposed to account for the comment.

comment

229 comment by: *Dassault Aviation*

CS-MMEL-125 Operational and Maintenance Procedures

As written "The operational or maintenance procedures are prepared to ensure compliance with the associated MMEL items dispatch conditions." May be misunderstood :

- the operational and/or the maintenance procedures are necessary for all MMEL items, which is not at all the case,

- the operational and/or the maintenance procedures are part of the certification process (to ensure compliance)

This text should be reworded as follows for clarification: "The operational and/or maintenance procedures are necessary to support certain MMEL items.

are prepared to ensure compliance with the associated dispatch conditions. However, the procedures themselves will not be subject to approval."

response

Partially Accepted

Clarification is included in the text to account for the comment.

comment

230 comment by: *Dassault Aviation*

CS-MMEL-130 Rectification Interval pages #16-17

General Comments:

At TC Holder level it is felt that a new category is missing in between C and D. As long as the safety level is substantiated and operational constraints taken in due consideration, Category C is considered as being not enough when but Cat D might be considered as being too long. Therefore, to cover those cases, Category A is inappropriately used. This use is not appropriate because the A cannot be extended and it is everybody's minds that the associated item is critical, although this is the contrary for those cases. This leads the NAAs to refuse an extension when necessary, although they could have given it, and the operators think that the MMEL contains a lot of critical items. The creation of this new should be then considered for permitting the category A to be adequately used.

§ (d) Category D: Under the definition of the Category, the paragraph:

"Items in this category meet the following criteria:

- (1) the absence of the item does not affect crew workload;
- (2) the crew do not rely on the function of that item on a routine or continuous basis; and
- (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item."

is misplaced in the CS-MMEL.130 that gives the definitions of the Rectification Intervals and NOT to which criteria they will meet. The appropriate place is in the GM1-CS-MMEL-130 Rectification Interval in page 30 of 378. Also it must be highlighted that the category D is not limited here to optional items, and must not be limited to optional items, and then applies to all types of items, optionally or basically installed.

response

Noted

The need for another category between C and D although understandable, cannot be, unilaterally introduced by EASA at this stage, mainly for harmonization reasons with current MMEL standards worldwide.

Partially Accepted

See also comment 108.

comment

231 comment by: *Dassault Aviation*

CS-MMEL-135 Rectification Interval Extension page #17

Comments related to the use of the R.I.E in so-called IR-OPS. As long as safety and operational considerations have been taken into account -and therefore substantiated in the MMEL, it is difficult to understand the one-time extension which may drive undue AOG at the operator's level.

response

Noted

Every item included in the MEL should have a rectification interval category. The definition of each category of repair interval will give the maximum period of time the aircraft can be operated under the MEL dispatch release. Overrun to the MEL time limitation can be granted by a procedure approved by the competent Authority (ARO.OPS.205(b)) under conditions specified in ORO.OPS.MLR.105.

ORO.OPS.MLR.105(f) procedure for extension only foresees a one-time extension of the rectification interval B,C and D.

Although a safe operation can be demonstrated when dispatching a given aircraft for a period of time exceeding twice the time associated to the corresponding rectification interval the operation of the aircraft is no more covered by the scope of the MMEL/MEL system.

Other regulatory procedures may then be used to allow continuous operation of the aircraft based on appropriate records but these are beyond the scope of the MEL.

comment

240

comment by: FOCA

Federal Office of Civil Aviation (FOCA):

After reviewing NPA 2011-11 CS-MMLE we are missing the generic MMEL for non-complex aircraft, as stated in the CDR to NPA 2009-01:

"...However, in order to minimize the burden for the TC applicants, the Agency will establish generic MMELs for all categories of non-complex by means of a certification specification".

Will these generic MMELs be subject of another NPA?

response

Noted

The generic MMEL will be subject of a dedicated NPA.

B. DRAFT DECISION - CS-MMEL - Book 1 - Subpart C - SUBPART C - LEVEL OF SAFETY AND JUSTIFICATIONS OF MMEL ITEMS	p. 17-18
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comment

13

comment by: Thales Avionics- JD Chauvet

CS-MMEL-145 (c) (1)" or in a slight discomfort to occupants"

Unconsistent with:

- the CS-MMEL-140 which does not address the effect on occupants comfort
- the GM2-CS-MMEL-1110 and the "non-safety-related-items" definition which may be excluded from MMEL and which are items related to "... comfort of passengers"

=> to be removed

response	<p>Partially Accepted</p> <p>The proposed NPA text was based on the CS 25.1309 definition of "minor" severity classification. CS MMEL.145 (b) is amended to delete the reference to Minor Failure Condition and to replace it by a reference CS MMEL.140, which should be used as a criteria for the qualitative assessment.</p>
comment	<p>15 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>" (3) Ensure that...is not allowed" : The scope and objectives are unclear, do we address the CS-MMEL-150 ? => to be clarified</p>
response	<p>Accepted</p> <p>The requirement is moved into the CS MMEL.150 for clarity purposes.</p>
comment	<p>16 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>(d) (2) "when the operation ...failure condition" for Catastrophic FC, this sentence open the door of leaving the dispatch under MMEL one failure from one catastrophic FC which does not permit to comply to the "No single failure" criteria of CS25.1309.</p> <p>=> considering that (c) (2) say that says "single failures leading to a potentially hazardous or catastrophic failure condition are normally not allowed at dispatch. Remove "one or" for catastrophic</p>
response	<p>Not Accepted</p> <p>The wording of CS MMEL.145(c)(2) is revised to clarify that the qualitative analysis should exclude catastrophic or hazardous failure condition at the next in-flight failure level except for specific cases addressed on a case-by-case basis and in line with CS MMEL.145(d) requirement for providing quantitative data.</p> <p>The possibility to review candidate items for which the next single failure or event may lead to a catastrophic FC is kept as not all Type Certification Basis do have the x.1309 "no single failure" criteria or exceptions to this principle may exist (e.g. helicopters rotor/transmission systems). Furthermore, the proposed requirements are consistent with the ASAWG recommendation on specific risk MMEL.</p>
comment	<p>17 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>"(c)(2) ... "Under MMEL conditions, single failures leading to a potentially hazardous or catastrophic failure condition are normally not allowed at dispatch."</p> <p>This sentence is more stringent for Hazardous FC than CS25.1309 which remove credit from the second part on the catastrophic. It should be clearer to the fact that leaving the dispatch configuration one failure from a catastrophic FC shall not be allowed.</p> <p>=> sentence to be modified: remove hazardous FC and use "shall" or "must" for the catastrophic FC</p>
response	<p>Not Accepted</p> <p>The intent of CS MMEL.145 is to provide requirements that will apply to any</p>

MMEL candidate and they were therefore designed to account for the various Type Certification Basis and particular risks which may not be subject to CS25.1309. Furthermore, the proposed requirements are consistent with the ASAWG recommendation on specific risk MMEL.
See also answer to comment 16.

comment

87 comment by: *Cessna Aircraft Company*

GM1-CS-MMEL-140 establishes a reasonable approach to dealing with items used in an emergency procedure. Cessna is unclear how this meets the rule as proposed. Cessna suggests rewriting the rule more like the guidance in terms of allowing such an item in the MMEL if it does not impair the emergency procedure or required function (for the case of being on the emergency bus).

Some aircraft have items on the emergency bus for crew workload or capability beyond the minimum required by the rules; current wording of the rule would drive designers to not have anything beyond the absolute minimum equipment on the emergency bus. Furthermore, for a given type of operation, there could be differences in what the minimum equipment must be on the emergency bus.

response

Accepted

In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as a guidance material to CS MMEL.145(c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.

comment

88 comment by: *Cessna Aircraft Company*

CS-MMEL-145: Cessna requests clarification on how previously approved MMEL's and older aircraft designs needing new or updated MMEL's would be handled. Because of rule and guidance/policy changes in the application of 25.1309, older aircraft may not have the system safety documentation, models, data, or tools needed to perform a quantitative analysis as required in (d). To require production of a complete analysis to support MMEL activity would be cost and resource prohibitive. Cessna suggests some relief or consideration for aircraft with older certification basis be provided with regard to the specifics of the system safety analysis requirements.

response

Noted

Compliance with CS-MMEL will not be required to older aircraft models of a type no more in production at the date of applicability of the new rules unless so desired by the applicant. Grandfathering provisions are also included to deal with previously accepted MMELs. Please refer to the Part 21 OSD Opinion 07/2011.

comment

89 comment by: *Transport Canada Civil Aviation Standards Branch*

Referenced Section: CS-MMEL-145(c)(2)

Comment

This section includes the statement "... crew ability to cope with this failure or

external event, and effects on occupants” which implies that the consequences of the next worst failure and an external event are separate events and can be treated independently. The requirements of CS 25.1309(a) & (a)(1) state “The aeroplane equipment and systems must be designed and installed so that:

(1) Those required for type certification or by operating rules, or whose improper functioning would reduce safety, perform as intended under the aeroplane operating and

environmental conditions.”

To substantiate that an acceptable level of safety for any dispatch configuration is achieved, the intended operating and environmental conditions the aeroplane would be expected to encounter should remain a consideration in the justification of MMEL items.

For instance, relief for a particular ice protection system component may be granted on the basis of having suitable, redundant ice protection system component(s) available. The next failure condition of an ice protection system component in and of itself may be no greater than minor whereas if the failure occurred in icing conditions the result would be a higher degree of hazard to the aeroplane and its occupants. Since the icing conditions in this example satisfy the normally expected aeroplane operating and environmental conditions and are considered to have a probability of 1, it would lead to the conclusion that it is essential to include operating and environmental conditions as a factor towards assessing the next worst-case failure condition.

The context of this section of the document could be interpreted so that it would appear to not require consideration of this, and similar cases (e.g. a cargo compartment fire in combination with a cargo fire detection/suppression equipment failure is an example of another case expected to be addressed).

Recommendation

Revise the wording of this section by adding the underlined words below in the referenced statement of this section as follows, “(c)(2)... *crew ability to cope with this failure separately or in combination with an external event, and effects on occupants*”.

response

Noted

The certified operating and environmental conditions should be considered at the level of showing of compliance with CS MMEL.145(c)(1) when evaluating the MMEL dispatch configuration. The “icing” event is therefore not considered as a next external event (probability of one) In the case of the icing protection system, this may result into prohibiting operations in icing conditions at dispatch level.

comment

90 comment by: *Transport Canada Civil Aviation Standards Branch*

Referenced section: CS-MMEL-145 Justification of MMEL items, section, (c)(2) and (d)(2)

Comment

Both of the referenced sections identify the possibility of allowing a dispatch configuration where a single subsequent failure may lead to a catastrophic failure condition. While it is recognized that the wording used in both these sections is consistent with the specific risk recommendations from the ASAWG group, as mentioned in section 0 of CS MMEL, it is important to understand their origin and intended implementation.

The ASAWG group produced a final report with MMEL recommendations that

included the same references to single failures leading to a catastrophic event. The reason for this being first, that the recommendation was provided to the FAA AEG as guidance only to be used for developing a standardized method. The outcome of which was believed to be issuance of a policy letter and not an FAA Order, AC or other form of rulemaking. Secondly, there was general agreement within the ASAWG group to ensure that no single failures would lead to a catastrophic event but it was recognized that some instances of MMEL relief currently exist in service where this may in fact be the case. The final wording of the ASAWG recommendation accommodated this condition and those phrases are now included here in the referenced sections (c)(2) and (d)(2), but during the ASAWG effort, they were only meant to apply to those legacy designs that did not have the no single failures requirement in the certification basis.

The situation is much different now where CS 25.1309 has a requirement where the type design must be shown to not have any single failures that can lead to a catastrophic failure condition. While it is understood that MMEL configurations may result in the aeroplane experiencing some amount of time where it will be at less than the type certification airworthiness level, it was not envisioned that it would apply to new designs with the no single failures requirement in the type certification basis.

Other than in exceptional situations on a case-by-case basis, no reasonable technical or safety argument can be made to justify a process whereby the type certification effort expended to ensure no single failures are present in design can be circumvented in operation. Thus the reference to single failures leading to a catastrophic event should be removed. Likewise, the reference to single failures leading to hazardous failure conditions not normally being allowed is not consistent with current guidance materials and certification practices. It is highly desirable to have this statement for hazardous single failure conditions and recommended to retain it although current systems designs are not required to achieve this goal in certification.

Recommendation

Revise section (c)(2) by deletion of specific wording and by adding the underlined words below in the referenced statement of this section as follows;

"Under MMEL conditions, single failures leading to a potentially hazardous ~~or catastrophic~~ failure condition are normally should not be allowed at dispatch. Single failures leading to a catastrophic failure condition are not allowed."

AND

Revise section (d)(2) as follows;

"When the operation with the inoperative item leaves the aircraft one failure away from a hazardous failure condition, or ~~one or two~~ or more failures away from a catastrophic failure condition."

response

Not Accepted

The possibility to review candidate items for which the next single failure or event may lead to a catastrophic FC is kept as not all Type Certification Basis do have the x.1309 "no single failure" criteria or exceptions to this principle may exist (e.g. helicopters rotor/transmission systems, particular risk analysis). Furthermore, the proposed requirements are consistent with the ASAWG recommendation on specific risk MMEL.

CS MMEL.145(d) provides prerequisites for a quantitative assessment in order to support a specific case which will not meet revised CS MMEL.145(c)(2) requirement as specified in new paragraph CS MMEL.145(c)(3) or when the conditions of CS MMEL.145 (d) (1) and (2) are met.

comment

110

comment by: AIRBUS

CS-MMEL-140 Level of Safety

§ (a): It is written "...to ensure that an acceptable level of safety as intended by the applicable requirements.....". What are the "applicable requirements"? This sentence should be reworded to indicate clearly what the "applicable requirements" means, or a definition (and/or a list) of the **applicable requirements** should be given somewhere in an appropriate document.

§ (a)(3): The "(s)" in the word "failure(s)" should be removed to read "failure". This is because only the next failure having the worst safety-related impact is generally considered and **NOT** all the next failures. In some remote cases, this is the manufacturer that submits items with the consideration of more than one next failure but this must not be imposed for all items because this is not the normal way to do. This is also consistent with the **CS-MMEL-145 (c)(2)**.

§ (a)(4): The same as above for **§(a)(3)** applies also here to the external event. This is also consistent with the **CS-MMEL-145 (c)(2)**.

§ (b): This paragraph is coming from the **FAA Policy Letter (PL) 63** that is recurrently criticized because not considered as appropriate by FAA operators and not straightforward. From recent discussions with the FAA, it appeared that the intent of the **PL-63** was in reality to address the systems supplied by the emergency busbar on some old Boeing airplanes. A recopy of the **PL-63** is then not at all appropriate and this paragraph should be removed to be also consistent with the initial agreed draft where it was not present.

In addition, it must be highlighted that:

- A system can be fed in emergency, although not necessary, only because the emergency busbar is physically very close to the system to be powered.-
- A system can be required in an emergency procedure, when it is available, but its non-availability will not impair the correct accomplishment of the procedure.

response

Partially Accepted

The "applicable requirement" reference has been the result of long discussions during the CS-MMEL working group sessions. Because the CS-MMEL is applicable to various kind of designs, subject to different certification basis and also potentially subject to operational requirements, this generic wording has been retained in the same spirit as the JAR-MMEL/MEL.010.

Interpretative material is added in the associated GM to the related CS-MMEL paragraph to specify that the applicable requirements to be considered for MMEL development include the Type Certification Basis requirements and any operational requirement (including airspace requirements) applicable to the considered item. Furthermore, is clarified that (b) "As intended" means that strict compliance with the applicable requirement(s) may not be ensured provided appropriate mitigation means are proposed ensuring an acceptable level of safety is maintained in line with the overall intent of the requirement(s).

The content of paragraphs CS-MMEL 140 (a)(3) and (a)(4) is describing the factors that are considered in the evaluation of the level of safety under MMEL. They do not refer at this stage to the qualitative evaluation conducted in a candidate MMEL item assessment as part of the justification but are more general level. They are considering the possibility that the worst effects on the level of safety are resulting from more than one failure or event as it is further defined in CS MMEL.145 (d). Indeed the qualitative evaluation of the next worst failure is limited to a single next "critical" failure as per CS-MMEL -145 (c)(2).

Accepted

In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as a guidance material to CS.MMEL.145(c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.

comment

111

comment by: AIRBUS

CS-MMEL-145 Justification of MMEL items

§ (a): It is written "**The justifications are provided as part of the MMEL items proposal**". What is the intention behind this sentence? Will the justifications provided in the MMEL Projects continue to be defined at the applicant discretion to appropriately support the proposals as this is successfully done for years now?

§ (b): This paragraph is not clear. What are the methods "**as agreed or as defined by the Agency**" and in which EASA document can they be found?

§ (c)(1): There is a reference to a "**slight discomfort to occupants**". To which occupants this refers to? Commercial passengers only? Cockpit and cabin crews only? All persons on board? If this refers only to the commercial passengers, it is surprising and not appropriate to find a reference to the commercial passengers comfort in a rule because this is only a commercial aspect exclusively relevant to the operator and not relevant to the authorities when the safety of the passengers is not impaired. This reference should then be removed.

§ (c)(2): The text "**Evaluates the consequences of the next worst safety-related failure and the consequences of the external event**" should read "**Evaluates the consequences of the next worst safety-related failure OR the consequences of the external event**".

This is because only **the next situation** (failure **OR** external event) having the worst safety-related impact is generally considered and **NOT multiple next situations** (failure + external event). In some remote cases, this is the manufacturer that submits items with the consideration of more than one next situations but this must not be imposed for all items because this is not the normal way to do. Also, there is no clear definition of what "**the next worst safety-related failure**" is.

§ (c)(3): The text "**Ensures that combination with another MMEL item providing mitigation means to meet paragraph (1) and (2) above is not allowed**" is redundant with the **CS-MMEL-150 Multiple inoperative items** that says: "**The effects of multiple inoperative items are taken into account during the preparation of the MMEL, as appropriate**". Therefore, the § (c)(3) should be removed. Also, the wording of the **CS-MMEL-150** needs to be clarified (see the corresponding comments related to the **CS-MMEL-150**).

§ (c)(4): It is written "**Evaluates the complexity of maintenance and/or operational procedures**". Regardless of the complexity of the **(o)** and/or the **(m)**, when relevant, what is important is giving flexibility for avoiding NO-GO situations. Therefore, such evaluation will not change a proposal to be made

and this sentence is useless and should be removed.

§ (e): The operational **(o)** and the maintenance **(m)** procedures are not approved. This should be clearly stated in the text that should read: **"The intent of the operational and maintenance procedures referenced in the MMEL is identified as part of the MMEL items proposal. Their content is not approved but is made available to the Agency upon request"**.

response

Partially Accepted

§ (a) is intended to ensure justifications are provided with the MMEL candidate proposals. This is to avoid having application with no justifications provided to the Agency but only referenced. The wording of the requirement is modified to improve clarity.

Noted

§ (b) is intended to leave the flexibility in the means of justifications of the MMEL, provided they are acceptable to the Agency. There is today a variety of methods used by the TC holders to comply with the level of safety required by CS MMEL.140.

CS MMEL.145 is introducing the minimum requirements for an item to be an acceptable candidate to be included in the MMEL. The means of compliance will be defined on a case by case basis through appropriate records (e.g. Operational Review Item (ORI)).

Accepted

The proposed NPA text was based on the CS 25.1309 definition of "minor" severity classification. CS MMEL.145 (b) is amended to delete the reference to Minor Failure Condition and to replace it by a reference CS MMEL.140, which should be used as a criteria for the qualitative assessment.

Partially Accepted

§ (c)(2): The intent of the paragraph is the following: to evaluate "the consequences of the next worst safety-related failure and the consequences of the next external event" and not to evaluate "the consequences of the next worst safety-related failure and the next external event". That is to say the consequences of the next failure are reviewed separately from the consequences of the next event. For example, if fire protection system is degraded, the consequences of the next failure of remaining fire protection system is evaluated and then the consequences of the next event = fire are evaluated taking into account the availability of the remaining fire protection system. The cumulated consequences are not required to be evaluated as far as CS MMEL.145 (c)(2) is concerned. "separately" is added to the text for clarity.

Partially Accepted

§ (c)(3) is proposed to be removed from CS MMEL.145 and integrated into CS MMEL.150 revised text.

Accepted

§ (c)(4) is removed but similar considerations have been transferred at GM level to address the intent of the original requirement.

Not Accepted

Procedures are considered as part of the MMEL content in CS-MMEL OSD data although their approval will be contingent upon compliance with certification

specifications which will be limited to providing their overall intent in the associated item justifications and the procedures validation methods, as requested by the Agency.
 § (e) is revised to clarify that only the intent of the procedures is to be part of the justifications

comment

112 comment by: AIRBUS

CS-MMEL-150 Multiple Inoperative items

It is written: "The effects of multiple inoperative items are taken into account during the preparation of the MMEL, as appropriate". In the **GM3-CS-MMEL-120 Format and content of MMEL - MMEL PREAMBLE - Multiple inoperative items** (page 25), it is written: "...Wherever possible, account has been taken in this MMEL of multiple inoperative items.....". The above underlined wording in the page 25 sounds clearer and the wording in the **CS-MMEL-150** should then read for consistency: "**Wherever possible, the effects of multiple inoperative items are taken into account during the preparation of the MMEL, as appropriate**".

response

Partially Accepted

Clarifications are made in CS MMEL.150.

comment

222 comment by: Boeing

Page: 18

Section: **CS-MMEL-145 Justification of MMEL Items**

Para: (c)(2)

Revise this paragraph as follows:

(2) Evaluates the consequences of the next worst safety-related failure and the consequences of the external event, if applicable, on the aircraft functional capabilities and/or safety margins, as well as crew ability to cope with this failure or external event, and effects on occupants. ~~Under MMEL conditions, single failures leading to a potentially hazardous or catastrophic failure condition are normally not allowed at dispatch.~~

JUSTIFICATION: The last sentence is not needed in this section. This section provides the types of information used to justify an MMEL proposal. It doesn't appear to be intended to address the approval criteria for the proposal. The sentence seems beyond the scope of what is intended by the section.

response

Partially Accepted

Although it is recognised that the NPA sentence is not of the same nature of information than the intent of paragraph (c)(2), the request to delete it completely is not accepted. An updated version of the requirement is proposed in a revised text.

comment

232 comment by: Dassault Aviation

CS-MMEL-140 Level of Safety page #17

§ (b): Although the requirement is well understood and is a driver for Falcon MMEL, the way it is written prohibits that any deviation from an emergency procedure be substantiated. For instance an optional EVAS system, part of an emergency procedure might not be inoperative with such a sentence.

For those considerations, it is proposed to let the opportunity to challenge this requirement on a "equivalent safety level" basis.

response

Accepted

In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as a guidance material to CS MMEL.145 (c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.

comment

233 comment by: *Dassault Aviation*

CS-MMEL-145 Justification of MMEL items pages #17-18

§ (c)(2): The text "Evaluates the consequences of the next worst safety-related failure and the consequences of the external event" should read "Evaluates the consequences of the next worst safety-related failure OR the consequences of the external event".

This is because only the next situation (failure OR external event) having the worst safety-related impact is generally considered and NOT multiple next situations (failure + external event).

§ (c)(4): "Evaluates the complexity of maintenance and/or operational procedures". This is a unique requirement toward procedures and in contradiction with the status of maintenance and operating procedures with regards to MMEL. This sentence is contradictory with §(e) of the same CS-MMEL and should be removed.

response

Partially Accepted

§ (c)(2): The proposed requirement is to evaluate "the consequences of the next worst safety-related failure and the consequences of the next external event" and not to evaluate "the consequences of the next worst safety-related failure and the next external event". That is to say the consequences of the next failure are reviewed separately from the consequences of the next event. For example, if fire protection system is degraded, the consequences of the next failure of remaining fire protection system is evaluated and then the consequences of the next event = fire are evaluated taking into account the availability of the remaining fire protection system. The cumulated consequences are not required to be evaluated as far as CS MMEL.145 (c)(2) is concerned. "separately" is added to the text for clarity.

Accepted

§ (c)(4) is removed but similar considerations have been transferred at GM level to address the intent of the original requirement.

comment

234 comment by: *Dassault Aviation*

CS-MMEL-145 Justification of MMEL items

§ (e): The operational (o) and the maintenance (m) procedures are not approved. This should be clearly stated in the text that should read: "The intent of the operational and maintenance procedures referenced in the MMEL is identified as part of the MMEL items proposal. Their content is not approved but may be made available to the Agency upon request".

response

Not Accepted

Procedures are considered as part of the MMEL content in CS-MMEL OSD data although their approval will be contingent upon compliance with certification specifications which will be limited to providing their overall intent in the associated item justifications and the procedures validation methods, as requested by the Agency.

B. DRAFT DECISION - Book 2 - GUIDANCE MATERIAL TO CS-MMEL

p. 19-34

comment

1 comment by: *Francis Fagegaltier Services*

Comments on GM2-CS-MMEL-145(c)

CS-E 1030 (a) states the following ; « If approval is sought for dispatch with Faults present in an Electronic Engine Control System (EECS), ... ». This limitation of scope is not reflected in the proposed GM2-CS-MMEL-145(c).

CS-E 1030 is only applicable to turbine engines, when CS-MMEL, applicable to "complex motor-powered aircraft", is not limited to aircraft equipped with turbine engines.

In addition, in GM2-CS-MMEL-145(c), the wording « may be carried out in compliance with CS-E 1030 » implies that there is a means to avoid applying CS-E 1030 when approval is sought for dispatch with Faults present in an Electronic Engine Control System. This is not correct.

Editorial : in between « purpose » and « the MMEL » at end of the proposed GM2-CS-MMEL-145(c), it is assumed that the word « of » is missing.

As a consequence of these comments, a rewording of GM2-CS-MMEL-145(c) is proposed as follows (changes highlighted in italics and bold) :

GM2-CS-MMEL-145(c) Justification of MMEL items
QUANTITATIVE SAFETY ASSESSMENT — ENGINE TIME LIMITED DISPATCH (TLD)

In case of a turbine engine, if approval is sought for dispatch with Faults present in an Electronic Engine Control System, a quantitative safety assessment should be carried out in compliance with CS-E 1030 (Time Limited Dispatch (TLD)). In this case, the applicant should ensure that assumptions made at engine level remain true at aircraft level for the purpose **of** the MMEL.

response

Accepted

The text of the GM has been amended accordingly.

comment

2 comment by: *Association of Dutch Aviation Technicians NVLT*

Please specify which maintenance personnel is allowed to perform and is responsible for the specific maintenance procedure in the MEL?

To our opinion only qualified mechanics or certifying staff is allowed to perform the MEL related maintenance procedures, however these procedures should be certified in the Aircraft Technical Log by certifying staff B1 or B2.

This is due the fact that the definition of maintenance is clearly stated in COMMISSION REGULATION (EC) No 2042/2003 of 20 November 2003 see art.

2 definitions and that all maintenance has to be certified by certifying staff see art. 2 h.

response

Noted

The need for certified maintenance in the frame of the MEL application is managed in accordance with the continuing airworthiness management procedures.

comment

10 comment by: *Arturo Brazal*

Regarding Definition Nr 4 'As required by applicable regulations', it is a bit confusing, assuming that OSD MMEL items must be justified. If there is a MMEL entry like this, how does the operator deal with it when preparing the MEL? (currently the TGL 26 provides some guidance in these cases, but with CS-MMEL, these entries should be replaced with the guidance in book 2)

response

Noted

The CS-MMEL provides specifications for the development of the MMEL. Some paragraphs like the CS MMEL.140 and CS MMEL.145 are applicable to all candidate items. The method for ensuring compliance with the relevant CS-MMEL requirements has to be agreed by the Agency as specified in CS MMEL.145 (b) "(b) The inclusion of each item in the MMEL is justified following one or more methods as agreed or as defined by the Agency."

Now, considering the case of an MMEL entry where the Remarks & Exception field indicate "As required by applicable regulations" or similar statement. The associated definition in the preamble specifies that this item is "subject to certain provisions (restrictive or permissive) expressed in the applicable legislation". This definition was adapted from the FAA definition "*As required by FAR*" means that the listed item is subject to certain provisions (restrictive or permissive) expressed in the Federal Aviation Regulations operating rules. The number of items required by the FAR must be operative. When the listed item is not required by FAR it may be inoperative for time specified by repair category. The term "14 CFR" may be substituted for "FAR" in MMELs or operator MELs.

Some FAR rules are permissive regarding certain equipment (for example § 91.609 Flight data recorders and cockpit voice recorders paragraph (5) embed some rule text permitting operation with inoperative equipment for 15 days extendable one time).

We do not have similar approach in our European regulations today but the definition text was kept for harmonization purposes.

This definition will be used in the frame of CS-MMEL only for cases where safe operation with the item inoperative is ensured, taking into account applicable European operational regulations.

The management of these items at MEL level is under the responsibility of the competent Authority approving the MEL.

comment

11 comment by: *Arturo Brazal*

GM1-CD-MMEL-145 paragraphs (a), (b) and (c): Should the ODS MMEL include specifications for all the entries, copying if it is the case, the guidance dispatch conditions in Book 2? Or the OSD MMEL item may refer to the corresponding CS-MMEL Book 2 item, without specifying the dispatch conditions?.

I need clarification about which is the reference document for operators to

	prepare their MELs, is it a self-contained MMEL (only one document) or is it a MMEL plus the guidance Book 2 in CSS-MMEL (two documents)?
response	<p>Noted</p> <p>The guidance book is not intended to be used directly by the operators. The content of the proposed guidance may be reflected in the MMEL, as applicable, and forms part of the specifications on MMEL, not on MELs. There is no intent to enable MMELs to refer to the APPENDIX 1 to GM1 MMEL.145.</p>
comment	<p>18 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>"GM2-CS-MMEL-130 Rectification Interval" end of (b) Quantitative aspect is only evoked within "CS-MMEL-145 (d)" and not the "c"</p>
response	<p>Accepted</p> <p>Corrections made.</p>
comment	<p>19 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>A "GM3-CS-MMEL-140" is missing for demonstration of compliance to CS-MMEL-140 (b) exclusion requesting a qualitative analysis demonstrating that the items is not powered by an "emergency bus or equivalent"</p>
response	<p>Accepted</p> <p>Clarification introduced in GM1 MMEL.140 (b).</p>
comment	<p>20 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>"GM1-CS-MMEL-145(b) Justification of MMEL items" and "GM2-CS-MMEL-145(b) Justification of MMEL items" this requirements should be referenced respectively "GM1-CS-MMEL-145(b)"and "GM2-CS-MMEL-145(b)"</p> <p>=> to be corrected</p>
response	<p>Accepted</p> <p>Corrections made.</p>
comment	<p>21 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>page 32 : a least two "GMx-CS-MMEL-145(c)" are missing to request both qualitative requested analyses (severity of the effect within dispatchable configuration and consequences of next worst failure or external event)</p> <p>=> to be added</p>
response	<p>Not Accepted</p> <p>The GMs are interpretative material of the CS requirements. As already requested by the CS MMEL.145 (b) in a clear and unambiguous manner, additional GMs were not deemed necessary.</p>
comment	<p>22 comment by: <i>Thales Avionics- JD Chauvet</i></p>

"GM1-CS-MMEL-145(c) Justification of MMEL items" This GM should be referenced as "GM1-CS-MMEL-145(d) " which is the first requirement which addressed the "supplemental safety assessment"

=> to be corrected

response

Accepted

Corrections made.

comment

23 comment by: *Thales Avionics- JD Chauvet*

"GM1-CS-MMEL-145(c) Justification of MMEL items chapter I." Does it mean that the max allowed dispatch time may be allowed?

=> to be clarified

response

Noted

The maximum allowable dispatch time resulting from the formulas described in GM1 MMEL.145(d) is intended to be used for a short period of time to mitigate the exposure to the risk, when the expected probabilities are falling below the certification objectives. Clarifications are introduced in GM1 MMEL.145(d). Whenever possible, the maximum allowed dispatch time should be rounded to the nearest conservative rectification Interval category.

comment

24 comment by: *Thales Avionics- JD Chauvet*

"GM1-CS-MMEL-145(c) Justification of MMEL items chapter III": the term "top event" is undefined, please use the conventional "Failure Condition" term

=> to be corrected

response

Accepted

Correction made.

comment

25 comment by: *Thales Avionics- JD Chauvet*

"GM2-CS-MMEL-145(c) Justification of MMEL items" should referenced "GM2-CS-MMEL-145(d)"

=> to be corrected

response

Accepted

Correction made.

comment

36 comment by: *CAA-NL*

It is unclear what the basis is for the formulas in GM1-CS-MMEL-145(c). The formulas would lead to maximum dispatch times that depend on the failure rate of the proposed MMEL item. We don't understand the logic is behind this approach.

GM1-CS-MMEL-145(b) gives a statement regarding the MMEL dispatch configuration leaving the aircraft two failures away from a Catastrophic failure condition. The related probabilities could be presented as:

$$PF(\text{INOP MEL-item}) \times PF(\text{Failure 1}) \times PF(\text{Failure 2}) \leq 10^{-9}$$

As over dimensioning is less and less applicable to modern designs, there will be less and less margin in overall probability related to failure conditions. The higher the reliability of the MEL-item = a low probability, the higher the probability of the two other failures within the formula given above.

Further, for reliable items (low failure rate) the formula given in GM1-CS-MMEL-145(c) leads to longer maximum dispatch times which is intuitively contrary to the reasoning given above.

For both formulas could be stated that the rest probability and thus the max. dispatch time is independent of the failure rate of the MEL-item is. The max dispatch time should be related to the probability of the relevant 2 failures away from the catastrophic failure condition. It is proposed to replace the guidance with a quantitative approach that is linked to the approach to system safety in the guidance material to CS 25.1309, and to explain that link.

response

Noted

The formula was based on the following assumption:

- The probability of the FC in full-up (PN) is well below 1E-09 as the probability of the FC under MMEL is $\leq 1E-07$.
- The overall objective is to maintain the average risk within the CS 25.1309 objective of $\leq 1E-09$.
- The average risk $\sim PN + PF.FR.Disp_Time[FH] \sim PF.FR.Disp_Time[FH] \leq 1E-09$.
- The maximum dispatch time as calculated in the formulas proposed in GM1 MMEL.145(c) ensures the average risk remains within the objective of 1E-09. The more reliable the item is, the less MEL application will be potentially applied on it. Therefore, the average risk is acceptable and meets CS 25.1309 objectives.

comment

85 comment by: UK CAA

Page No: General comment on MMEL Guidance Book

Paragraph No: Various

Comment: Many items in the MMEL Guidance Book have had the word "that" added after "provided", when compared with TGL26 and other MMELs generally. This is unnecessary and its removal would restore consistency.

response

Accepted

comment

91 comment by: Transport Canada Civil Aviation Standards Branch

NPA Section: GM1-CS-MMEL-145(c) Justification of MMEL items

Comment

Acknowledging the acceptance of the message-oriented MMEL approach, the guidance for this section should take into account that CAS messages may cover more than one failure (which is usually the case). In these instances, the worst case failures combination/condition for which this message would be posted should be considered when performing the quantitative assessment.

Recommendation

Revise section (c) by adding the following as a note;

"Where a message-oriented MMEL approach is in use, the worst case failures combination/condition for which this message would be posted should be considered when performing the quantitative assessment."

response

Accepted

The proposal is accepted and changes of the guidance material are made in that direction.

comment

92 comment by: *Transport Canada Civil Aviation Standards Branch*

NPA Section: GM1-CS-MMEL-145(c) Justification of MMEL items

Comment

The application of the equations $Max_Disp_Time_{CAT}$ and $Max_Disp_Time_{HAZ}$ needs to be carefully controlled as there are no hard limitations preventing an applicant from bypassing the desired assessment methods outlined in section GM2-CS-MMEL-140(a), "Means to maintain the level of safety". The methods detailed in GM2-CS-MMEL-140(a) have been the cornerstone of all past MMEL approvals through the use of limitations, the presence of redundant systems or the use of operational and/or maintenance procedures as mitigating factors. The regulatory authorities have also accepted a second assessment method allowing an order of magnitude reduction to 10-08 for catastrophic failure conditions and 10-06 for hazardous failure conditions on past programs. The application of the 10-07/10-05 method for catastrophic and hazardous failure conditions, respectively, is new and has not been used for MMEL dispatch consideration.

The concern regarding the 10-07/10-05 method application is that it may figure more prominently during the early design stages of a program having a negative impact on system redundancies and system robustness (i.e. applicants may use this more relaxed MMEL criteria to justify less redundancy or reliability based on having dispatch configurations comply with lower standards). Since hard limitations and/or stipulations restricting the use of this method are currently not in the NPA, the possibility exists that an applicant can justify using this method as a first choice instead of the tried and true assessment techniques already in existence. While it can be agreed that certain, exceptional cases may warrant consideration of the 10-07/10-05 method, it should be highlighted that an applicant using this approach would be required to substantiate the following:

- Justify that the cornerstone objectives of GM2-CS-MMEL-140(a) have been addressed to the maximum possible extent, and

· - - The 10-08/10-06 criteria could not be satisfied without undue hardship
Such measures will help ensure the spirit of the desired assessment objectives and that the 10-07/10-05 method is only used in exceptional, short duration cases.

Recommendation

Revise GM1-CS-MMEL-145(c) by inserting the underlined text in the 2nd paragraph under the heading "Quantitative Safety Assessment" to read as

follows:

~~Items for which~~ “Certain exceptional, short duration cases where the means to maintain the level of safety according to the methods described in GM2-CS-MMEL-140(a) could not be fully achieved and, where the probabilities per flight hour of 1.10-08 for catastrophic failure conditions and 1.10-06 for hazardous failure conditions are not met in the dispatch configuration, should be reviewed with the agency to address the following:

Provide justification that the objectives of GM2-CS-MMEL-140(a) have been addressed to the maximum possible extent, and
The 10-08/10-06 criteria could not be satisfied without undue hardship

response

Noted

Provisions are present in the proposed GM1 MMEL.145(d) to specify that the 1.10-08 for catastrophic failure conditions and 1.10-06 for hazardous failure conditions are the objectives. Furthermore the CS MMEL.145(d) (1) requires that the quantitative analysis is conducted only if the severity of the failure condition cannot be mitigated.

comment

94 comment by: *Transport Canada Civil Aviation Standards Branch*

Referenced Section: GM1-CS-MMEL-110 MMEL purpose

As indicated in the preamble of NPA 2011-11, paragraph 10, a MMEL is part of the Operational Suitability Data (OSD) that complements a specific Type Certificate (TC). As such, we believe that a MMEL should only cover one aircraft type.

Furthermore, from an operational point of view, a MMEL covering two or more aircraft types could bring unnecessary additional burden to an aircraft operator in the development of the MEL for a specific aircraft type. Despite the commonality that may exist between two aircraft types, it is not normally acceptable by National Aviation Authorities to approve a single MEL covering more than one aircraft type.

TCCA Proposal:

It is proposed that GM1-CS-MMEL-110 be deleted from Book 2 of CS-MMEL.

response

Not accepted

As long as the MMEL is referenced in each individual aircraft type TCDS, we see no issue in having the same document addressing several types provided the GM is followed.

comment

95 comment by: *Transport Canada Civil Aviation Standards Branch*

Referenced Section: GM1-CS-MMEL-120 Format and content of MMEL

For consistency of terminology used in other parts of CS-MMEL, it is proposed to replace “operations” with “operational” in paragraph (h) as indicated below.

TCCA Proposal:

(h) Where there is a requirement for a specific maintenance procedure, then an (M) symbol should be included as part of the MMEL entry to indicate this. Where there is a requirement for a specific ~~operations~~ operational procedure, then an (O) symbol should be included as part of the MMEL entry to indicate this.

response

Accepted

comment

96 comment by: *Transport Canada Civil Aviation Standards Branch***Referenced Section: GM3-CS-MMEL-120 Format and content of MMEL**

For consistency of terminology used in other parts of CS-MMEL, it is proposed to replace "operations" with "operational" in paragraph 28 as indicated below.

TCCA Proposal:

28. '(O)' indicates a requirement for a specific ~~operations~~ operational procedure which must be accomplished in planning for and/or operating with the listed item inoperative. Normally these procedures are accomplished by the flight crew; however, other personnel may be qualified and authorised to perform certain functions..

response

Accepted

comment

97 comment by: *Transport Canada Civil Aviation Standards Branch***Referenced Section: GM1-CS-MMEL-145(c) Justification of MMEL items**

In order to ensure MMEL relief standardization, the calculated maximum dispatch times using equations (1) and (2) should, whenever possible, be rounded to the nearest conservative Rectification Interval. As an example, assuming an aircraft type with projected/average utilization of 10 hours per day, a calculated time of 80 hours would be equivalent to 8 calendar days, which should then be rounded to a category B Rectification Interval for the aircraft MMEL item.

TCCA Proposal:

It is proposed to add the following paragraph after the last paragraph of GM1-CS-MMEL-145(c):

Whenever possible, the MMEL entry should use standard Rectification Interval Categories by rounding the calculated maximum dispatch time (in flight hours) to the nearest conservative Category (based on projected/average aircraft utilization per day).

response

Partially Accepted

The maximum allowable dispatch time resulting from the formulas described in GM1 MMEL.145(d) is intended to be used as a parameter in the decision of acceptability of the candidate item, when the expected probabilities are falling below the certification objectives. Clarifications are introduced in GM1 MMEL.145(d) to specify that, whenever possible, the maximum allowed dispatch time should be rounded to the nearest conservative rectification Interval category, not exceeding the C rectification interval category.

comment

98 comment by: *CHC Flight Standards*

CHC would like to propose not to use this definition of flight time (page 26 item 12) for the following reasons:

1. Definition is different then the technical flight time definition.
2. Definition is different then the FCL flight time definition.
3. Definition is not unambiguous --> ... comes to a complete stop on its parking area, after the first landing". In helicopter operations it's rather normal to have multiple intermediate stops all with a landing, while the rotors and engines keeps on running. It's unclear in such a situation when the MEL becomes applicable.
4. The definition would also create problems in the EMS world where a

mission is seen as the whole series of flights until the return to the hospital. With this definition the MEL can become applicable on the EMS operating site or at a stopover at another hospital.

5. Another difference in flight time definition for pilots (technical flight time, commercial flight time, FCL flight time, FTL flight time and Ops flight time could all be different). This is another MEL flight time definition.

In view of the above, CHC would like to propose the use of the normal FCL flight time definition (which in principle deletes ~~after the first landing.~~)

This will resolve all items above except item 4 which could be addressed in the HEMS appendix or HEMS approval.

response

Not Accepted

The definition provided in item 12 on page 26 of the NPA is the definition of "flight" and not "flight time". If an item is proposed and considered acceptable only for 1 flight as per the below definition then we need to be able to do this. If the item is justified for a series of flights, then this would also be directly reflected.

comment

113 comment by: AIRBUS

GM1-CS-MMEL-105(d) Definitions

§ (b): For consistency with the § (a), the word "item" should be used in place of "instrument or equipment". Also, since this sentence refers to inoperative items only, the word "inoperative" should be added. The complete sentence should then read "It should be highlighted that unless it is specifically allowed by the MMEL, the instrument or equipment inoperative item should not be removed".

Last, is it the appropriate place to highlight that an inoperative item must not be removed unless permitted by the MMEL?

response

Accepted

comment

114 comment by: AIRBUS

GM2-CS-MMEL-110 MMEL purpose

NON SAFETY RELATED ITEMS

General comment:

No appropriate and indisputable definition is given on what is a "non-safety-related items". For example, in the § 2, the "galley equipment" is listed as being a "non-safety-related item" but a galley oven is capable of catching fire. The same may apply to the movie equipment, stereo equipment, and overhead reading lamps. Also the word "safety" in the sentence "non-safety-related items" is not defined ("Safety" of what? In flight? On ground? Everywhere? For the airplane? For the occupants?).

§ 2:

- It should read "Non-safety-related equipment items..." for consistency with the use of the word "item" everywhere and with the definition given in the CS-MMEL-105 Definitions.

- It should read at the end "... **stereo equipment, and overhead reading lamps, and equipment related to maintenance convenience**" in order to take into account the equipment that serve only on ground for convenience of the maintenance personnel.

§ 3: it should read "**Non-safety-related equipment items...**" for consistency with the use of the word "**item**" everywhere and with the definition given in the **CS-MMEL-105 Definitions**.

§ 4: it should read "**Non-safety-related items need not be included in the MMEL, unless so desired by the applicant, and need not be submitted to the CS-MMEL requirements**". The items that need to be included in the MMEL are only those impacting the airworthiness and/or the safety of the occupants for the intended flight regardless of their required or not required status in the CS-25. For example, the DFDR, the CVR or the QAR are not necessary to ensure a safe intended flight although they are required by the CS-25 and could not be listed in the MMEL. However, the airplanes manufacturers may elect to include this kind of items in the MMEL for creating an anchor in the MMEL allowing further on the operators to list them in their MEL otherwise they could be considered as being NO-GO since not listed in the MMEL. Such items may be listed as being "**As required by operational regulations**". The situation is simpler for items that are not required by the CS-25 and are "**non-safety-related items**".

response

Partially Accepted

The "non-safety related items" will be further defined in a GM to ORO.OPS.MLR.105(a) Minimum Equipment List (MEL).

Once the decision to cover a non-safety related item in the MMEL is taken by the applicant, then it should be submitted to the same requirements as any other MMEL item, although showing of compliance should be a straightforward exercise.

comment

115

comment by: AIRBUS

GM1-CS-MMEL-120 Format and content of the MMEL

§ (a): This paragraph is only appropriate to the MMELs in paper format that will be phased out in the coming years for most of the aircraft manufacturers. A new standard of MMELs in electronic format is being defined at the ATA level. It is then the opportunity to consider in the **CS-MMEL** the electronic documents rather than only referring to the "**five-column format**" that is only applicable to paper documents.

This paragraph should then read "**The MMEL in paper format should normally be written in a 'five-column format'. Refer to examples in GM2-CS-MMEL-120. Other formats, including electronic formats, may be accepted provided that they are clear and unambiguous. Refer to examples in GM2-CS-MMEL-120**".

§ (b): To take into account electronic MMELs, this paragraph should read "**Where appropriate, the MMEL should contain: cover page information, revision history, detailed summary of changes at last revision, list of effective pages or documentary units, and table of contents within the administrative control pages section at the beginning of the MMEL.**".

§ (f): It is written "**Rectification interval may be identified through a reference to another item.**". It is not indicated that no symbol is necessary in this case since the rectification interval that must apply is that of the item to which the "refer to" is made. This paragraph should then read: "**When an item refers to another item, no rectification interval (blank) is necessary for the first item but all conditions associated to the other item apply including the rectification interval.**".

§ (h): In the 3rd line, it should read "**...for a specific operations operational procedure...**".

§ (i): It is not always possible and/or appropriate to identify in the dispatch condition the intent of the (m) procedure. This § should then read "**When a maintenance procedure is associated to an MMEL item, wherever possible a dispatch condition identifying the intent of the procedure (e.g. deactivation of an equipment) should be included in the associated item.**".

§ (k): It is written "**The periodicity of the performance of the procedures...**". The word "performance" is misleading here and should be replaced by "accomplishment" to read: "**The periodicity of for the accomplishment performance of the procedures...**".

response

Partially accepted

The five-column format may also apply to PDF format which are not paper format.

Paragraph (b) is clarified by adding "or equivalent information should be made available in the case of MMEL in other than paper format".

Paragraph (f) is added to GM1 MMEL.120 to address the reference to other items for the rectification interval.

comment

116 comment by: AIRBUS

GM2-CS-MMEL-120 Format and content of the MMEL

FIVE-COLUMN FORMAT EXAMPLES

The header "**FIVE-COLUMN FORMAT EXAMPLES**" is applicable only to the page 22 of 378 and NOT to the Message oriented MMEL example on the page 23 of 378.

Also, this § is applicable only to paper MMELs and not electronic MMELs.

This header should then read instead: "**FIVE-COLUMN AND MESSAGE ORIENTED FORMAT EXAMPLES (PAPER DOCUMENTS ONLY)**".

response

Accepted

We acknowledge the need for having separate GMs for different formats. We kindly remind Airbus that they committed to provide an example of electronic format MMEL.

comment

117 comment by: AIRBUS

GM3-CS-MMEL-120 Format and content of the MMEL MMEL PREAMBLE

This MMEL PREAMBLE is shown as being a SPECIMEN; this means that it is only an example of what can be written without the obligation to use it. This should be clearly written here.

Utilisation (Rectification Interval extension):

This paragraph is misplaced here and should be moved to a MEL PREAMBLE Specimen located in the document appropriate to the MEL. This is because the rectification interval extension deals with the MELs and not the MMEL.

DEFINITIONS AND EXPLANATORY NOTES

§ 3. The verbiage "**Any in excess of ...**" is very often used but the majority of operators do not understand its meaning and a wrong interpretation is always possible. This issue is detailed below in **C. Appendices**

I Appendix 1 to GM1-CS-MMEL-145: MMEL Items Guidance Book. Also it should be written "**..means that the listed item of equipment required...**"; "**...and only excess equipment item may be ...**", "**When the equipment item is not required...**" since the definition of what is an item is given.

§ 4. "**As required by applicable regulations**": This sentence is too vague and then opens the door to any interpretation. It should be then clarified.

§ 8. "**Considered inoperative**". In the 4th line, the verbiage "**...documenting the item on the dispatch release (if applicable)**" is not understood and should be clarified.

§11 "**Deactivated**" and "**Secured**". The definition is vague because it does not clearly indicate the meaning of the words "**Deactivated**" and "**Secured**". Also it should read "**...means that the specified component item must be put...**" since the definition of what is an item is given. What does the word "**acceptable**" means in the sentence "**...means that the specified component must be put in an acceptable condition...**"? Acceptable for what and/or for whom?

§ 13. "**Item**". Similarly as for the **Book 1 SUBPART A GENERAL CS-MMEL-105 Definitions**, it should read: "**.. means instrument, equipment, or function, system, or component**".

§ 16. "**If Installed**". It should read "**...means that the equipment item is either....**" since the definition of what is an item is given.

§ 18. "**Is not used**". It should read in the line 3 "**...or otherwise utilize that component or system item under normal operations...**" since the definition of what is an item is given. In the lines 5 and 6, it is written: "**However, operations-related provisions, (O) procedures and rectification interval must be complied with.**"; this is not always true (For ex: The APU is operative but must not be used, therefore there is no need to apply the rectification interval of the APU item.) and "**if relevant**" should be added at the end of the sentence to read "**However, operations-related provisions, (O) procedures and rectification interval must be complied with, if relevant.**". It should read in the line 8 "**...that is not used to inform crew members that a component or system an item is not to be used...**" since the definition of what is an item is given.

§ 31. "**Rectifications intervals**". Category A: The word "**day**" is used but is not defined in the **CS-MMEL-105**. The **JAR-MMEL/MEL.040 Rectification Intervals** clearly indicated "**calendar day**". What is the rationale for this

change? If the word "day" used here means "calendar day", it should then be written "calendar day". If the word "day" has a different meaning than "calendar day", the word "day" should then be defined in the **CS-MMEL-105**. This inconsistency was already highlighted for the **Book 1 SUBPART A GENERAL CS-MMEL-105 Definitions**.

Response

Partially Accepted

Editorial changes in definition 3, 11, 13, 16 are accepted. Definition 3, 8, 11, 17 have been taken from current reference documents (JAR-MMEL/MEL, MMEL procedures manual) Furthermore, these definitions are harmonized with FAA policy letter 25 Rev 17, except definition 17 which was improved to specify the operational requirements that need to be complied with.

For definition 17, the rectification interval of the "is not used" item is applicable if more restrictive than the item using "is not used" as the operational consequence of its unavailability is identical. Rectification interval reference is deleted as repairs should be performed in the same time frame as origin item rectification interval. The purpose of the "is not used" versus the "is considered inoperative" is to relieve the operator from performing maintenance tasks to deactivate the item that is not used.

See also the answer to comment 223 for the day definition.

Comment

118 comment by: AIRBUS

GM1-CS-MMEL-125 Operational and maintenance procedures**DEVELOPMENT PROCESS**

The (O) and the (M) procedures themselves are not approved by the Agency and the development process of the (O) and the (M) procedures is out of the scope of the Agency.

Also, the non-availability of a (O) and/or of a (M) (when relevant) do not preclude from the approval of the associated item. This is because, regardless of the process used for their development, if the (O) and/or the (M) procedures (when relevant) are not available together with the dispatch conditions, the associated item is **NO-GO**. This GM is then not appropriate and should be removed.

response

Not accepted

As per Annex III to Part-OPS ORO.MLR.105 (g) The operator shall establish the operational and maintenance procedures referenced in the MEL taking into account the operational and maintenance procedures referenced in the MMEL. These procedures shall be part of the operator's manuals or the MEL.

It is therefore important that the associated procedures referenced in the MMEL are established and made available to the Operators.

The references to the document containing the procedure are added to the MMEL content CS MMEL.120.

comment

119 comment by: AIRBUS

GM1-CS-MMEL-130 Rectification Interval

USE OF CATEGORY D

Comment 1: The text: **"The rectification interval category D is normally used for MMEL items of an optional nature or items installed in excess of the requirements."** is too restrictive and does not reflect the truth. If it is true that this category was essentially covering optional items at the beginning, this is no more the case today and any item can be eligible to a category D as soon as this may be justified. This text should be then changed to read: **"The rectification interval category D is normally generally used for MMEL items of an optional nature or items installed in excess of the requirements. However, others items may be eligible to the category D when justified"**.

Comment 2: As highlighted in the **Book 1 SUBPART B MASTER MINIMUM EQUIPMENT LIST CS-MMEL-130 Rectification Interval**, the paragraph located under the definition of the Category and reminded below:

"Items in this category meet the following criteria:

- (1) the absence of the item does not affect crew workload;**
- (2) the crew do not rely on the function of that item on a routine or continuous basis; and**
- (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item."**

is misplaced in the **CS-MMEL.130** that gives the definitions of the Rectification Intervals and **NOT** to which criteria they should meet. The appropriate place is here in the **GM1-CS-MMEL-130 Rectification Interval**.

Also, it is suspected that the intention behind the obligation to adhere to the above 3 conditions is to limit to a very restricted minimum the category **D** use since it will be very difficult to demonstrate compliance to the 3 conditions for all candidate items although they could be acceptable. There is then a loss of flexibility since **C** is considered as being not enough by the applicants whereas **D** is considered as being too much by authorities. Using the category **A** for solving such issues is always possible but this is not really the appropriate solution. This seems to demonstrate that a new category is really missing in between **C** and **D** that could be acceptable by the authorities and the applicants. In the mean time of the potential creation of a new category, flexibility should be given to the **OEB/MMEL Subgroup Chairmen** not to be obliged to apply strictly the 3 conditions. They should be permitted to accept a category **D** for items not fulfilling the 3 conditions based on operational considerations given by the applicants. For permitting that, the text should be modified as follows:

"Items in this category should meet the following criteria:

- (1) the absence of the item does not affect crew workload;**
- (2) the crew do not rely on the function of that item on a routine or continuous basis; and**
- (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item.**

However, the possibility is given to accept this category for items not meeting any or all the three criteria based on operational

response	<p>considerations”.</p> <p>Not accepted</p> <p>The current criteria are already allowing room for interpretation so that it is not always excluded to have D category granted based on specific considerations. The criteria for category D classification have been kept at CS level with a modified paragraph (1) to specify the workload shall not be “adversely” affected.</p>
comment	<p>120 comment by: AIRBUS</p> <p>GM1-CS-MMEL-140 Level of Safety</p> <p>ITEMS REQUIRED FOR EMERGENCY PROCEDURES</p> <p>There is a contradiction between the GM2-CS-MMEL-140 and the CS-MMEL-140. The GM permits the non-availability of an item required in an emergency procedure provided that this does not impair the emergency procedure accomplishment regardless of the item is powered in emergency or not. The CS prohibits the non-availability of an item required in an emergency procedure <u>AND</u> powered in emergency. See the comments given in the CS-MMEL-140 for more details.</p>
response	<p>Partially accepted</p> <p>In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as a guidance material to CS MMEL.145 (c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.</p>
comment	<p>121 comment by: AIRBUS</p> <p>GM2-CS-MMEL-140 Level of Safety</p> <p>MEANS TO MAINTAIN THE LEVEL OF SAFETY</p> <p>§ (a)(2) should read “Transfer of the function/information to an operating system/component item performing....” since the definition of what is an item is given.</p>
response	<p>Not accepted</p> <p>In the meaning of this GM, the term “used” seems to provide more clarity than using the word “item”. We therefore prefer to keep the currently proposed text.</p>
comment	<p>122 comment by: AIRBUS</p> <p>GM1-CS-MMEL-145 Justification of MMEL items</p> <p>MMEL GUIDANCE BOOK</p> <p><u>General comment for the complete section:</u></p> <p>- The words “hazardous” and “catastrophic” are used several times but no definitions are given. At least a reference should be given to the AMC CS 25.1309 7. FAILURE CONDITION CLASSIFICATIONS AND PROBABILITY TERMS.</p>

- This guidance material is applicable to all aircraft types and operations. This paragraph should then clearly indicate somewhere that the dispatch conditions recommended in this GM may be adapted in the MMEL according to the aircraft design and/or the type of operations.

§ (a) The guidance material provided in the **Appendix 1 to GM1-CS-MMEL-145** is a collection of dispatch conditions and not a justification document. In which way, an MMEL item can be then justified by this guidance material? Clarifications are necessary.

§ (b) It should read "...provided in **Appendix 1 to GM1-CS-MMEL-145** is as an acceptable...".

§ (c) It is written in line 3 "...**The availability of a guidance material for an item does not prevent the applicant to prepare alternate MMEL content.**". This sentence seems to permit the applicant submitting MMEL items with dispatch conditions that are different to the corresponding ones given in the **MMEL GUIDANCE BOOK**, since it is guidance book only as clearly stated in its title, and not at all a policy that must be applied anyway.

However, the experience showed that the **OEB/MMEL Subgroup Chairmen** are really frightened at the idea of deviating from the content of the **MMEL GUIDANCE BOOK** and are then refusing alternative dispatch conditions although well justified by the applicant and consistent with the design of the airplane.

A sentence should be then added to clearly permit the **OEB/MMEL Subgroup Chairmen** deviating from the MMEL GUIDANCE BOOK when the applicant is proposing a well justified alternative content. The **OEB/MMEL Subgroup Chairmen** would then not have the feeling that they are deviating from a rule (although it is not) they are normally committed imposing a strict application.

§ (g) The "**MMEL minor change**" classification is not defined although used here. A clear definition should be given somewhere.

response

Noted

comment

126 comment by: *Virgin Atlantic*

GM1-CS-MMEL-120 (a) states "The MMEL should normally be written in a 'five column format'. Other formats may be acceptable providing they are clear and unambiguous. Refer to examples in GM2-CS-MMEL-120".

Should this section not be amended to cover the new format documents as produced by Airbus and Boeing, who have now moved away from the standard five column format. Examples of Airbus and Boeing new format documents being included as acceptable formats will prevent any future questions to regulatory agencies as to whether these formats are deemed acceptable.

response

Partially accepted.

The five-column format is still the most common used format for MMEL and this is why it has been kept as an example. The new formats, introduced mainly since the electronic document format has been introduced do vary quite significantly from each other. However, examples of message oriented MMEL and electronic format will be proposed in the GM.

comment

127 comment by: *Virgin Atlantic*

VIR would like to request the MEL be able retain the flexibility of retaining the

"-" for Number Installed, particularly for cases where aircraft in the same fleet have different numbers of the applicable equipment installed.
 As stated this is used, in the vast majority of cases, for passenger service and cabin items. Operators often have different numbers installed dependant on fleet configuration but the Number Required is the critical number for dispatch. Often the Number Installed can be clarified in the remarks under the item and customised to each a/c fleet/sub fleet.
 By stipulating the "-" in Number Installed cannot remain as such forces operators to introduce multiple MEL entries for the same item to cover cases where variable numbers of equipment are installed on the applicable fleet. This will increase the overall size of the MEL by duplicating entries when it could be argued it is not really necessary.

response

Accepted

Comment has been taken into account in CS MMEL.120 (b)(3) revised text.

comment

129 comment by: *Virgin Atlantic*

Item 27 - Same comment applies here as comment number 127 already submitted.

response

Partially Accepted

The requirements for MEL are provided in ORO.MLR.105. The note under definition 27 is proposed to be revised to add "as far as practical".

comment

159 comment by: *European Cockpit Association*

Last sentence p23: ECA does not agree that an operator's MEL may differ in format from the MMEL.

response

Noted

comment

202 comment by: *DGAC FRANCE*

GM1 to CS-MMEL 105(d)

DGAC France considers the subject of the second bullet numbered (b) is important.

But it seems to us it is not located at the appropriate place with the GM.

It introduces a principle of deriving the MEL from the MMEL entries. The CS-MMEL105 (d) is only a definition.

DGAC France proposes to move this (b) sentence under GM to CS-MMEL 120 (b) (2) which deals with the process of elaborating the MMEL

The text within that GM should be modified accordingly: "...unless it is specifically allowed by the MMEL, an inoperative item should not be removed."

response

Noted

This requirement is more appropriately applicable to the operator's when using the MEL where it is specifically addressed in an AMC. However, it has been kept at CS-MMEL level to reinforce the concept that removal of items should be specifically permitted.

comment

203 comment by: DGAC FRANCE

GM 2 to CS-MMEL 110

DGAC comment is about the "non safety related item included in the MMEL, when desired by the applicant".

We understand that the purpose of the sentence is to create a legal "hook" so that the aircraft operator has no difficulty to create an entry in its own MEL. Otherwise, that operator's Authority who may ignore the exact status of the equipment (safety related or not) may refuse the MEL entry.

On the other hand, this leads to the negative impression that one may believe that the item is introduced because it is safety related.

DGAC France believes there should be a clear means to indicate the status of such items, so it is known to operators' authority without ambiguity.

Maybe the CS-MMEL should give the possibilities to place these items in a different dedicated MMEL chapter.

Maybe it shall clearly indicate that these non safety related items should be managed, in the MEL, by the operator with different methods than those applicable to the item which are mandatory in the MMEL.

As a example of debates it may raise, should such items be defined with a RI? If a RI appears, what are the management rules for this "volunteer" RI? In other words, will such an item be submitted to the CS_MMEL 120, 125, 130 ...? How and where to specify (in the preamble?) that these items may not be limited by the Rectification Interval Extension rule?

response

Noted

The "non-safety related items" will be further defined in a GMto Part-ORO.

Once the decision to cover a non-safety related item in the MMEL is taken by the applicant, then it should be submitted to the same requirements as any other MMEL item, although showing of compliance should be a straightforward exercise.

comment

204 comment by: DGAC FRANCE

GM1-CS-MMEL 120 (b)

The elements requested by CS-MMEL 120 (b) (1) about date of approval and applicability and further detailed in GM-CS-MMEL 120 (b) are meant to be used by the aircraft operators and the operational authority to approve the corresponding MEL and its revisions, upon time.

Those are typically elements contained "within the administrative control pages".

The sentence in GM 1- CS-MMEL 120 (b) begins with the words: "where appropriate."

It should be clarified that in case the process of MMEL is done in the electronic format, the furniture of the whole information is to be provided via the description of the MMEL management system.

The words "where appropriate" should in no case exempt the applicant from providing with the necessary pieces of information.

response

Partially accepted

The "where appropriate" is deleted and "unless equivalent information should be made available" is added.

comment

206 comment by: *DGAC FRANCE*

GM 3 to CS-MMEL 120. MMEL Preamble

DGAC France has questions after reading first sentence of the § Rectification Interval Extension (page25 of NPA) as copied here:

« *The operator may be permitted, 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 where indicated in this MMEL.* »

Can you explain the use of the last words "where indicated in this MMEL"?

Are there needed to cover the case (rare cases if any) where the B, C, D have not been meant to be extendable? Are there examples to be found in existing MMELs for that?

According to French DGAC experience, in all similar situations where the authority does not want to allow a one-time extension, a "A" RI has been used (such as A/3 days or A/10days) to clearly specify that no extension is possible.

If these words are there to cover something else, the purpose is to be clarified. Otherwise, DGAC France proposes to delete the words "where indicated in this MMEL".

response

Noted

The intent is to specify that the MMEL has been evaluated upfront to enable a one-time extension of B, C and D rectification interval and this should be indicated in the MMEL preamble if this is the case to inform operators. The preamble paragraph on rectification interval extension is updated for clarity.

comment

214 comment by: *E. Bakker (Fokker Services)*

GM1-CS-MMEL-145(c) Justification of MMEL items

The quantitative safety assessment guidance given here is not fully clear and contains some illogical elements.

1. The proposed guidance only considers additional in flight failure modes (single failures, but more likely failure combinations) that in combination with the inoperative equipment per the MMEL lead to hazardous or catastrophic effects. The lack of guidance for combinations leading to major effects is surprising.
2. When following the guidance, it is suggested, there is no additional risk over and above the basic fleet average top level reliability requirements of CS 25.1309(b). However, the guidance starts with declaring that during operation with the MMEL item inoperative a 10^{-8} catastrophic failure probability is acceptable without further calculation. This may in principle exceed the fleet average top level reliability requirements of CS 25.1309(b). Only for a catastrophic failure probability between 10^{-8} and

10^{-7} further calculation is required. It would be more logical if calculation would be required in all cases where 10^{-9} can not be met. Likewise for hazardous effects.

3. The calculation method in itself raises the following comments:
 - Without margin in the basic catastrophic or hazardous failure condition probability (10^{-9} respectively 10^{-7}) the proposed equations do not yield any useful dispatch time (i.e. no MMEL dispatch allowed). This is however not consistent given the acceptance (without calculation) of 10^{-8} catastrophic failure probability which, as stated above, in that case directly implies an exceedance of the requirements of CS 25.1309(b).
 - The equations in fact make the dispatch times only a function of the margin in the basic catastrophic or hazardous failure condition probabilities relative to the 10^{-9} respectively the 10^{-7} limit. While that seems defensible at first sight, it leads to the irrational consequence that (given the same top event margin) for very reliable equipment a longer dispatch time is accepted than for lower reliability items, while the in flight (catastrophic or hazardous) failure condition has a higher probability of occurrence!
 - We feel that a more transparent quantitative approach can be derived from the Part 21A.3B(d)(4) GM guidelines to establish rectification campaigns enforced through Airworthiness Directives. For that purpose Fokker Services has already developed a method where the 21A.3B(d)(4) GM assumption on the number of rectification campaigns during the fleet lifetime is replaced by an assumption (based on fleet evidence) on the percentage of flights that trigger dispatch with inoperative equipment per the MMEL. The same equation as used for establishing a maximum to the AD compliance time can then be used for the calculation of the maximum MMEL dispatch time. This method can equally be applied to catastrophic, hazardous and major in flight failure conditions and produces more logical results. In addition: both AD rectification campaigns and MMEL operation cover situations of elevated risk and can therefore best be covered by a similar approach.

response

Noted

1. The requirements of CS MMEL.140/145 are to provide guidance to applicants about the area to be investigated in order to ensure justifications provided to support the MMEL candidate are developed in a consistent manner. However, not all aspects of the MMEL determination are covered. These aspects will be reviewed as part of the Agency evaluation of the MMEL.
2. The formula provided in GM1 MMEL.145(d) was based on the following assumptions:
 - The probability of the FC in full-up (PN) is well below $1E-09$ as the probability of the FC under MMEL is $\leq 1E-07$.
 - The overall objective is to maintain the average risk within the 1309 objective of $\leq 1E-09$.
 - The average risk $\sim PN + PF.FR.Disp_Time[FH] \sim PF.FR.Disp_Time[FH] \leq 1E-09$.
 - The maximum dispatch time as calculated in the formulas proposed

in GM1 MMEL.145(c) ensures the average risk remains within the objective of 1E-09.

The tolerance that the Probability of failure condition [per flight hour] under dispatch condition could be $\leq 1.10^{-8}$ without the need for further review is based on the fact that in such a case, taking into account the conservative assumption that the Failure Rate of proposed MMEL item [per flight hour] is $\leq 1.10^{-3}$, the probability of the failure condition in full-up configuration will be $\leq 1.10^{-11}$. This is granting sufficient margin to accommodate an MMEL relief for a C rectification interval which corresponds to 100FH as an average operating time.

3. Alternate methods than the one proposed in GM1 MMEL.145(d) can be proposed to show compliance with the CS requirement that is basically asking for a quantitative analysis to be performed in specific cases. If the proposed methodology is achieving or exceeding the objectives of the one proposed by the guidance material, it will be considered acceptable by the Agency.

comment

215 comment by: *E. Bakker (Fokker Services)*

GM1-CS-MMEL-130 Rectification Interval

It is stated here that the rectification interval category D is normally used for MMEL items of an optional nature or items installed in excess of the requirements. However, in our opinion the D category should also be available when the quantitative assessment warrants so. Or is the A category intended to be applied in all those cases where the quantitative assessment does not lead to the selection of the B or C category? This needs clarification.

response

Partially accepted

The A category with an interval compatible with the demonstrated maximum dispatch time may be used in specific cases. However, whenever possible, the MMEL entry should use the standard Rectification Interval Categories by rounding the calculated maximum dispatch time (in flight hours) to a conservative Category (based on projected/average aircraft utilization per day). Additional guidance is added in that direction in GM1 MMEL.145(d) paragraph (b)(3).

comment

218 comment by: *GE Aviation*

The guidance discusses MMEL configurations which leave the airplane two failures away from a catastrophic condition. Airplanes with only two engines are in this condition for full-up dispatch. It is not clear how this guidance would apply to the engines for twin airplanes. It might be useful to explicitly exclude airplane engines in this paragraph, on the basis of their demonstrating high levels of integrity and reliability which continue to improve with time.

response

Noted

The demonstration during type certification that the probability of the failure condition corresponding to the loss of both engines on a two engines aircraft is not supposed to be taken into account for each and every MMEL item evaluation. Unless the proposed dispatch configuration is affecting the compliance to the certification safety objectives in terms of dual engine loss to the extend described in CS MMEL.145(d), no further showing of compliance is

expected at the level of the MMEL.

comment

225 comment by: *Boeing*

Page: 33

Section: **GM1-CS-MMEL-145(C) Justification of MMEL Items**

Revise the Note under Equation (2) as follows:

*Note: **Each "probability per flight hour" in this section is to be computed in accordance with the EASA AMJ 25.1309 definition of "average probability per flight hour."** The two equations given above for maximum dispatch times for MMEL items or functions involved in Catastrophic or Hazardous failure conditions provide dispatch times that are compatible with the fleet average top level reliability requirements of CS 25.1309(b). Equation (1) would yield a maximum operating time in the particular configuration to be $\leq 1\%$ of the fleet operating time when the dispatch configuration has a failure rate of $1.10^{-7}/FH$.*

JUSTIFICATION: Adding this text will provide better clarity and accuracy, leading to increased comprehension and compliance.

response

Accepted

comment

235 comment by: *Dassault Aviation*

GM1-CS-MMEL-105(d) Definitions page #20

INOPERATIVE

§ (b): For consistency with the § (a), should read "It should be highlighted that unless it is specifically allowed by the MMEL, the ~~instrument or equipment~~ inoperative item should not be removed".

response

Accepted

comment

236 comment by: *Dassault Aviation*

SUBPART B

GM2-CS-MMEL-110 MMEL purpose page #20

NON-SAFETY-RELATED ITEMS

General comment:

As mentioned several times during the MMEL group meeting, no unchallengeable definition is given for a "non-safety-related items". For example, in the § 2, the "galley equipment" is listed as being a "non-safety-related item" but a galley oven is capable of catching fire. The same may apply to the movie equipment, stereo equipment, and overhead reading lamps. A clear and unambiguous definition of Non Safety related items is to be provided in accordance with TC Holders.

§ 2:

- Should read "Non-safety-related ~~equipment~~ items..." for consistency with the use of the word "item" everywhere and with the definition given in the CS-MMEL-105 Definitions.

- Should read at the end "... stereo equipment, ~~and~~ overhead reading lamps, and equipment related to maintenance convenience" in order to take into account the equipment that serve only on ground for convenience of the maintenance personnel.

§ 3: Should read "Non-safety-related ~~equipment~~ items..." for consistency with the use of the word "item" everywhere and with the definition given in the CS-MMEL-105 Definitions.

§ 4: it should read "Non-safety-related items need not be included in the MMEL, unless so desired by the applicant, and need not to be submitted to the CS-MMEL requirements".

response

Partially accepted

The "non-safety related items" will be further defined in a GM Part-ORO.

Once the decision to cover a non-safety related item in the MMEL is taken by the applicant, then it should be submitted to the same requirements as any other MMEL item, although the showing of compliance should be a straightforward exercise.

comment

237 comment by: *Dassault Aviation*

SUBPART B

GM1-CS-MMEL-120 Format and content of the MMEL page #21

§ (a): This paragraph is only appropriate to the MMELs in paper format that will be phased out in the coming years for most of the aircraft manufacturers. A new standard of MMELs in electronic format is being defined at the ATA level. It is then the opportunity to consider in the CS-MMEL the electronic documents rather than only referring to the "five-column format" that is only applicable to paper documents.

This paragraph should then read "The MMEL in paper format should normally be written in a 'five-column format'. Refer to examples in GM2-CS-MMEL-120. Other formats, including electronic formats, ~~may be~~ are accepted provided that they are clear and unambiguous. ~~Refer to examples in GM2-CS-MMEL-120~~".

response

Partially accepted

The five-column format may also apply to PDF format which is not paper format.

comment

238 comment by: *Dassault Aviation*

SUBPART B

GM1-CS-MMEL-130 Rectification Interval

USE OF CATEGORY D page #30

According to the current practice(any item can be eligible to a category D as

soon as this is substantiated) the text should be then changed to read: ""The rectification interval category D is ~~normally~~ generally used for MMEL items of an optional nature or items installed in excess of the requirements. However, others items may be eligible to the category D when justified".

As highlighted in the Book 1 SUBPART B MASTER MINIMUM EQUIPMENT LIST CS-MMEL-130 Rectification Interval, the paragraph located under the definition of the Category and reminded below:

"Items in this category meet the following criteria:

- (1) the absence of the item does not affect crew workload;
- (2) the crew do not rely on the function of that item on a routine or continuous basis; and
- (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item."

Even if it is recognized that these criteria are a good starting point for discussion, it is felt that interpretation of the two last conditions will be so complex as it might be operator's or even pilot's dependent. Moreover, having those three conditions met in addition to the multiple interpretation might drive to the fact that no item can fail in that category.

For giving the opportunity to use Cat D, the text should be modified as follows:

"Items in this category should meet the following criteria:

- (1) the absence of the item does not affect crew workload;
- (2) the crew do not rely on the function of that item on a routine or continuous basis; and
- (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item.

However, the possibility is given to accept this category for items not meeting any or all the three criteria based on operational considerations".

response

Not accepted

See also comment 119.

comment

239 comment by: *Dassault Aviation*

SUBPART C

GM2-CS-MMEL-140 Level of Safety

ITEMS REQUIRED FOR EMERGENCY PROCEDURES page #31

There is a contradiction between the GM2-CS-MMEL-140 and the CS-MMEL-140. The GM permits the non-availability of an item required in an emergency procedure provided it does not impair the emergency procedure accomplishment regardless of the item is powered in emergency. The CS prohibits the non-availability of an item required in an emergency procedure

	<p><u>AND</u> powered in emergency.</p> <p>GM wording is preferred.</p>
response	<p>Accepted</p> <p>In order to better reflect the intent of this requirement and to take into account the various cases highlighted in the comments, it is proposed to delete the CS MMEL.140(b) paragraph and to adapt it as a guidance material to CS MMEL.145 (c) where it is recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.</p>
comment	<p>241 comment by: <i>Dassault Aviation</i></p> <p>SUBPART C</p> <p>GM2-CS-MMEL-140 Level of Safety</p> <p>MEANS TO MAINTAIN THE LEVEL OF SAFETY page #31</p> <p>§ (a)(2) It should read "Transfer of the function/information to an operating system/component item performing...." since the definition of what is an item is given.</p>
response	<p>Not accepted</p> <p>In the meaning of this GM, the terms "used" seems to provide more clarity than using the word "item". We therefore prefer to keep currently proposed text.</p>
comment	<p>242 comment by: <i>Dassault Aviation</i></p> <p>GM2-CS-MMEL-145 Justification of MMEL items</p> <p>QUALITATIVE SAFETY ASSESSMENT – LATENT FAILURES page #32</p> <p>As this paragraph goes beyond the conclusion of the ASAWG, EASA is requested to provide the rationale to add it in complement to the agreed methodology for MMEL.</p> <p>Nevertheless, from a methodological standpoint, Dassault-Aviation request EASA to strictly comply with ASAWG conclusion.</p>
response	<p>Not accepted</p> <p>This paragraph is requesting for a qualitative consideration when the MMEL dispatch configuration leaves the aircraft two failures away from a catastrophic failure condition, one being latent. Purpose is to bring to the applicant's attention that taking credit of the quantitative safety objectives in a systematic manner is not considered acceptable for handling such MMEL dispatch configurations and that the qualitative assessment should prevail.</p> <p>We continue to receive MMEL proposals where the MMEL dispatch configurations leave the aircraft two failures away from a catastrophic failure condition, one being latent, the submitted rationale being that the catastrophic failure condition was still meeting the quantitative safety objectives of the ASAWG recommendation.</p>
comment	<p>243 comment by: <i>Dassault Aviation</i></p>

GM2-CS-MMEL-145 Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – LATENT FAILURES page #32

As this paragraph goes beyond the conclusion of the ASAWG, EASA is requested to provide the rationale to add it in complement to the agreed methodology for MMEL.

Nevertheless, from a methodological standpoint, Dassault-Aviation request EASA to strictly comply with ASAWG conclusion.

response

Not accepted

See also comment 242.

comment

244 comment by: *Dassault Aviation*

SUBPART C

GM2-CS-MMEL-145 Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – PREVIOUS APPROVALS page #32

The first part of the paragraph deals with the use of previously approved MMEL for a new MMEL item in a MMEL having to comply with CS-MMEL. Similarity of systems and operations should be provided. That is a quite straight forward approach which is agreed.

However, the purpose of the second part is quite unclear. Is it part of the similarity approach when the similarity is so tiny that it is felt that there is no similarity at all and that the new MMEL item is to be substantiated on its own? In that case CS-MMEL would be applicable and there is no need to refer to any flight or sim test.

Second paragraph is to be removed.

response

Partially accepted

The second paragraph is misplaced in the GM2. A GM3 is proposed to be introduced for clarifying the intent of the text.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 22 AUTOFLIGHT p. 35-47

comment

38 comment by: *Trafi*

22-10-2A Flight Director: If this item covers display of symbols only (e.g. FD bars) as described in Additional considerations, it would be good to write the text on item itself.

response

Accepted

Proposed clarification of the title is accepted.

comment

123 comment by: *AIRBUS*

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book (Aeroplanes only)

Comments applicable to the complete Appendix 1 to GM1-CS-MMEL-145: MMEL Items Guidance Book:

Comment 1): Throughout the **TGL-26**, as well as the **MMEL Items Guidance Book**, the following conditions can be found:

May be inoperative...

...for a maximum of 6 flights or 25 flight hours, whichever occurs first...

...for a maximum of 6 flights or 25 flight hours or 2 calendar days...

...for a maximum of 6 flights or 2 calendar days...

...for a maximum of 10 calendar days...

...for a maximum of 3 calendar days...

...for a maximum of 2 calendar days...

...for a maximum of 90 calendar days...

...for a maximum of 5 flights...

...for a maximum of 3 flights...

...for a maximum of 4 flights...

It is understood that such restrictions are intended to limit the exposure time with the associated items inoperative. When proposed by an aircraft manufacturer, such restrictions are supported by a quantitative analysis which demonstrates that the safety of the flight is maintained during the proposed time interval that is not renewable (Category A). In the case of the **TGL-26** and the **MMEL Items Guidance Book**, on which quantitative analysis (made by whom from the Agency and when) such restrictions have been established and considered as being applicable to all aircraft designs, old and modern? In any case, it would be suitable to reconsider these restrictions for simplifying them in the way of an appropriate flexibility and consistency. Also, they need to be well understood at the ramp level before dispatch for avoiding misinterpretations.

Comment 2): In the **TGL-26 (Section 4/Part 3 (JAR-OPS) Page 26-13 dated 01.06.08)** there is a **FLOW DIAGRAM FOR THE USE OF TGL 26 IN A MEL (Appendix to Section 1)**. A similar diagram, appropriate to the MMEL, should be considered for inclusion in the introductory part of the **MMEL ITEMS GUIDANCE BOOK**.

This would avoid long lasting and useless discussions with authorities, and associated waste of time, when an approved MMEL already contain items the dispatch conditions of which are different with regards to those of the corresponding item in the **MMEL ITEMS GUIDANCE BOOK** and that have been already submitted, justified an approved, although deviating from the **MMEL ITEMS GUIDANCE BOOK** content.

Comment 3): Very often in the **TGL-26**, as well as the **MMEL Items Guidance Book**, the following conditions are used:

- **"Any in excess of X may be inoperative provided..."**, with **X** being a number.

- **"Any in excess of those required may be inoperative provided..."**.

It must be stressed that these conditions are generally not understood by the operators and lead to an interpretation that may be at the contrary of what is intended by the condition. What is generally understood is that, when **only 1 is**

installed, it is NO-GO, but when more than 1 is installed, all are GO or GO-IF!

For avoiding such issue, it is proposed to change:

- **"Any in excess of X may be inoperative provided..."**, with **X** being a number, by
- **"One or more may be inoperative provided that (a minimum of) (at least) X is (are) operative provided..."**, with **X** still being a number. **"(a minimum of)"** or **"(at least)"** may be optional, but it is better to use them because this will help emphasize and rapidly pinpoint the minimum number of items that must be operative.

Also it is proposed to change:

- **"Any in excess of those required may be inoperative provided..."**, by
- **"One or more may be inoperative provided that those required (?) are operative..."**. The **(?)** indicates that an important information remains missing in order to understand the dispatch condition.

Indeed what is missing is to indicate clearly **by what** or **for what** (Ex: **"for the intended route"**) the **required** items must be operative. Adding **"...by the applicable regulations..."** giving then **"...provided that those required by the applicable regulations are operative..."** would not bring any valuable information since not evident to the flight crew (i.e. the end user). Clarifications are then necessary.

Comment 4): Very often in the **TGL-26**, as well as the **MMEL Items Guidance Book**, the condition: **"May be inoperative provided..."** is used without the **"that"** after the term **"provided"**. Without the **"that"**, the term **"provided"** could be interpreted as the past participle of the verb "to provide", instead of the condition.

Therefore, to avoid ambiguity, the term **"that"** after the word **"provided"** should be systematically added everywhere the word **"provided"** is used, in order to ensure that the reader understands it is a condition, and not something **"to provide"** or **"to be provided"**.

response

Comment1:

Noted

The proposed rectification intervals referred to in the comment have been transposed from existing TGL 26 content as they were adopted by the JAA. The intent was to ensure smooth transition from the existing situation to the future one by not preventing the Industry to continue using the existing relief that has been accepted by most of the NAAs as a basis for the MEL content. As explained in the explanatory notes, this basis can still be made available to the operators, if supported by the (S)TC holder, at MMEL level. Alternate rectification intervals may also be acceptable provided robust and comprehensible rationales are made available by the applicant. These could be used at a later stage as material to update the guidance material as published in the CS-MMEL Book 2.

Comment2:

Noted

The purpose of the guidance book is described in GM1 MMEL.145 and it is clearly specified that "The availability of a guidance material for an item does not prevent the applicant to prepare alternate MMEL content". It is therefore not expected that any EASA approved MMEL content will be challenged against

this material that is intended to be used only at MMEL evaluation level and not at MEL level as per the basic principles of Certification Specifications usage.

Comment 3:

Partially accepted

Any in excess of X may be inoperative should be made clear by having the X in column (3) for number required at dispatch.

The "Any in excess of those required may be inoperative" was introduced to items which may not be required by operational requirements or airspace requirements, depending on the kind of operations performed and routes flown. The intent was not to lock the MMEL to a restrictive relief when no requirement to have the system installed applies. This needs to be further specified by the Operators at the level of its MEL. We propose to add additional information in that direction at the level of the definitions in the MMEL preamble.

Comment 4:

Not accepted

The current proposed wording using "may be inoperative provided:" followed by a set of conditions is used in all FAA and TCCA MMELs. For the sake of harmonization and as no safety concern has been escalated to the point that a change of this wording was felt necessary, we intend to keep it.

comment

124

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

**(Aeroplanes only)
22-10-2A Flight Director**

In the **Additional Consideration** in the page 42 §2, it is written: "**The C category may be upgraded to A or B Category at the MEL level based.....**".

The word "**upgraded**" is not appropriate because not defined and also because from **C** to **B** the change is more restrictive. At the level of the operator this is then a "**downgrade**" and not an "**upgrade**" since **downgrading** the flexibility for dispatch.

From **C** to **A**, this is generally more restrictive, but sometimes this may be less restrictive at the level of the MMEL because the **A** may be used to permit a dispatch for a time interval in between **C** and **D** for the reason that **D** is consider as too long and **C** is considered as not being long enough.

It would be then better to say: "**The C category may be ~~upgraded~~ changed to A or B Category at the MEL level based...**".

response

Accepted

The additional considerations for FD bars item are clarified.

comment

130

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

**(Aeroplanes only)
22-71-1 Navigation Database**

What is proposed in the NPA is quite complicated and may confuse operators. It is then proposed to change by something more general and easy to understand like the following:

C / - / O / (O) May be out of date provided that:

1) The procedures of the out of date navigation database changed in the current navigation database are not used (The procedures not changed may be used), and

2) Alternate procedures are established and used, and

3) The current aeronautical information (e.g. charts) is used to check the database navigation fixes (the coordinates, frequencies, status (as applicable)), and suitability of navigation facilities required for the intended route.

With an **(O)** that could say:

During cockpit preparation:

- Crosscheck, as applicable, RNAV/RNP, conventional SID, STAR, APPR procedures with the current aeronautical information (e-charts).

If the procedure intended to be flown is identical to the current aeronautical information (e-charts):

Use the procedure of the out of date navigation database.

If the procedure intended to be flown is not identical to the current aeronautical information (e-charts):

Do not use the procedure of the out of date navigation database,

Use the procedure intended to be flown by manually tuning the radio navigation aids (VOR, DME, ADF, ILS), or request the assistance of the Air Navigation Service Providers.

- For airways navigation, crosscheck the navigation database airways with the CFP (Computerized Flight Plan) or with the current aeronautical information (e-charts).

If the complete airways is identical:

Use the applicable airways of the out of date navigation database.

If the airways is not identical:

Insert new routings according to the current airways.

The **C** category is completely appropriate here since only the procedures that are not changed in the navigation database may be used.

Noted

The above proposal may be acceptable as an alternate MMEL content. However, as it is based on reliance upon specific systems (e-charts, CFP) which may not be available on all aircraft, it is proposed to keep the generic wording as proposed.

response

comment	<p>224 comment by: <i>Boeing</i></p> <p>Page: 33 Section: GM1-CS-MMEL-145(C) Justification of MMEL Items</p> <p>Change the text in Equations (1) and (2) to read as follows:</p> $FR_{11/fh} = \text{Failure Rate Probability of proposed MMEL item [per flight hour]}$ <p>JUSTIFICATION: Correction for accuracy.</p>
response	<p>Not accepted. The term used by ASAWG is found adequate for the intended purpose.</p>

<p>C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 23 COMMUNICATIONS</p>	<p>p. 48-84</p>
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comment	<p>26 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>p.60 "SATCOM data or voice as a primary means of communication" incomplete sentence?!</p> <p>=> to be clarified</p>
response	<p>Accepted Editorial change made.</p>
comment	<p>27 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>p.64 first "23-12-1A": by similarity to 22-10-1A "(Other than CAT)" should be noted in the column, as well as for 23-12-1B "(CAT)" should be noted</p> <p>=> to be corrected</p>
response	<p>Accepted Proposed information added.</p>
comment	<p>28 comment by: <i>Thales Avionics- JD Chauvet</i></p> <p>p.65 "23-12-1D" should be referred "23-12-1C" and "(CAT)" added</p> <p>=> to be corrected</p>
response	<p>Accepted Proposed information added.</p>
comment	<p>31 comment by: <i>Alexandra MALVEZIN</i></p> <p>P58 – Item 23-11-1B – HF Communications</p> <p>This proposed MMEL guidance prohibits the relief for dispatch with no HF operative on routes requiring two LRNS.</p>

But, Chapter 'Flights Planning to Operate Without HF Communications' (p22 from the NAT MNPS Operations Manual) states that the carriage of HF Communications is mandatory for flight in the Shanwick OCA only. It is possible for aircraft with only functioning VHF communication equipment to plan their route outside the Shanwick OCA. We then do not understand the contradiction. Dispatch with no HF operative in the MNPS airspace should be allowed on routes specially designed.

response

Noted

The reference to Long Range Communication System (LRCS) (not to be confused with LRNS) was deleted as this is not defined in European rules. If the HF is not required for the planned route to be flown (e.g. outside of Shanwick OCA), then 23-11-1A relief would apply and dispatch can be granted with no operative HF system.

comment

39 comment by: *Trafi*

23-12-1D (page 65) Numbering wrong (should be C)?

response

Accepted

Corrections made.

comment

40 comment by: *Trafi*

23-13-1 (page 66) For clarification both VHF and HF would be better to mentioned on the list too as informed in Explanatory notes.

response

Noted

comment

61 comment by: *UK CAA***Page No:** 59**Paragraph No:** 23-11-1C

Comment: Should 'IFBF' be 'IFBB'? Also, remarks against A / - / 1 relief, words 'for flight' should be removed.

Justification: Documentary errors.

response

Accepted

Corrections made.

comment

62 comment by: *UK CAA***Page No:** 64**Paragraph No:** 23-12-1B

Comment: It is surprising that there is no proviso preventing dispatch with an inoperative VHF radio that is powered by an emergency bus, as previously included in TGL26.

Justification: The 'additional considerations' do refer to emergency bus

powered systems. However, what other residual means of communication might there be following a total loss of generated power? There appears to be no value in the removal of this proviso.

response

Noted

On some integrated avionics design, more than the minimum required VHF could be supplied on emergency busses, The previous TGL 26 content was judged too much penalizing for these design solutions. The safety concern linked to power supply of the remaining VHF is still however addressed through the provisions in the additional considerations field and through **GM4 MMEL.145(c) Justification of MMEL items.**

comment

63 comment by: *UK CAA*

Page No: 70

Paragraph No: 23-30-1A

Comment: Word "provided" missing between "inoperative" and "procedures".

Justification: Documentary error.

response

Accepted

Corrections made.

comment

128 comment by: *Virgin Atlantic*

VIR would like to state we consider the reduction of the Cat C RI to Cat A (3 calendar days) for one HF and a backup SATCOM punitive to air transport operators. In some cases (especially in winter times) it can take longer than this to arrange a Hangar input should HF coupler work be required, which necessitates access to the aircraft tail area.

The comment regarding all ATC facilities not using SATCOM is questionable as in many areas this is the primary means of communication. VIR believe this item should remain flexible, and possibly take into account areas of operation if the RI of A is to remain.

response

Accepted

23-11-1B is changed to a C rectification interval.

comment

131 comment by: *AIRBUS*

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)
23-30-2 Datalink

- Pages 48 and 68: The ATA Chapter number for the Datalink is neither **23-30** nor **23-20** but **23-21**.

- Page 69, in the **Explanatory notes** §2, it is written "**After 5th February 2015 the option 23-20-1B will no more be applicable for dispatch in airspaces requiring datalink**" and "**Option 23-20-1B is applicable for aircraft not required to have datalink installed as per Commission**

Regulation (EC) No 29/2009 or whenever aircraft is operated below FL285.”.

The **No 29/2009** indicates clearly “**This Regulation shall apply to all flights operating as general air traffic in accordance with instrument flight rules within the airspace above FL 285 defined in Annex I, Part A. In addition, it shall apply from 5 February 2015 to all flights operating as general air traffic in accordance with instrument flight rules within the airspace above FL 285 defined in Annex I, Part B.”.**

This means that datalink is not required by the **No 29/2009** for airplanes flying within the space at or below FL 285, then the **item 23-20-1B** will continue to apply. Also, Eurocontrol and the Single European Sky committee consider that there will be about 25% of exemptions granted to the rule with airplanes under MEL with datalink inoperative as covered by the **No 29/2009 Article 3, 4.(d)”.**

response

Partially Accepted

Explanatory notes have been updated to take into account the above comment.

comment

132

comment by: AIRBUS

Attachment [#1](#)

I Appendix 1 to GM1-CS-MMEL-145: MMEL Items Guidance Book

**(Aeroplanes only)
23-11-1 HF Communications**

It is really surprising to see that there is an attempt to limit reliance on the **SATCOM system**.

For the **HF system (23-11)**, the proposed **MMEL Items Guidance Book** is more restrictive than the **TGL 26**. This restriction is explained in the **Explanatory notes** in the page 59 by the fact that “**....not all ATC facilities are adequately equipped to handle SATCOM data or voice**”.

However this issue was already considered in the **TGL 26** by the sentences:

- “**Prior to each flight, coordination with the appropriate ANSP is established...**”,
- “**Prior to each flight, permission is obtained from the appropriate ANSP....**”, and
- “**Alternate communications procedures are established and used**”.

All these conditions avoid the use of the **SATCOM** on routes where the **ATC** facilities are not adequately equipped to handle the **SATCOM** data or voice. The same should be reflected in the **MMEL Items Guidance Book**.

Furthermore, the **FAA** and the **ICAO** have launched activities to validate the **SATCOM** as a mean for routine ATS communications. The **ICAO** has already validated the amendment of the procedure **7030/5** with the use of the **SATCOM** for routine **ATS** (refer to attached file).

Another initiative is also led by the **ICAO/FAA** in cooperation with **PARC CWG**: the Interregional Satcom Voice Task Force (**Performance based operations Aviation Rulemaking Committee’s - Communication Working Group**), with the objectives of developing a **Satcom Voice Guidance Material (SVGGM)** document

within global **ICAO Required Communications Performance (RCP)** framework, by **December 2011**. The **SVG M** will take into account:

- **NAT SATCOM** voice trial guidance material
- **PARC CWG SATCOM** voice project
- Aircraft approval guidance by **FAA** and **EASA**

Then, the philosophy of the proposed **MMEL Items Guidance Book** to be more restrictive on the **SATCOM** use does not seem to be in line with the general reliance of **operator/ICAO/FAA** on the **SATCOM** system.

response

Partially Accepted

Once the SATCOM voice is certified as a primary means of communication and this certification is not limited to the aircraft systems but includes also the service providers and infrastructure, SATCOM could be considered as an alternative to HF and dispatch with no HF serviceable could be considered. The review conducted by the Agency with the rulemaking and avionics specialists resulted in the current proposed guidance. More flexibility can be envisaged based on the SATCOM certification basis. This is proposed to be clarified in the additional considerations.

comment

133

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

23-30-1 Public Address (PA) System

23-40-2 Crew Member Interphone System

Other systems (e.g. cockpit to ground communication) are not covered in the proposed **MMEL Items Guidance Book**.

The **Public Address** and the **Cabin Interphone** are included in the **ATA 23-73** (for the Airbus A320 Family, A330, and A340) and **44-11** (for the Airbus A380 and A350).

Item 23-40-2-1A: In the current MMELs, the cockpit to cabin and the cabin to cockpit interphone function may be inoperative, if the **Public Address** is operative. In the proposal, the dispatch with the inoperative interphone is more restrictive, e.g. the loss of both handsets in one entry area could be **NO-GO**. As mentioned in the **Explanatory notes** for this item, a complete loss of the interphone is no more allowed (even though the **Public Address** is available). What are the rationales for such restrictive change?

Item 23-40-2-5A: Despite the **Explanatory note** for this item, the new proposal seems not to be in-line with the current **TGL-26** guidance. In the **TGL-26**, the visual alerting in the cockpit may be inoperative if the aural alerting is available. In the **MMEL Items Guidance Book**, the visual alerting in the cockpit may be inoperative if the aural alerting is operative and if the **Public Address** is operative.

The relationship between the **Public Address** and the alerting in the cockpit is not understood and should be clarified. The **Public Address** may only help in the case of a loss of the alerting in the cabin. What are then the rationales for this change?

response

Not accepted

The absence of an operative interphone system in the cabin was assessed by the Agency cabin safety experts not to be permissible as the passenger address system does not offer the two-way communication functions of the interphone that would normally be required during evacuation emergency procedures. Alternate proposals are however possible if an equivalent level of safety can be demonstrated.

comment

160 comment by: *European Cockpit Association*

p53 23-10-3 Flight crew compartment speaker: ECA disagrees! Wearing a headset for an extended time (long range flight) is additional workload. Most headsets really hurt if worn longer than 30 mins. Should be restricted according to CS-MMEL 140 (a) (2)

response

Not accepted

Some aircraft are operated with headset worn during the whole flight (turboprop, helicopters). We have not retained additional limitations in the guidance material but specific design may lead to more restrictive MMEL content if the impact on crew workload is assessed as major.

comment

208 comment by: *DGAC FRANCE*

As per our "general comment numbered "207" by CRT :

ATA 23 :

23-xx-xx: SATCOM

There is no mention of such an item. And SATCOM is MANDATORY for such operations. Please, add an item about SATCOM which is mandatory for ETOPS 207'.

response

Noted

The Guidance Book list of items is not exhaustive. The proposal is noted for future developments of the guidance material.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 25 EQUIPMENT/FURNISHINGS p. 85-122

comment

64 comment by: *UK CAA*

Page No: 102

Paragraph No: 25-60-5B

Comment: Category 'C' relief is provided for 'Any in excess of those required...'. Should this be Category 'D'?

Justification: GM1-CS-MMEL-130

response

Not accepted

If additional raft are installed and are unserviceable but extended overwater flight are still conducted, a rectification interval C is judged sufficient to perform

necessary maintenance actions. Operations can be however conducted up to 120 days using 25-60-5A provided no extended overwater flights are conducted.

comment

66 comment by: UK CAA

Page No: 108

Paragraph No: 25-60-7

Comment: The proposed item for Emergency Flotation Equipment is stated as being consistent with TGL26. However, Category D relief is only provided for non-commercial air transport operations.

Justification: TGL26 allowed Category 'D' relief for operations over land for performance classes 1, 2 & 3.

response

Accepted.

Change is made to category D on item 25-60-7B.

comment

67 comment by: UK CAA

Page No: 118

Paragraph No: 25-63-2

Comment: Item title is incorrect.

Justification: Documentary error.

Proposed Text: Item title should be "Automatically Deployable Emergency Locator Transmitter (ELT(AD))".

response

Accepted.

Correction made.

comment

68 comment by: UK CAA

Page No: 119

Paragraph No: 25-63-3A

Comment: Reference to (O) Procedure is missing at beginning of provisos.

Justification: (O) Procedure is required for alerting crew members of inoperative or missing equipment.

response

Accepted.

Correction made.

comment

137 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

25-40-2 Interior Lavatory Ashtrays

This item **25-40-2 Interior Lavatory Astray** has been incorporated in the draft **MMEL Items Guidance Book** following the introduction of this item in the Airbus MMEL because of a customer request.

However, the item **25-40-2A** is based on the availability of the fire extinguisher alone, which protects the waste bin only. Consideration should be taken for an alleviation based on the lavatory smoke detection system which protects the whole lavatory module.

This is because the lavatory smoke detection system ensures a detection of smoke in the whole lavatory module whereas the fire extinguisher is limited to the waste bin. An alleviation based on the smoke detection system would be then safer.

response

Not accepted

As indicated in the associated explanatory notes: "MMEL exception 25-40-2A takes credit of the lavatory fire-extinguishing system to mitigate the undesired situation where, during a non-smoking flight, a passenger goes on purpose into the lavatory for smoking. This relief does not take credit of the lavatory smoke detection system. It is indeed assumed (worst-case scenario) that such a passenger might also try to make it inoperative (e.g. using a wet towel)." Alternate proposal based on specific protective design may however be accepted.

comment

138 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

**(Aeroplanes only)
25-60-1 Escape Slides**

For the escape slides, the proposal deviates from the **TGL-26** text in so far that it states:

"One may be inoperative or missing provided..."

It should be revised to say:

"One may be inoperative or missing on each deck provided..."

This would allow covering single-deck **AND** double-decks configurations, which is not the case in the proposal.

response

Accepted.

"on each deck" is added.

comment

139 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

**(Aeroplanes only)
25-63 Emergency Locator Transmitter (ELT)**

The items **25-63-1B** and **25-63-1-C** are related to the **Automatic ELT only**.

As written in the draft **MMEL Items Guidance Handbook**, the following issue was unfortunately experienced with these two items for an airplane basically

fitted with:

- One **automatic** ELT, and
- Two **NOT automatic survival** ELTs.

The **OEB/MMEL Subgroup Chairman** considered that the condition **25-63-1B (A/1/0 May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.)** was not applicable to this airplane because its configuration includes **several ELTs**.

The **OEB/MMEL Subgroup Chairman** considered that the derived alleviation from the **MMEL Items Guidance Book** applicable to this airplane configuration (equipped with **ONE** Automatic ELT and two NOT Automatic Survival ELTs) is confirmed by the item **25-63-1C (Any in excess of one may be inoperative.....)**.

The consequence is that **the unique automatic ELT is NO-GO** although only **ONE** is installed and that the item **25-63-1B should apply and not the item 25-63-1C**.

Both items should be then reworded for avoiding such misinterpretation or the **OEB/MMEL Subgroup Chairmen** should be trained to understand that the item **25-63-1B** applies when **only a unique** Automatic Fixed ELT is installed regardless of the number of **NOT automatic** survival ELTs and that for the not automatic survival ELTs, this is the item **25-63-3** that applies.

response

Noted

Training will be provided, as required.

comment

161 comment by: *European Cockpit Association*

p104 25-60-5 Life rafts. It should be analyzed whether the majority of ditching events happened on extended overwater flights. Many events happened during take-off or landing (e.g. the famous Hudson-river-landing). ECA recommendsto not restrict life raft to extended overwater-flights if installed.

response

Noted

The MMEL relief reflects the content of the operational rule, in line with previous TGL 26 guidance.

comment

162 comment by: *European Cockpit Association*

p115 25-62-2B ECA does not agree. The requirement is relaxed over TGL 26: Has to be filled at the next destination with spares, up to a maximum of 2 days. This isi important as we are dealing with emergency medical kits!

response

Accepted

The previous TGL 26 relief is re-instated.

comment

197 comment by: *Virgin Atlantic*

Reference Item 25-40-02A - VIR would like to request the substantiation of the rectification interval of CAT B for this item. Current EASA Approved MMELs (such as Airbus A330/A340) contain this alleviation but with an RI of CAT C with the same remarks - the associated lavatory fire extinguishing system is operative.

response

Noted

As indicated in the associated explanatory notes: "MMEL exception 25-40-2A takes credit of the lavatory fire-extinguishing system to mitigate the undesired situation where, during a non-smoking flight, a passenger goes on purpose into the lavatory for smoking. This relief does not take credit of the lavatory smoke detection system. It is indeed assumed that such a passenger might also try to make it inoperative (e.g. using a wet towel). In order to mitigate the above risk a B rectification interval is also proposed to reduce the probability of occurrence)." Alternate proposal based on specific protective design may however be accepted.

comment

209

comment by: *DGAC FRANCE*

As per our "general comment numbered "207" by CRT :

ATA 25:

Those following items are dealing with ashtrays in ATR aircrafts. In ATR, there is only a lavatory. So, the dispatch condition is limited to the following ones which are very restrictive in particular for the airplanes which had only one lavatory such the ATR.

25-40-1A: **A - 0 ou C - 0**: One or more may be inoperative or missing provided that repairs are made within 10 consecutive calendar days.

A - 0 (3 days)

25-40-2A: ~~B—0~~ replaced by **A-0 ou C-0**: One or more may be inoperative or missing provided that associated lavatory fire-extinguishing system, when installed, is operative

response

Noted

MMEL exception 25-40-1D provides relief for non-smoking flights with a D rectification interval. If the operator still intend to operate a smoking flight with a missing exterior ashtray, then the A(3 calendar days) applies.

As indicated in the associated explanatory notes: "MMEL exception 25-40-2A takes credit of the lavatory fire-extinguishing system to mitigate the undesired situation where, during a non-smoking flight, a passenger goes on purpose into the lavatory for smoking. This relief does not take credit of the lavatory smoke detection system. It is indeed assumed that such a passenger might also try to make it inoperative (e.g. using a wet towel). In order to mitigate the above risk a B rectification interval is proposed to reduce the probability of occurrence)." Alternate proposal based on specific protective design may however be accepted.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 25 EQUIPMENT/FURNISHINGS SEATS	p. 123-145
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comment

32

comment by: *Alexandra MALVEZIN***P144 – Item 25-21-2-2 Excess Cabin Crew Seat**

'Seat or seat assembly in excess of requirements and assigned to a cabin crew may be inoperative provided'.

We do not understand the formulation : An excess seat is no longer considered as excess when assigned to a flight attendant.

From our point of view, three cases should then be considered as far as cabin crew seats are concerned :

- A cabin crew seat is inoperative. Item 25-21-2-1 is applied.

- Additional crew is carried. In this specific situation, the seat occupied by that cabin crew is no longer considered excess to requirements. If inoperative, item 25-21-2-1 must be used

- If there are more crew seats than cabin crew in the aircraft, the item 25-21-2-2B must be used.

response

Noted

For each aircraft type, a minimum number of required cabin attendant seats shall be determined and reflected in the operations manual. These seat positions, when assigned to cabin crew members, ensure the adequate cabin monitoring (direct view) while providing close access to the emergency exits to be operated in case of an emergency evacuation. If an operator needs to operate with one of these seats inoperative, this is covered by item 25-21-2-1. Now, if additional crew members are carried and assigned to additional seats to this minimum required for certification, then item 25-21-2-2 allows to have one or more of this kind of seats inoperative with less restrictive conditions as they come in addition to the minimum requirements.

comment

41 comment by: *Trafi*

25-21-2-1A (page 143), Procedures: (M): tt is what (definition)?

response

Accepted

Editorial change made to correct to "to".

comment

69 comment by: *UK CAA*

Page No: 143

Paragraph No: 25-21-2-1A

Comment: Number required for dispatch should be "-".

Justification: Number required for dispatch is dependent on the aircraft type.

response

Accepted

The intent was to reflect the proposed restriction in the additional considerations.

comment

134 comment by: *AIRBUS*

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

25-11-1-2 Flight Crew Seats – Manual Adjustments**Vertical and Recline Adjustments:**

-The item **25-11-1-2-2B** that says “**One or more may be inoperative provided that the affected seat is secured or locked in a position acceptable to the flight crew member**” is too restrictive with a category **B** since the position **is acceptable to the flight crew member**. Either the pilot accepts the seat, and the category **C** is appropriate, or the pilot refuses the seat, and this is a **NO-GO** regardless of the category. Therefore, it is appropriate to change the **B** to **C**.

-The item **25-11-1-2-2A** that says “**One or more may be inoperative provided that the associated power adjustment of the affected flight crew member seat is operative.**” is too restrictive with a category **B** since the power adjustment is still operative. If the power adjustment fails in flight, this will be limited to a unique flight, and in addition partially, since the item **25-11-1-2-2B** will apply for the next flight.

Therefore, it is appropriate to change the **B** to **C**.

response

Not accepted

The B rectification interval is proposed for manual controls of the seats as they are the functions required for certification of the seats. This is to mitigate the risk of the need to move the seat after an emergency situation where the electrical supply to the seats may have been lost.

If equivalent safety can be demonstrated on a particular design, alternate MMEL content may be accepted.

comment

135

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

The item **Flight Crew Seats Shoulder Harness** is missing in the **MMEL Items Guidance Book**.

It is understood that the authorities consider that a pilot shoulder harness inoperative prevents the use of the affected seat during the flight because the shoulder harness is necessary in the case of RTO or in severe turbulence conditions.

Relief should be however granted on a case by case basis when the demonstration is made that **under any ground and flight conditions, the pilot seat shoulder harness automatic locking system is not activated** showing that **the shoulder harness is not necessary even in the case of RTO or in severe turbulence conditions**.

The associated condition could be then:

C / 2 / 1 / May be inoperative on the F/O seat.

response

Noted.

The proposal should however be the subject of a case-by-case review.

comment

136

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

25-21-2-1A Cabin Crew Seat Assembly (single or dual position)

As soon as alternate procedures are developed, as well as shown in the dispatch conditions, to meet the operational (**EU-OPS 1.990**) and certification (**CS 25.785(h)**) requirements, especially with regards to the direct view policy, it is then considered appropriate to permit more than one seat inoperative for a C rectification interval. This should be clearly reflected here.

response

Partially accepted

There was no scope in TGL 26 to allow more than one required cabin crew seat to be inoperative. Consequently, the current proposal does not anticipate this possibility. If adequate mitigation means can be demonstrated, alternate MMEL content may be envisaged base on a case-by-case review.

comment

163 comment by: *European Cockpit Association*

p 131 Additional considerations: inoperative passenger table is a good point! We can however not find a dedicated reference in the actual MMEL to it. Should be instituted or clarified in the MMEL (e.g. in column 5), because the 'additional considerations' in the NPA do not form part of the actual MMEL.

response

Noted

The additional considerations are an integral part of the MMEL guidance. If there is a failure mode of the passenger seat table that may render a seat inoperative, the later should be deferred under MEL.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 26 FIRE PROTECTION p. 146-153

comment

140 comment by: *AIRBUS*

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

26-25-1 Lavatory Waste Receptacle Fire-Extinguishing System

In the **Additional considerations** in the page 153, it is written "**The lavatory smoke detection system is not considered as an acceptable alternate means to the waste receptacle fire-extinguishing system.**"

Could additional details being given to understand the reason why the lavatory smoke detection system is not considered as an acceptable alternate mean? There is currently no rationale given for this statement.

response

Noted

As indicated in the associated explanatory notes: "MMEL exception 25-40-2A takes credit of the lavatory fire-extinguishing system to mitigate the undesired situation where, during a non-smoking flight, a passenger goes on purpose into the lavatory for smoking. This relief does not take credit of the lavatory smoke detection system. It is indeed assumed that such a passenger might also try to make it inoperative (e.g. using a wet towel)."

In order to mitigate the above risk a B rectification interval is also proposed to

reduce the probability of occurrence.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS p. 154-196
GUIDANCE BOOK - ATA 30 ICE PROTECTION

comment

33 comment by: *Alexandra MALVEZIN*

P171 – Item 33-43-1 – Wing Illumination Light

Why items from the ATA 33 are displayed in the middle of ATA 30?

response

Noted

This is due to the fact that Ice evidence probes light and wing inspection lights were listed in ATA 33 in TGL 26. As the subject is more linked to their use to mitigate icing conditions, the NPA is showing these items along with ATA 30 items. This will be however change in the final version of CS-MMEL where ATA 33 items will be moved to the appropriate location in the document.

comment

34 comment by: *Alexandra MALVEZIN*

P180 – Item 30-31-2 – Pitot Heating Failure Indication System

This proposed MMEL guidance is a lot of more conservative than the existing TGL 26 or any other relevant documentation (FAA MMEL). The possibility to dispatch with the indicating system being inoperative when the pitot heating system has been verified operative has been deleted. We do not understand why since in this configuration the aircraft still answers to airworthiness requirements.

response

Noted

The proposal has been made voluntarily more restrictive as explained in the explanatory noted. The additional considerations which are integral part of the guidance will however be shown in the final CS-MMEL version and indicate clearly "Additional relief may be granted based on the certification basis and the applicable operational requirements."

comment

35 comment by: *Alexandra MALVEZIN*

P192 – Item 30-42-1 – Windshied Wipers

Dispatch with windshied wipers is possible when no precipitation is forecasted during a period of **one hour** before until one hour after the ETD and ETA respectively at the departure and destination airports (instead of 5 nm in current versions of the MMEL). This restriction also includes takeoff and landing alternates.

We do not understand the need to enlarge to one hour around the airport the zone of no precipitation.

response

Noted

This is to ensure consistency with the operational requirements for the selection of aerodromes (CAT.OP.MPA.180).

comment	<p>141 comment by: <i>AIRBUS</i></p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 30-00-1 Inertial Separators – Position Indicating System</p> <p>Although it is recognized that this may be an appropriate limitation for many aircraft with particle/inertial separators it is not necessarily required for all aircraft with such devices. The requirement seems to consider the particle separator to be of a similar level of criticality in icing conditions to the ice protection system itself. This may be true on some aircraft but not on all. The effect of the inertial particle separator upon the robustness of the engine to icing conditions differs depending on the engine, the particle separator design, the intake design and the ice protection system design. Therefore it should be possible to certify without such a limitation. This item should be then changed accordingly.</p>
response	<p>Noted</p> <p>The guidance retained is indeed restrictive to cope with the most unfavourable case (inertial separator required for icing protection). An adequate justification may however support an alternate (less restrictive) proposal for a specific type/engine MMEL.</p>
comment	<p>164 comment by: <i>European Cockpit Association</i></p> <p>p. 157 assumption in the explanatory note is not in line with what is trained and experienced in operation: Icing conditions should be assumed any time when OAT is below 8°C and visible moisture.</p>
response	<p>Not accepted</p> <p>The definition of icing conditions in the absence of AFM definition for engine ice protection related items should be any time when OAT on the ground and for takeoff, or TAT in flight is 10 °C or below</p>
comment	<p>165 comment by: <i>European Cockpit Association</i></p> <p>p. 157 30-00-1A relaxation against TGL 26 should be evaluated in a safety-analysis. For the meantime, in doubt for the safety, the TGL 26 provision (daylight-VMC only) should remain. Just restricting the flight (no flight in known or forecast icing conditions) does not help if you encounter not-forecasted icing-conditions. The VMC-requirement is much easier to maintain since no flight into or in clouds is allowed, the daylight helps to obey to this rule. (Night-VFR is basically IFR, since the checking of the VMC-conditions at night is often not really possible. This statement is true inline with TGL 26, e.g. 30.31 (2), where it is stated 'Flights under IFR or at night'.)</p>
response	<p>Accepted</p> <p>The conditions on day VMC is re-instated together with additional consideration that this may be alleviated based on appropriate justification.</p>
comment	<p>166 comment by: <i>European Cockpit Association</i></p> <p>p. 159 30-10-1A Not agree. The TGL 26 provision (daylight-VMC only) should remain. Just restricting the flight (no flight in known or forecasted icing</p>

conditions) does not help if you encounter not-forecasted Icing-conditions. The VMC-requirement is much easier to maintain since not flight into or in clouds is allowed, the daylight helps to obey to this rule. (Night-VFR is basically IFR, since the checking of the VMC-conditions at night is often not really possible. This statement is true inline with TGL 26, e.g. 30.31 (2), where it is stated 'Flights under IFR or at night')

response

Accepted

The conditions on day VMC is re-instated together with additional consideration that this may be alleviated based on appropriate justification.

comment

167

comment by: *European Cockpit Association*

p. 161 30-21-1A Not agree. The TGL 26 provision (daylight-VMC only) should remain. Just restricting the flight (no flight in known or forecast icing conditions) does not help if you encounter not-forecasted Icing-conditions. The VMC-requirement is much easier to maintain since not flight into or in clouds is allowed, the daylight helps to obey to this rule. (Night-VFR is basically IFR, since the checking of the VMC-conditions at night is often not really possible. This statement is true inline with TGL 26, e.g. 30.31 (2), where it is stated 'Flights under IFR or at night') The Austrian-accident during approach to Munich should be kept in mind. ([http://www.skybrary.aero/index.php/F70,_vicinity_Munich_Germany,_2004_\(AW_WX_LOC_RE\)](http://www.skybrary.aero/index.php/F70,_vicinity_Munich_Germany,_2004_(AW_WX_LOC_RE))) The aircraft could only be safely landed because of day-VMC. Especially Icing of Engine-Intakes takes place also in areas with no Icing-forecast because of the temperature-drop due to the suction. The next consecutive failure could be an engine-failure which might lead to loss of propulsion; as the reason is atmospheric and the same for all engines, this failure then would have to be considered catastrophic.

response

Accepted

The conditions on day VMC is re-instated together with additional consideration that this may be alleviated based on appropriate justification.

comment

168

comment by: *European Cockpit Association*

p. 162 30-21-1A Not agree. The TGL 26 provision (daylight-VMC only) should remain. Just restricting the flight (no flight in known or forecast icing conditions) does not help if you encounter not-forecasted Icing-conditions. The VMC-requirement is much easier to maintain since not flight into or in clouds is allowed, the daylight helps to obey to this rule. (Night-VFR is basically IFR, since the checking of the VMC-conditions at night is often not really possible. This statement is true inline with TGL 26, e.g. 30.31 (2), where it is stated 'Flights under IFR or at night') The Austrian-accident during approach to Munich should be kept in mind. [http://www.skybrary.aero/index.php/F70,_vicinity_Munich_Germany,_2004_\(AW_WX_LOC_RE\)](http://www.skybrary.aero/index.php/F70,_vicinity_Munich_Germany,_2004_(AW_WX_LOC_RE)) The aircraft could only be safely landed because of day-VMC. Especially Icing of Propellers takes place also in areas with no Icing-forecast because of the aerodynamic specificities of a propeller. The next consecutive failure could be an engine-failure which might lead to loss of propulsion; as the reason is atmospheric and the same for all engines, this failure then would have to be considered catastrophic.

response

Accepted

The conditions on day VMC is re-instated together with additional consideration

that this may be alleviated based on appropriate justification.

comment

169 comment by: *European Cockpit Association*

p. 165 30-80-1A Not agree. The TGL 26 provision (daylight-VMC only) should remain. Just restricting the flight (no flight in known or forecasted icing conditions) does not help if you encounter not-forecasted Icing-conditions. The VMC-requirement is much easier to maintain since not flight into or in clouds is allowed, the daylight helps to obey to this rule. (Night-VFR is basically IFR, since the checking of the VMC-conditions at night is often not really possible. This statement is true inline with TGL 26, e.g. 30.31 (2), where it is stated 'Flights under IFR or at night')

response

Accepted

The conditions on day VMC is re-instated together with additional consideration that this may be alleviated based on appropriate justification.

comment

170 comment by: *European Cockpit Association*

p. 171 33-43-1C add 'and used', so that the sentence reads: "One or more may be inoperative provided that a portable lamp/light of adequate capacity for wing and/or control surface inspection is available and used for night operations in icing conditions." This is in line with TGL 26.

response

Accepted

comment

171 comment by: *European Cockpit Association*

p. 172 and following. Single-pilot IFR: It should be considered whether more specific directions have to be given regarding which system can be accepted to have failed. Especially combinations (e.g. System 1 pitot, system 2 static fail) might lead to undesirable consequences. Consider highly integrated avionics suites. Some references to ATA 34 might be helpful. Single-pilot IFR has to be treated with special care, since specific failure-conditions can lead to a/p-failures which demand manual flying without mental capability left to analyze complex icing-related failure-scenarios. An example could be the text found for 30-31-3D (Helicopter, condition b) where it is stated "The remaining static port heater and all connected primary indications are verified to be operative at the pilot-in-command station prior to each flight". Recent accidents should makes us very cautious as regards Icing. Some of the changes over TGL 26 shows that EASA principally shares that view.

response

Accepted

Additional review of the proposal concluded that the proposed guidance cannot be adapted to specific design of complex aircraft that should be reviewed on a case-by-case basis. The guidance for pitot, static and stall warning vanes heaters is removed from the CS-MMEL guidance book.

comment

172 comment by: *European Cockpit Association*

p. 189 30-41-1B Not agree. Unnecessary introduction of a new procedure. Windshield heat is not only installed to protect against ice, but to improve structural integrity. In so far, might the next failure, if experienced undetected, lead to an unsafe condition when flying high speed. On the other side, the

'unknown Icing condition' might be covered because it will be detected when the screen starts to show ice-accretion.

response

Partially Accepted

Additional considerations added to address the comment.

comment

173 comment by: *European Cockpit Association*

p. 192 30-42-1A add an 'and' as last word on condition a)

response

Accepted

comment

174 comment by: *European Cockpit Association*

p. 193 30-42-1B Not agree. Rain repellent is by no means a substitution to functioning wipers. Its use is only recommended at moderate to heavy rain, it's use in light rain or drizzle, when a wiper is still needed, might even impair vision. In addition, rain repellent depends on a functioning wiper: the fluid is sprayed on the screen and equally distributed by the wiper.

response

Accepted

Additional considerations added to address the comment.

comment

175 comment by: *European Cockpit Association*

p. 195 30-40-1A Under the provision that it cannot substitute a functioning wiper, the requirement is quite strict considering the year-long restriction to not use the system. Should probably be a 'C'-item without restriction, or only linked to wiper-functionality.

response

Accepted

Item 30-40-1B is proposed to be allocated with a D (120 days) rectification interval. Item 30-40-1A covers the failure of both wipers and alternate means.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 31 INDICATING/RECORDING SYSTEMS	p. 197-212
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comment

42 comment by: *Trafi*

31-21-1A Clock (page 198&199): Should this Note 1 (as in TGL 26) be considered on EASA Guidance book too as described in Additional considerations?

response

Accepted

For clarification of the scope of applicability of the statement provided in the note, it has been transferred to the additional considerations.

comment

176 comment by: *European Cockpit Association*

p. 199 30.21.1A Please re-introduce note1 from TGL 26 since clock-function is not obviously linked to function of other aircraft-systems.

response	<p>Noted</p> <p>The content of the previous TGL 26 notes is now moved integrally to additional considerations which are integral part of the guidance. The nature of the notes content is indeed of that level of information.</p>
comment	<p>177 comment by: <i>European Cockpit Association</i></p> <p>p. 203 31-31-2A As 5% is an arbitrary number and does not differentiate between parameters (e.g. primary parameters, like attitude, speed, sink rate, etc.) it is proposed to delete this provision.</p>
response	<p>Noted</p> <p>We acknowledge the fact that the 5% value is arbitrary but it has been retained by JAA as an acceptable basis in the past and was retained in CS-MMEL on that basis.</p>
comment	<p>178 comment by: <i>European Cockpit Association</i></p> <p>p. 212 31-31-4A As 5% is an arbitrary number and does not differentiate between parameters (e.g. primary parameters, like attitude, speed, sink rate, etc.) it is proposed to delete this provision.</p>
response	<p>Noted</p> <p>We acknowledge the fact that the 5% value is arbitrary but it has been retained by JAA as an acceptable basis in the past and was retained in CS-MMEL on that basis.</p>

<p>C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 33 LIGHTS</p>	<p>p. 213-246</p>
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comment	<p>70 comment by: <i>UK CAA</i></p> <p>Page No: 232-234</p> <p>Paragraph No: 33-42-1</p> <p>Comment: Some sub-items are incorrectly numbered 33-41-xx</p> <p>Justification: Documentary errors.</p>
response	<p>Accepted</p> <p>Corrections made.</p>
comment	<p>71 comment by: <i>UK CAA</i></p> <p>Page No: 233</p> <p>Paragraph No: 33-42-1-2</p> <p>Comment: The addition of tail strobe lights should be considered for inclusion in the title.</p> <p>Justification: Anti-Collision Light System may include tail strobe light/s.</p>

response	<p>Proposed Text: "Wing-Tip / Tail Strobe Light"</p> <p>Accepted Additional information included in the title.</p>
comment	<p>142 comment by: AIRBUS</p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 33-20-1 Passenger Compartment Lighting</p> <p>In some configurations where a floor mounted emergency photoluminescent lighting is installed, the passenger compartment lighting may be necessary to charge this emergency photoluminescent lighting. In this case, relief cannot be granted when the passenger compartment lighting is not sufficient to properly charge the floor mounted emergency photoluminescent lighting system. A new condition is then necessary to say: "(o) The passenger compartment lighting is sufficient to charge the floor mounted emergency photoluminescent lighting, if installed".</p> <p>The (o) should provide the minimum level of passenger compartment illumination required to charge the floor mounted emergency photoluminescent lighting.</p>
response	<p>Accepted</p> <p>A sentence is added in the additional considerations to deal with the raised issue.</p>
comment	<p>143 comment by: AIRBUS</p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 33-20-2A Cabin Signs</p> <p>The item 33-20-A should read: "One or more may be inoperative provided that affected passenger seats, crew member seats or lavatories from which a at least one cabin sign is not readily legible are blocked and placarded 'DO NOT OCCUPY'". Changing "a" by "at least one" is appropriate to show that <u>at least one must be readily legible for not blocking the seats</u>.</p>
response	<p>Accepted</p>
comment	<p>144 comment by: AIRBUS</p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 33-41-1C Navigation/Position Lights</p> <p>Why is the item 33-41-1C limited to the helicopters?</p>

With the Airbus Anti-collision Light System (specific property: double flash strobe lights forward facing) the aircraft moving direction can be conspicuously identified. Therefore, a missing navigation light could be easily replaced by the set of requirements laid down under the exception **33-41-1C**.

response

Not accepted

The navigation light requirements are dictated by the rules of the air, as applicable. It is therefore not possible to validate a generic relief at CS-MMEL guidance level as suggested in the comment.

comment

145 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)
33-42-1 Anti-Collision Light System (Items 33-42-1-1A and 1B)

The Sub-ATA is **33-48** and not **33-42**.

There are airplanes for which a full redundancy between the strobe lights and the red beacon lights is granted. Thus it is then possible to allow the dispatch without any beacon light operative provided that strobe lights are operative without restriction to daylight operations. This full redundancy between the anti-collision subsystems (beacon lights and strobe lights) should be covered in the **MMEL Items Guidance Book** when this is possible because of the strobe lights performance.

The tail-strobe light(s) (if installed) are not covered in the **MMEL Items Guidance Book** and should be.

In the item **33-42-1A**, it is written: "**Either the upper or the lower fuselage lights may be inoperative provided that an acceptable number of white wing-tip strobe lights are operative.**"

What does "**an acceptable number**" mean? How to determine that the number is acceptable? Who decides that this is acceptable? The **Explanatory notes** try to clarify, but usually, the wing tip/tail strobes cover different dihedral angles than the two beacons, thus the loss of one beacon can usually not be compensated by "**an acceptable number**" but only by the complete strobe lights system.

response

Not accepted

The ATA breakdown standardizes up to the 3rd digit: 33-40 for exterior lights. The numbering selected for the CS-MMEL is retaining the TGL 26 convention. This numbering can however be adapted at MMEL manufacturer level, if necessary.

Noted

The acceptable number is indicated as some design may integrate multiple bulbs or filaments which may be partially degraded and still comply with the requirements of CSx.1401.

comment

146 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)
33-43-1 Wing Illumination Light

Comment 1: The Wing Illumination (Scan) Lights are associated with the ATA **33-49**. The ATA **33-43** stands for the Taxi/Take-off-Lights.

Comment 2: In general, if more than one light source for ice detection is available on each side (e.g. Wing and Engine-Inspection light), one on each side should be sufficient. This depends on the airplane type. This should be cover in the **MMEL Items Guidance Book**.

Comment 3: The exception **33-43-1C** says: "**One or more may be inoperative provided that a portable lamp/light of adequate capacity for wing and/or control surface inspection is available for night operations in icing conditions.**"

It should be clarified if the purpose of the lamp/light is for ground inspection only or if it is intended to be used in-flight also. This should be perhaps clarified in the "**Additional Considerations**" paragraph.

response

1/**Not accepted**

The ATA breakdown standardizes up to the 3rd digit: 33-40 for exterior lights. The numbering selected for the CS-MMEL is retaining the TGL 26 convention. This numbering can however be adapted at MMEL manufacturer level, if necessary.

2/**Noted**

If an engine inspection light is used as an alternate means to visually identify the formation of ice, it should be demonstrated that ice build-up on the engine air intake is representative of the wing ice-build up and vice-versa if the wing inspection light only is available. These kinds of MMEL proposals may be acceptable on a case-by-case basis.

3/**Partially accepted**

The intent is to use the portable lamp from the flight crew compartment or from another station in the fuselage, as applicable. An additional entry is proposed to cover the specific case of the lights being used only for ground inspection purpose only.

comment

147

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)
33-44-1 Landing Lights

The Sub-ATA is **33-42** and not **33-44**.

response

Not accepted

The ATA breakdown standardizes up to the 3rd digit: 33-40 for exterior lights. The numbering selected for the CS-MMEL is retaining the TGL 26 convention. This numbering can however be adapted at MMEL manufacturer level, if necessary.

comment

148

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

33-50-1-1 Cabin Emergency Lighting (Overhead Emergency Lighting (each aisle))

The rationales for this item are not clear.

Airbus has a complete different design that allows 50% of all light sources to be inoperative maintaining the CS-compliance.

This item and the rationales should be revisited.

response

Accepted

Additional considerations have been added to indicate that the proposed guidance is provided as examples of relief generally accepted in MMELs and should be validated on particular cabin design configuration.

comment

149

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

33-50-1-2 Cabin Emergency Lighting (EXIT Signs)

- Items **33-50-1-2A** and **2B**: An appropriate distinction should be done between the **EXIT Locators (CS 25.811(d)(1))**, the **EXIT Markers (CS 25.811(d)(2))** and the additional **EXIT Signs (CS 25.811(d)(3))** for avoiding wrong interpretations.

- Item **33-50-1-2B**: The condition "**One may be inoperative provided that the associated door/exit is considered inoperative. Refer to item 52-22**" conflicts for the **EXIT Locators** because they serve always for a pair of doors (RH and LH).

response

Partially Accepted

Additional considerations have been added to indicate that the proposed guidance is provided as examples of relief generally accepted in MMELs and should be validated on particular cabin design configuration.

comment

150

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

33-50-1-3 Cabin Emergency Lighting (Exit Area Lighting)

Item **33-50-1-3A**: This component is not known. It is assumed that this is the evacuation area light.

If so, the rationale is not understood because the evacuation area light serves for one door only and the wording should then be: "**One may be inoperative provided that the associated door/exit is considered inoperative. Refer to item 52-22.**".

response

Accepted

The guidance is revised. Additional considerations have been added to indicate that the proposed guidance is provided as examples of relief generally accepted in MMELs and should be validated on particular cabin design configuration.

comment

151 comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)**33-50-1-3 Cabin Emergency Lighting (Floor Proximity Lighting)**

- It is not clear which kind of FPEEPMS is covered. There are seat mounted, floor mounted and non-electrical floor mounted. For each, dedicated items are necessary in the in the **MMEL Items Guidance Book**.

- Item **33-50-1-4-1A – Individual Lights/Strips**: The condition **(c)** is confusing. Who defines the specific strips? How many and which length may be interrupted? To which authority it is referred to?

- Item **33-50-1-4-2A – EXIT Markers**: It would be better to title "**EXIT Identifier**", (as per the **CS 25.812(e)(2)**) to avoid confusion with the "**Exit Markers**" as per the **CS 25.811(d)(2)**.

The condition, should read "**One or more may be inoperative...**" because in some airplanes, there are two EXIT Identifiers per door due to visibility reasons. For the EXIT Identifiers, no brightness value is defined. The word "**legible**" does not help when applying the MEL as it can be individually interpreted.

response

Partially Accepted

Additional considerations have been added to indicate that the proposed guidance is provided as examples of relief generally accepted in MMELs and should be validated on particular cabin design configuration.

comment

179 comment by: European Cockpit Association

p. 220 33-20-1B (aeroplanes) Not in line with explanation: please introduce in analogy to 33-20-1B (Helicopters) the requirement of at least 50% functioning lights, in order to be able to perform emergency-duties (e.g. search for smoke-source, bomb-search, medical emergencies), for which the emergency-lighting is not foreseen and does not provide adequate lighting-level (emergency lighting is mainly to assist evacuation of the aircraft).

response

Partially Accepted

Wording of condition (b) is updated to clarify the intent.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 34 NAVIGATION FLIGHT INSTRUMENTS p. 247-299

comment

6 comment by: LE PUIL, Frederic

MMEL chapter 34 :

As the pilot in command is suppose to use the MEL as a stand alone document , everytime the following condition is used "b) Operating procedures do not require its use".

the procedures should mention:
To provide information on which operating procedures require its use

For new MMEL item 34.40.2 Area navigation system :

34-40-2A

To comply with the new definitions of ICAO PBN concept , Ops procedures should mention :

(b) Certified RNP/ RNAV capabilities relevant for the intended route are maintained, and

ans as the next condition is :

(c) Operational procedures do not depend upon its use.

The procedures part should mention :

To provide information about which procedures depend upon its use

response

Accepted

Changes will be incorporated.

comment

29 comment by: *Thales Avionics- JD Chauvet*

[page 278 & 279: replace "HIS" by "HSI"](#)

response

Accepted

Changes will be incorporated.

comment

43 comment by: *Trafi*

34-10-2E (helicopters) (page 259): (b) Word "and" in wrong place?

response

Accepted

Changes will be incorporated.

comment

44 comment by: *Trafi*

34-20-1C (aeroplanes), (page 282) Stabilised Direction Indication: what is the logic when 2 needed and still capability to fly under day VFR? When it is possible to fly IFR or VFR night? (see OPS 1.650/652).

34-20-1D (aeroplanes), (page 282) Stabilised Direction Indication: case B,-, 1: (b) The stabilised direction indication is displayed at each required pilot's station: 1 ea required for dispatch. Does this mean that one direction indication is duplicated from one source? Is single pilot operation also considered?

response

Accepted

Item 34-20-1C: The comment has been taken into account and the day VFR restriction is removed at dispatch conditions level in the guidance. Additional considerations have been inserted to account for potential additional restrictions, if applicable.

Noted

Item 34-20-1D: The intent of this option is actually to have one single source feeding both sides of the flight crew compartment indications. The single pilot case is more appropriately captured within option 34-20-1B.

comment	<p>45 comment by: <i>Trafi</i></p> <p>34-22-1D Magnetic/Standby compass: (helicopters): (a) Operations are conducted under VFR : night possible?</p>
response	<p>Noted</p> <p>The availability of two independent stabilised direction indicators is ensured at dispatch as per condition (b), the night VFR operations are permitted by this guidance item.</p>
comment	<p>46 comment by: <i>Trafi</i></p> <p>34-20-2C (page 294) Primary Attitude Indication: (Aeroplanes & Helicopters): Single pilot: with 1 indication single pilot is allow to fly only VFR?</p> <p>34-20-2D (page 294) Primary Attitude Indication: (Aeroplanes & Helicopters): 2 required, (a) Operations are conducted under VFR; how many "excess" system is needed for IFR?</p>
response	<p>Accepted</p> <p>Item 34-20-2C is deleted for simplification purpose. Indeed entry 34-20-2F (renumbered 2E) should address the failure of the attitude indicator in a single pilot cockpit.</p>
comment	<p>59 comment by: <i>Luftfahrt-Bundesamt</i></p> <p><u>Page 282, ATA Chapter 34: Navigation Item 34-20-1 Stabilised Direction Indication</u></p> <p>The proposed guidance does not cover the case of a stabilised direction indication failure for VFR night and IFR operation.</p> <p><u>Page 295, ATA Chapter 34: Navigation Item 34-20-2F Stabilised Direction Indication</u></p> <p>As per current TGL 26 guidance, the dispatch is authorised with one secondary (standby) attitude indication only for a single pilot day VMC in sight of the surface with adequate external attitude reference. However based on the operational requirements this relief is not acceptable as one primary attitude indicator should be the minimum.</p>
response	<p>Accepted</p> <p>Item 34-20-1C is modified to allow night VFR/IFR flights.</p> <p>Not Accepted</p> <p>The MMEL may deviate from the operational requirements provided an acceptable level of safety is maintained. This is the case for item 34-20-2F (renumbered 2E) as long as the dispatch conditions are fulfilled.</p>
comment	<p>72 comment by: <i>UK CAA</i></p> <p>Page No: 251</p> <p>Paragraph No: 34-10-1 Primary Airspeed Indication</p>

Comment: What is the difference between primary airspeed indication and primary airspeed information? If none is intended then the text should use consistent terminology, including that used in the airworthiness requirements, which do not refer to 'airspeed information' displays, just ASIs. In the airworthiness requirements, (e.g. CS 23, 25, 27, 29) an airspeed indicator is a required instrument for each pilot. It is not clear from the proposed text that alleviation is possible only for those instruments which are not essential to meet this requirement. Perhaps it should say "Any in excess of that required for each required pilot may be inoperative", as was the standard clearly stated under TGL26.

Justification: Self-explanatory.

response

Accepted

It is accepted that "airspeed indication" should replace "airspeed information" for consistency.

comment

73 comment by: UK CAA

Page No: 264**Paragraph No:** 34-10-3

Comment: The item for Turn and Slip Indicator/Turn Co-ordinator is confusing. Relief has been broken down into two components – "Inclinometer" and "Slip/Skid Indication". The turn indicator is not an inclinometer.

Justification: Incorrect component description.

Proposed Text: Use terms "Turn Indication" and "Slip (or Slip/Skid) Indication" in sub-item titles.

response

Accepted

comment

74 comment by: UK CAA

Page No: 270**Paragraph No:** 34-10-4

Comment: The item for Vertical Speed Indicators is stated as being consistent with TGL26. However, relief is now provided for aeroplanes with 0 required for dispatch, whereas TGL26 required a minimum of 1. Is this intended?

response

Accepted.

The proposal has been changed to re-instate consistency with TGL 26.

comment

75 comment by: UK CAA

Page No: 276**Paragraph No:** 34-15-2A

Comment: No rectification interval, number required or number installed has been shown.

	Justification: Documentary error.
response	Accepted. Corrections made.
comment	180 comment by: <i>European Cockpit Association</i> p. 251 34-10-1A It should be clarified, that the primary airspeed information at each required pilot's station has to come from the respective independent sources: Otherwise the requirement has only limited use.
response	Accepted. "Independent" is added.
comment	181 comment by: <i>European Cockpit Association</i> p. 264 34-10-3 According to our knowledge, the inclinometer is the slip indicator. (see http://en.wikipedia.org/wiki/Turn_coordinator) whereas slip/skid-indicator is the combination of inclinometer and turn-coordinator. Recommendation: Use TGL 26-text for clarity.
response	Accepted. Corrections made.
comment	182 comment by: <i>European Cockpit Association</i> p. 274 34-15-1A Procedures: As RVSM is used widely, it should be stated verbally like in TGL 26.
response	Not accepted A generic wording has been used in the guidance not to limit to RVSM related requirements. If RVSM restrictions are confirmed, this should be specified verbally at type MMEL level.
comment	183 comment by: <i>European Cockpit Association</i> p. 282 34-20-1A condition of a working Magnetic/sby-compass missing: In case of failure of stabilized direction indication and dispatch without functioning sby/Magnetic-compass no heading-indication would be available.
response	Accepted Although the failure of the sby/magnetic compass is restricted to day VFR conditions when only one stabilised direction indicator is operative on pilot's-in-command side (item 34-22-1A), the failure of the last heading source may not be acceptable if adequate ground references are not available. An additional condition on Magnetic/standby compass is therefore added to item 34-20-1A.
comment	184 comment by: <i>European Cockpit Association</i> p. 294 34-20-2A As discussed in the rulemaking group, this may be not acceptable, since jet aircraft (in this case used as corporate or private aircraft) might not be able to be controlled without an attitude indicator. Loss of the standby-attitude indicator might be catastrophic. See also http://aviation-safety.net/database/record.php?id=19900920-1 In addition, Night-VFR does

not necessarily allow to orientate on the horizon. So, another catastrophic situation if standby-ADI fails. At least the original TGL 26-text should be used.

response

Partially accepted

Additional considerations are updated to reflect the comment.

comment

185 comment by: *European Cockpit Association*

p. 294 34-20-2C change remark (a) to 'daylight VMC reason: As discussed in the group, might be not acceptable, since jet a/c (in this case used as corporate or private a/c) might not be able to be controlled without an attitude indicator. Loss of the sby-attitude indicator might be catastrophic. See also <http://aviation-safety.net/database/record.php?id=19900920-1> In addition, Night-VFR does not necessarily allow to orientate on the horizon. So, another catastrophic situation if sby-ADI fails. At least the original TGL 26-text should be used.

response

Partially accepted

Item 34-20-2C is adapted to ensure day VMC conditions in sight of the surface with adequate external attitude reference with a C rectification interval for single pilot operations.

comment

186 comment by: *European Cockpit Association*

p. 294 34-20-2D change remark (a) to daylight VMC reason: As discussed in the group, might be not acceptable, since jet a/c (in this case used as corporate or private a/c) might not be able to be controlled without an attitude indicator. Loss of the sby-attitude indicator might be catastrophic. See also <http://aviation-safety.net/database/record.php?id=19900920-1> In addition, Night-VFR does not necessarily allow to orientate on the horizon. So, another catastrophic situation if sby-ADI fails. At least the original TGL 26-text should be used.

response

Not accepted

Item 34-20-2D proposal is leaving the aeroplane at least two attitude indication failures away from total loss of attitude. Therefore, the VFR restriction is assessed as adequate to mitigate this dispatch configuration.

comment

187 comment by: *European Cockpit Association*

p. 295 34-20-2E change remark (a) to daylight VMC reason: As discussed in the group, might be not acceptable, since jet a/c (in this case used as corporate or private a/c) might not be able to be controlled without an attitude indicator. Loss of the sby-attitude indicator might be catastrophic. See also <http://aviation-safety.net/database/record.php?id=19900920-1> In addition, Night-VFR does not necessarily allow to orientate on the horizon. So, another catastrophic situation if sby-ADI fails. At least the original TGL 26-text should be used.

response

Not accepted

Item 34-20-2E proposal is leaving the aeroplane at least two attitude indication failures away from total loss of attitude. Therefore, the VFR restriction is assessed as adequate to mitigate this dispatch configuration.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 34 NAVIGATION NAVIGATION EQUIPMENT	p. 300-332
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comment

76 comment by: UK CAA

Page No: 312**Paragraph No:** 34-40-1

Comment: It is not clear why the word 'helicopters' has been added to the title of the transposed TGL26 ACAS text as TCAS II carriage by helicopters is not mandated. No rationale as to why the word has been added can be found in the supporting explanatory material.

Justification: TCAS II carriage by helicopters is not mandated but the proposed CS-MMEL text may be interpreted as implying mandated equipage. Note that CAT.IDE.A.155 (see also UK CAA comment against 'Aircraft applicability' page 314) refers to carriage by aeroplanes only.

Proposed Text: Amend title 'Aeroplanes and Helicopters' to read 'Aeroplanes'.

response

Noted

If not required to be carried, then the relief under item 34-40-1B is intended to be applicable.

The intent was to provide guidance also for helicopters, if so desired by the applicants.

comment

77 comment by: UK CAA

Page No: 312**Paragraph No:** 34-40-1

Comment: ACAS II carriage by helicopters is not mandated, however some helicopters are voluntarily equipped. Similarly, some aeroplanes that are not mandated to be equipped with ACAS II may be voluntarily equipped. Clarification on the applicability of CS-MMEL's ACAS requirements to such aircraft is therefore necessary.

Justification: TCAS II carriage by helicopters is not mandated, similarly some non-mandated aeroplanes may be voluntarily equipped. Applicability of 34-40-1 to voluntarily-equipped aircraft is not clear, therefore guidance on applicable MMEL procedures is considered appropriate.

Proposed Text: Amend title '34-40-1 Airborne Collision Avoidance System (ACAS) (MC)' to read '34-40-1 Airborne Collision Avoidance System (ACAS) (if installed) (MC)'

response

Not accepted

The nature of the guidance material is that it is used as applicable by the (S)TC holder. If the proposed guidance is not applicable, it should not be retained at MMEL level.

comment

78 comment by: UK CAA

Page No: 314

Paragraph No: Aircraft applicability

Comment: ACAS II carriage by helicopters is not mandated, however some helicopters are voluntarily equipped. Similarly, some aeroplanes that are not mandated to be equipped with ACAS II may be voluntarily equipped. Clarification on the applicability of CS-MMEL's ACAS requirements to such aircraft is therefore necessary.

Justification: TCAS II carriage by helicopters is not mandated, similarly some non-mandated aeroplanes may be voluntarily equipped. Applicability of 34-40-1 to voluntarily-equipped aircraft is not clear, therefore guidance on applicable MMEL procedures is considered appropriate.

Proposed Text: Add new explanatory note: 'The requirements of 34-40-1 are also intended to be applied by operators of aeroplanes and helicopters for which the carriage and operation of ACAS II equipment is not mandatory, but are so equipped.'

response

Partially accepted

Information is added in the additional considerations for clarity purpose.

comment

79

comment by: UK CAA

Page No: 314

Paragraph No: References CAT.IDE.A.155

Comment: In considering the proposals on pages 311-314 it was necessary to refer to CAT.IDE.A.155. Note that CRD to NPA 2009-02B dated 26 November 2010 erroneously states under CAT.IDE.A.155 Airborne Collision Avoidance System (ACAS) that:

TURBINE-POWERED AEROPLANES WITH A MAXIMUM CERTIFIED TAKE-OFF MASS OF MORE THAN 5 700 KG OR A MAXIMUM PASSENGER SEATING CONFIGURATION OF MORE THAN 19 SHALL BE EQUIPPED WITH ACAS II. CAT.IDE.A.160 AIRBORNE WEATHER DETECTING EQUIPMENT

The following shall be equipped with airborne weather detecting equipment when operated at night or in instrument meteorological conditions (IMC) in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route:

- (a) pressurised aeroplanes,
- (b) non-pressurised aeroplanes with an MCTOM of more than 5 700 kg; and
- (c) non-pressurised aeroplanes with an MPSC of more than nine.

The source material is understood to be the subject of a significant typographical error and in any case is believed to have been superseded by CRD to NPA 2009-02b 'Part-NCC and Part-NCO' dated 30 Aug 2011. Part-NCC NCC.IDE.A.140 Airborne collision avoidance system (ACAS) states that 'Turbine-powered aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than 19 shall be equipped with ACAS II'. NCC.IDE.A.145 addresses airborne weather detecting equipment.

Furthermore, NPA 2010-03 AUR.ACAS.100 lays down ACAS carriage

requirements. Which is the appropriate reference?

Justification: Clarification.

Proposed Text: Amend reference to either 'NCC.IDE.A.140' or 'AUR.ACAS.100'.

response

Not accepted

Reference to CAT.IDE.A.155 rule as published in Opinion 04/2011 is correct.

comment

80 comment by: *UK CAA*

Page No: 329

Paragraph No: 34-54-2A

Comment: Number required for dispatch should be "-" as it is dependent upon those required for the intended route.

Justification: Documentary error.

response

Accepted

comment

188 comment by: *European Cockpit Association*

p. 306 34-51-1 and following: The concentration of those complex issues into 'Navigation Systems' is not helpful for determining the necessary equipment and the state of degrading navigation equipment acceptable by the PIC. It is preferable to list the equipment like in TGL 26 in order to allow determination.

response

Noted

The intent is not to have the content of the proposed guidance copied at MEL level but to set-up a framework for the (S)TC holder to develop his design related MMEL proposal, based on applicable requirements.

comment

189 comment by: *European Cockpit Association*

p. 313 34-40-1-2A There is no pilot monitoring. There is only a pilot non-flying, who monitors. Please keep nomenclature like in TGL 26 or EASA 34-40-1-1A.

response

Noted

The terminology of pilot monitoring is a EASA standard.

comment

190 comment by: *European Cockpit Association*

p. 318 34-41-1C Please revert to TGL 26-text! Experience shows that especially on Longrange-flights WX-forecasts are not dependable and use of WX-radar likely, although no WX is forecasted.

response

Not accepted

The text proposed has been developed along the lines of TGL 26 and even providing more specific constraints on the route (alternates are now clearly encompassed). The main difference is the possibility to dispatch in daylight

VMC condition that was introduced based on the advice flight standards expert pilots.

comment

210 comment by: *DGAC FRANCE*

As per our "general comment numbered "207" by CRT :

ATA 34:

Some aircraft are not fitted with wind shear detection/prediction systems such as ATR for example. It's an option for some aircrafts.

34-41-1: Weather detection system

34-41-1-1: wind shear detection/warning system predictive function

Add (if installed)

34-41-2: wind shear detection/ warning system

34-41-2-1: reactive function

Add (if installed)

34-51-1A: it could be interesting to decompose navigation systems by navigation systems for the following reasons:

a) Trend to digital documentation. It will be better to decompose item by item.

b) All the navigation systems don't have the same objectives. For example, there are Short Range Navigation Systems and Long Range Navigation Systems.

c) Easy to be adapted to specific navigation airspace requirements (Cf PBN/OACI)

response

Not accepted

The nature of the guidance material is that it is used as applicable by the (S)TC holder. If the proposed guidance is not applicable, it should not be retained at MMEL level.

C. APPENDICES - I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK - ATA 35 OXYGEN p. 333-376

comment

48 comment by: *Trafi*

52-51-2B (page 364) Emergency Exit (All cargo configuration only): Procedures: (O)

"All crew members are briefed on the location and condition of the affected emergency exit, passenger distribution and modified cabin safety procedures;
"No passengers onboard text not valid concerning the passenger distribution.

response

Accepted

comment	<p>60 comment by: <i>Luftfahrt-Bundesamt</i></p> <p><u>Page 365, ATA Chapter 52: Doors Item 52-51-1 Door / Exit Guidance to determine passenger number reduction and distribution</u></p> <p>For ensuring an adequate level of safety it is strongly recommended to retain both the application of the 20% additional passenger reduction as well as the 60 ft rule between two pairs of exits. Therefore the Draft MMEL TGL "Operation with an inoperative Exit" should be considered completely in the interest of passenger safety.</p>
response	<p>Noted</p> <p>The application of an additional 20 % capacity reduction on all zones of the aircraft (including the non-affected zones) was reviewed by the Agency.</p> <p>The proposed guidance is including a new criteria that focuses on the affected zones by reducing to 75% the nominal capacities of these affected zones (like for the dead end zones).</p> <p>The 60ft rule is not enforced per say but the intent of this rule is more seen as a design constraint for avoiding installation of exits too far from each other. The MEL is a temporary exemption (5 flights) to this rule and operational procedures aspects have been reinforced in the proposed guidance (e.g. relocation of cabin crew members). Furthermore, the updated guidance requires the reduction of passengers is performed in the zones affected by the inoperative exit, which should improve the flow of passengers during the evacuation of these cabin areas.</p> <p>We trust the proposed method guarantees an acceptable level of safety as intended by the applicable certification requirements.</p>
comment	<p>81 comment by: <i>UK CAA</i></p> <p>Page No: 362</p> <p>Paragraph No: 52-51-1A</p> <p>Comment: Proviso (a) refers to "in accordance with the guidance provided in additional considerations". These words cannot be used in an MEL as they are referring to the EASA MMEL Guidance Book only.</p> <p>Proposed Text: "(a) The number of passengers carried and the position of the seats which they occupy is in accordance with the Maximum Passenger Capacity (MPC) table [see guidance provided in 'Additional Considerations'], and"</p>
response	<p>Accepted</p>
comment	<p>82 comment by: <i>UK CAA</i></p> <p>Page No: 363</p> <p>Paragraph No: 52-51-2</p> <p>Comment: Title should be amended to align with 52-51-1.</p> <p>Proposed Text: "Door / Exit (All cargo configuration only)".</p>

response	Accepted
comment	<p>83 comment by: <i>UK CAA</i></p> <p>Page No: 364</p> <p>Paragraph No: 52-51-2C</p> <p>Comment: It appears that the intent of this item is to replace the equivalent TGL26 entry which, itself, appeared unclear. It seems that the relief should be for door functions rather than the complete door.</p> <p>Proposed Text: "(O) One or more functions may be inoperative for a maximum of 10 calendar days provided:"</p>
response	<p>Not accepted</p> <p>The conditions under which a door/exit is considered inoperative are listed in the additional consideration field to clarify when the proposed entry may apply.</p>
comment	<p>84 comment by: <i>UK CAA</i></p> <p>Page No: 375</p> <p>Paragraph No: 52-51-1-1</p> <p>Comment: Proviso (b) refers to "a safe position for take-off and landing". However, the door must be locked closed by some alternative means.</p> <p>Justification: To satisfy the relevant security requirements for Flight Crew Compartment Doors.</p>
response	<p>Not accepted</p> <p>The locking of the door is subject to dedicated rule ORO.SEC.100.A where it is stated that the door is locked when required by security procedures or by the pilot-in-command until engine shut down after landing, except when deemed necessary for authorised persons to access or egress in compliance with national civil aviation security programmes;</p> <p>The intent of the proposed guidance is to address safety of the flight only, the security aspects will have to be dealt with at national level (e.g. in the MEL).</p>
comment	<p>152 comment by: <i>AIRBUS</i></p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 35-20-1 Passenger/Cabin Crew Oxygen System (Supplemental Oxygen)</p> <p>Comment 1: The dispatch condition 35-20-1B(f) that says "Sufficient oxygen quantity is available for at least 10 % of the passengers for the entire flight time when the cabin pressure altitude is between 10 000 ft and 13 000 ft following a decompression event at the most critical point of the intended route," is not clear. Does the 10% refers to:</p>

1- The **affected** passengers? (e.g. if 10 units (assuming 1 unit/pax) are inoperative, do we have to demonstrate that the oxygen is available for one pax?).

2- All the passengers on-board? Then, if 10% or more of the cabin oxygen units are operative at dispatch, is this proviso complied with?

Comment 2: The paragraph **Additional Considerations - 35-20-1B** that says **"The total amount of supplemental oxygen required in Portable Passenger Oxygen units (e) is in addition to the amount required for first-aid oxygen. The oxygen quantity requirements are based on CAT rules."** should be clarified with respect to the statement in the page 350 (**Additional considerations - Number of portable oxygen cylinders**) that says: **"The number of mandatory portable oxygen cylinders, defined for each aircraft type, is calculated as follows:**

- One portable oxygen cylinder is required for each required cabin crew, and

- Portable oxygen cylinders are required for 2 % of the passengers.

The minimum number of required portable oxygen cylinders is determined by the highest number due to the above requirements."

The statement of **Additional Considerations - 35-20-1B** in page 344 seems in contradiction with the one in the page 350 (**Additional considerations - Number of portable oxygen cylinders**).

Does this mean that for this item **35-20-1B**, **additional** units must be loaded on-board?

This would mean that we have to comply with the quoted statement **AND** have **additional** portable units for **10%** of the passengers for the time when the cabin altitude is between 10,000 ft and 13,000 ft?

response

Noted

Comment 1:

1/The dispatch condition is reflecting the operational requirement which is applicable for the associated operating altitudes (below 25,000ft). The 10% are applicable to all passengers.

2/Yes

Comment 2: There is no contradiction as the additional considerations in P 344 are referring to the amount or quantity of oxygen available whereas the statement in P 350 is referring to the number of individual portable oxygen units and not their content in terms of quantity of oxygen supply.

The question if additional units have to be loaded cannot be answered generally as it is dependent upon the required quantities of oxygen to meet the applicable regulations and dispatch conditions of applicable MMEL item, if any.

Practical considerations should also be taken into account as a limited number of cabin crew will be available on board to bring the portable oxygen to the end-user, depending on the size of the cabin.

comment

153

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)

35-50-1 First-Aid OxygenIn the **Explanatory notes**, it is written **"An additional guidance entry 35-50-1B is proposed to allow partial failure of the first-aid oxygen bottles."** However, there is no **35-50-1B** entry in the page 349.

response	<p>Accepted</p> <p>The sentence referring to a non-existing entry is deleted.</p>
comment	<p>154 comment by: AIRBUS</p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 46-20-1 Electronic Flight Bag (EFB) Systems</p> <p>For all Airbus airplanes, the Sub-ATA 46-2x is dedicated to FANS function and ATS Datalink systems.</p>
response	<p>Noted</p> <p>As per ATA ispec 2200, ATA 46-20 is for Flight Deck Information Systems: "That portion of the onboard information system that supports the flight deck systems, flight deck crew and flight operations" which is suitable for EFB numbering in CS-MMEL guidance.</p>
comment	<p>155 comment by: AIRBUS</p> <p>I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book</p> <p>(Aeroplanes only) 52-51-1 Door/Exit</p> <p><u>Comment 1:</u> The Sub-ATA should be 52-22 and not 52-51 since it concerns only the external doors and not the internal doors.</p> <p><u>Comment 2:</u> The explanatory note refers to the draft TGL-47 dated 27 August 2002 that was submitted to the JAA MMEL/MEL Working Group during the 26 to 27 November 2002 meeting and not during the 15 to 16 March 2005 meeting. This is because the DGAC and Airbus made a proposal during the 01 to 02 September 2004 meeting that was discussed again during the 15 to 16 March 2005 meeting for a publication in the TGL-26. The draft TGL-47 was strongly rejected by all members of the JAA MMEL/MEL Steering Group (manufacturers, operators, authorities and JAA representatives) because it was a collection of conditions picked-up in different documents approved by different authorities <u>with the sole objective to retain the most stringent conditions and to forget the flexible ones</u>. Also, as written, it was a complete re-certification with one door/exit inoperative. What was missing was the guidance to determine the passenger number reduction and distribution but a reference was made to the CAA-UK FOCDOM 8-99 for help. The huge work made by the JAA MMEL/MEL Steering Group (previously Working Group) conducted to an appropriate information to be published in the TGL-26 and it was enough to complete with a guidance to determine the passenger number reduction and distribution in replacement of the CAA-UK FOCDOM 8-99, but this was not done because of the numerous works left to the Steering Group.</p> <p><u>Comment 3:</u> The statement in the (O) "Where the affected door/exit can be opened, the briefing should address the possible use of the door for emergency evacuation in certain circumstances;" is in contradiction with the dispatch conditions that says: "(d) The affected door/exit is not used for passenger boarding, nor for any purpose whilst passengers are on board,".</p>

Comment 4: There are spaces missing between some words and some words are not correctly written.

Comment 5: The conditions **(c)**, **(d)** and **(e)** of the item **52-51-2C** are misleading. Do these conditions refer to the inoperative door/exit? This question arises because when the conditions **(c)**, **(d)** and **(e)** are fulfilled, the door/exit is **OPERATIVE** and **NOT INOPERATIVE**.

Comment 6: In the page 366 (**Applicability List**), the **(3)** and **(4)** are usually separate entries in the MMEL and are not included in the door/exit inoperative item.

Comment 7: In the page 367 (**2. Calculation of Maximum Passenger Capacity (MPC) Tables**), for better understanding of the methodology, we suggest to add various examples with illustrations (different cabin configurations and different type exit doors) as applicable in different paragraphs.

response

Noted

The computation methodology was developed in order to gather with all possible cabin designs that can be certified, from the small to very large, double-deck aircraft. The comment about the base of calculation to be restrictive is not understood as the computation is based upon the type of doors installed and hypothesis recognize worldwide regarding associated evacuation capabilities. Indeed a smaller door may allow less evacuation capability and hence would correspond to less residual passenger carriage capability under specific MEL dispatch cases. The intent is to keep the same level of safety during the evacuation for the passenger disregarding the fact is boarding a small business jet or a double-deck airliner.

comment

156

comment by: AIRBUS

I Appendix 1 to GM1-CS-MMEL-145 : MMEL Items Guidance Book

(Aeroplanes only)**52-52-1 Flight Crew Compartment Door**

The third paragraph of **Additional Considerations** says "**These procedures will have to consider appropriate actions when a decompression function is dependent on the affected locking system in order to ensure that an acceptable level of safety is maintained.**"

How can be the interpretation of this sentence with regards to the use of deadbolts (for designs fitted with such features)?

Deadbolts were clearly authorized as an acceptable means in the **TGL-26** and it is not now.

Does the EASA accept the deadbolts as an acceptable mitigation means or not? What are the rationales associated with?

response

Noted

The intent of the guidance proposed is to ensure an acceptable level of safety. If the use of a deadbolt corresponds to an unacceptable exposure to consequences of a rapid decompression (e.g. when the certification of the door required a pressure controlled automatic opening mechanism), then this should be appropriately considered as per CS MMEL.145 requirements and associated guidance.

comment	<p>211 comment by: <i>DGAC FRANCE</i></p> <p>As per our "general comment numbered "207" by CRT :</p> <p><u>ATA 35:</u></p> <p>For this specific item, it is depend on the type of aircraft and type of operations. ATR is limited to FL250.</p> <p><u>35-50-1: First Aid Oxygen:</u></p> <p>In OPS 1.760, there was some information about the way the calculation has to be done. In this Guidance Material, a lot of information is not provided.</p> <p>The way to calculate the oxygen needs was specified in OPS 1.760: "An operator shallabove 25000'. The amount of oxygen shall be calculated using an average flow rate of at least 3l (Standard Temperature Pressure Dry)/minute/person....for 2% of the passengers carried."</p>
response	<p>Not accepted</p> <p>The purpose of the CS-MMEL is not to repeat applicable operational requirement that are provide through dedicated parts of the regulations. OPS 1.760 is now reflected in Part-OPS (Subpart IDE) and associated information can be found at that level. The intent of the proposed relief is not to deviate from the applicable rules but to enable the dispatch configurations to still fulfill them in terms of oxygen supply to crews and passengers.</p>
comment	<p>212 comment by: <i>DGAC FRANCE</i></p> <p>As per our "general comment numbered "207" by CRT :</p> <p><u>ATA 46</u></p> <p>46-20-2: Class 2 EFB</p> <p>Some Class 2 EFBs are composed of a Display Unit and a Docking Station.</p> <p>Please add those items in the MEL. In some case of a failure of Display Unit, it's still possible to use an EFB as a class 1 by removing the laptop from the Docking Station.</p>
response	<p>Noted</p> <p>As mentioned in the comment the subject is more at MEL level. There is nothing today preventing an applicant to cope with alternative proposals to be included at MMEL level if required to enable Class 2 partially failed to be used as Class 1 provided procedures and safety level are adequate for the intended purpose.</p>
comment	<p>213 comment by: <i>DGAC FRANCE</i></p> <p>As per our "general comment numbered "207" by CRT :</p> <p><u>ATA 52:</u></p> <p><u>52-22: Emergency exit</u></p>

Is the base of the calculation relevant for all kind of aircrafts? It seems that the way to calculate is very restrictive for some aircrafts compared to other ones.

response

Noted

The computation methodology was developed in order to gather with all possible cabin designs that can be certified, from the small to very large, double-deck aircraft. The comment about the base of calculation to be more restrictive for some aircraft compared to others is not understood as the computation is based upon the type of doors installed. Indeed a smaller door may allow less evacuation capability and hence would correspond to less residual passenger carriage capability under specific MEL dispatch cases. The intent is to keep the same level of safety during the evacuation for the passenger disregarding the fact is boarding a small business jet or a double-deck airliner.

comment

216 comment by: *E. Bakker (Fokker Services)*

Appendix 1 to GM1-CS-MMEL-145: MMEL ITEMS GUIDANCE BOOK

ATA Chapter: 52 Doors

References:

The text in "Passenger/Seat Occupancy Reduction Guidance", GENERAL,

(1) "Any aeroplane configured with two pairs of Type III or larger exits only, is considered to be in an airworthy condition with one passenger emergency exit inoperative provided that the number of passengers is reduced to less than 20 and the entry door is operative." is more restrictive than prescribed by the design requirements for ditching emergency exits as per CS25.807(d)(1).

Also item (iii) of the "Initial aeroplane capacity" (page 369 of 378) contains more limiting figures than which can be derived from CS25.807(d)(1).

Fokker Services would therefore suggest to change the guidance to match the figures presented in the table of CS25.807(d)(1) as indicated below. Fokker Services consider it justified to use the design requirement figures of CS25.807(d)(1) as guidance for calculating the initial aeroplane capacity, bearing in mind that the exposure time is limited to 5 flights in case of an exit inoperative.

Suggested text for item (iii) of the "Initial aeroplane capacity":

- a) **9**, if only one operative exit pair includes doors smaller than Type III is available,
- b) **19**, if only one operative exit pair of Type III or larger is available,
- c) **40**, if at least two operative exits pairs are available, of which one pair is Type II or larger,
- d) **110**, if at least two operative exits pairs are available, of which one pair is Type I or larger,

>110: for each additional operative Type I, Type A, Type B, or Type C exit pair, the maximum of 110 may be increased with 45.

response

Partially accepted

It is accepted to align the wording of the guidance with the latest proposed

amendment to CS-25.

ANNEXES - ANNEX 1 - CLASSIFICATION OF CHANGE IN TYPE DESIGN

p. 377

comment

195

comment by: AIRBUS

Since the classification of changes relates to Part 21, the global approach at Part 21 level should be clarified first.

Until the general guidance material at OSD concept level is clarified with EASA, it is not relevant to comment on the specifics for the MMEL.

Airbus is requesting more time to review with EASA the best approach for assessing design changes impact on ALL OSD elements, and to complete « proof of concept » projects on a voluntary basis.

With respect to MMEL, the current OEB MMEL process is felt adequate by Airbus, and should be kept in the interim phase. This means OSD applicant proposes to EASA MMEL revisions through MMEL projects (stand alone or combined with a design change).

response

Noted

ANNEXES - ANNEX 2 - AVAILABILITY OF MMEL OPERATIONAL AND MAINTENANCE PROCEDURES

p. 378

comment

196

comment by: AIRBUS

The Part 21, § 21A.62 Availability of OSD reads:

"21A.62 Availability of operational suitability data

The holder of the type-certificate or restricted type-certificate shall make available:

(a) at least one set of complete operational suitability data prepared in accordance with the applicable operational suitability certification basis, to all known European Union operators of the aircraft, before the operational suitability data must be used by a training organisation or an European Union operator; and

(b) any change to the operational suitability data to all known European Union operators of the aircraft; and..."

In this respect, what is required is that the MMEL is made available, and MMEL content is defined under CS-MMEL-120.

Airbus do agree that it is very important to ensure that these procedures are made available by the TC Holder in due time so as to assist the Operators for setting up their MEL and getting approval by their NAA prior to the EIS of a new aircraft, however Airbus would like to insist that they are NOT part of the approved MMEL as such (See CS-MMEL 120).

It is consequently very important to ensure that any text written relative to availability of such procedure is consistent to the agreed way of working for MMEL, and in this respect the proposed sub§ (a) may be misleading. If such a guidance is to be retained, first it should be clarified at which level: Part 21 or

CS-MMEL, and second it should be written in such a way that this does not create any misunderstanding on what is the " EASA approved part" that Operators cannot change and must use, versus the "non approved part" which are proposed procedures for operators, that could be tailored to their needs in agreement with the National Authority based upon their operating environment.

Consequently Airbus recommends to delete this annex, which relates to Part 21 aspects, and see in due time if further clarifications within the CS-MMEL are needed.

response

Noted

This GM is proposed for Part-21 not for CS-MMEL.

comment

245 comment by: *Dassault Aviation*Annex 221A.62 Availability of OSD

First of all, before any consideration for maintenance and operating procedure availability it should be highlighted that the non availability of the MMEL for a given item will not result in any unsafe situation, as if MMEL is not available and therefore MEL , then this will result in a AOG situation. Dassault Aviation suggests that the possibility of the non availability of the MMEL be part of the EASA proposal in Part 21

There has been a lot of discussions around the maintenance and operating procedures for a given MMEL item at the CS-MMEL level.

It has been agreed that those procedures will not be part of the MMEL and not to be approved. This is in contradiction with the current proposed GMx-21A.62 text, where M&O procedures are clearly tagged as certification "item" under the Part 21.

Therefore, in order to keep consistency with CS-MMEL group agreement, the (a), (b), (c) are to be deleted.

response

Accepted

The GMx-21A.62 is deleted.

Appendix A **Attachments**



[NAT Regional SUPPs for SATCOM Voice.pdf](#)

Attachment #1 to comment [#132](#)

C. DRAFT DECISION**I Draft Decision CS-MMEL****Book 1****SUBPART A****GENERAL****CS MMEL.100 Applicability**

This CS is applicable to complex motor-powered aircraft and contains certification specifications for establishing the MMEL.

CS MMEL.105 Definitions

For the purpose of this CS, the following terms mean:

- (a) 'Applicant': an applicant for, or a holder of, a type certificate (TC), change approval or supplemental type certificate (STC), applying for the approval by the European Aviation Safety Agency (hereinafter referred to as 'the Agency') of the MMEL.
- (b) 'Calendar Day': a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator.
- (c) 'Catastrophic Failure Condition': as defined in the applicable Type Certification Basis.
- (d) 'Day of discovery': the calendar day when a malfunction was recorded in the aircraft maintenance record/log book.
- (e) 'End user': an operator or training organisation having a Minimum Equipment List (MEL) based on the MMEL approved by the Agency.
- (f) 'External Event': an occurrence which has its origin distinct from the aircraft or the system being examined, such as atmospheric conditions (e.g. wind gusts/shear, temperature variations, icing, lightning strikes), operating environment (e.g. runway conditions, conditions of communication, navigation and surveillance services), cabin and baggage fires, and bird strike.
- (g) 'Flight Day': a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator, during which at least one flight is initiated for the affected aircraft.
- (h) 'Hazardous Failure Condition': as defined in the applicable Type Certification Basis.
- (i) 'Inoperative': an item which does not accomplish its intended purpose or is not consistently functioning within its approved operating limits or tolerances.
- (j) 'Item': a component, instrument, equipment, system or function.
- (k) 'Rectification Interval (RI)': a limitation on the duration of operations with inoperative items.

CS MMEL.107 Status of provided data

- (a) The MMEL and associated operational and maintenance procedures are part of the Operational Suitability Data (OSD), as defined in Part-21, and means are to be provided to clearly distinguish the mandatory data from the non-mandatory data for

the end-user. Data provided by the applicant is presented as mandatory or non-mandatory (recommendations) for the end user.

- (b) The MMEL content as defined in CS MMEL.120(b) is considered as data required from the applicant and mandatory for the end user.
- (c) The operational and maintenance procedures referenced in the MMEL are considered as non-mandatory (recommendations) data for the end-user.

SUBPART B**MASTER MINIMUM EQUIPMENT LIST****CS MMEL.110 MMEL purpose**

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

CS MMEL.115 Types of operation

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

CS MMEL.120 Format and content of the MMEL

- (a) The MMEL is written in a format acceptable to the Agency.
- (b) Each MMEL contains the following:
 - (1) Approval status, including date of approval and effective date.
 - (2) A preamble based on GM3 MMEL.120, definitions and, if appropriate, clarifying notes which adequately reflect the scope, extent and purpose of the list.
 - (3) The list of items, including for each item:
 - the rectification interval category,
 - the number installed or a dash symbol, as applicable,
 - the number required or a dash symbol, as applicable,
 - the operational procedure symbol, as applicable,
 - the maintenance procedure symbol as applicable,
 - placarding indications, as applicable, and
 - any associated conditions and limitations, including the intent and periodicity for the accomplishment of the operational and maintenance procedure, as applicable.

CS MMEL.125 Operational and Maintenance Procedures

Accomplishment instructions for the operational and maintenance procedures identified in the MMEL by the associated symbols are developed and validated by the applicant.

CS MMEL.130 Rectification Interval

A rectification interval is established for each MMEL item in accordance with the following categories:

- (a) Category A: No standard interval is specified; however, items in this category shall be rectified in accordance with the conditions stated in the MMEL.
 - (1) Where a time period is specified in calendar days or flight days, the interval excludes the day of discovery.
 - (2) Where a time period is specified other than in calendar days or flight days, it shall start at the point when the defect is deferred in accordance with the operator's approved MEL.
- (b) Category B: Items in this category shall be rectified within 3 calendar days, excluding the day of discovery.

- (c) Category C: Items in this category shall be rectified within 10 calendar days, excluding the day of discovery.
- (d) Category D: Items in this category shall be rectified within 120 calendar days, excluding the day of discovery. Items in this category meet the following criteria:
 - (1) the absence of the item does not adversely affect crew workload;
 - (2) the crew do not rely on the function of that item on a routine or continuous basis; and
 - (3) the crew's training, subsequent habit patterns and procedures do not rely on the use of that item.

CS MMEL.135 Rectification Interval Extension

The MMEL preamble indicates when the rectification interval extensions are applicable.

SUBPART C**LEVEL OF SAFETY AND JUSTIFICATIONS OF MMEL ITEMS****CS MMEL.140 Level of safety**

The MMEL items are prepared to ensure that an acceptable level of safety as intended by the applicable requirements is maintained taking into account the following factors:

- (a) reduction of aircraft functional capabilities and/or safety margins;
- (b) change in crew workload and/or degradation in crew efficiency;
- (c) consequence(s) to the aircraft and its occupants of the next failure(s) having the worst safety-related impact on the aircraft's take-off, continued flight and landing when dispatching in a known degraded configuration;
- (d) consequence(s) to the aircraft and its occupants of the next external event(s) for which the item was designed to protect against, if applicable.

CS MMEL.145 Justification of MMEL items

- (a) The justifications are provided by the applicant along with the MMEL items candidates.
- (b) The inclusion of each item in the MMEL is justified following one or more methods as agreed or as defined by the Agency.
- (c) The justifications include at least a qualitative safety assessments which:
 - (1) evaluate the consequences of the proposed MMEL dispatch configuration on the aircraft functional capabilities, crew workload and discomfort to occupants and show compliance with CS MMEL.140,
 - (2) evaluate the consequences of the next worst safety-related failure and separately evaluate the consequences of the external event for which the item was designed to protect against, if applicable, and ensure they do not correspond to an hazardous or catastrophic failure condition, and
 - (3) notwithstanding paragraph (2) above, specific cases may be accepted when supported by quantitative safety assessment as per paragraph (d) below.
- (d) The qualitative safety assessment is supplemented by a quantitative safety assessment when both of the following considerations are met:
 - (1) relief is proposed for items, functions and/or systems involved in catastrophic or hazardous failure conditions, and the severity of the failure condition under MMEL configuration is not mitigated by special operating conditions, limitations or procedures; and
 - (2) when the operation with the inoperative item leaves the aircraft one failure away from a hazardous failure condition, or two failures away from a catastrophic failure condition.
- (e) When an operational or maintenance procedure is associated to an MMEL item, corresponding symbol is included in the MMEL, and the intent of the procedure is specified in the associated item justification.

CS MMEL.150 Multiple inoperative items

- (a) The simultaneous application of two MMEL items is prohibited when one is used as a mitigation means to justify the other.
- (b) The cumulative effects of multiple inoperative items application are taken into account to ensure compliance with CS MMEL.140(a), as far as practicable.

Book 2**GUIDANCE MATERIAL TO CS-MMEL****SUBPART A****GM1 MMEL.105(a) Definitions**

CALENDAR DAYS

All calendar days are considered to run consecutively.

GM1 MMEL.105(g) Definitions

INOPERATIVE

- (a) Some items have been designed to be fault tolerant and are monitored by computers which transmit fault messages for the purpose of maintenance. The presence of this category of message does not necessarily mean that the item is inoperative.
- (b) It should be highlighted that unless it is specifically allowed by the MMEL, the item should not be removed.

GM1 MMEL.105(h) Definitions

ITEM

- (a) In the context of these Certification Specifications, a component is considered to be a piece of equipment or instrument.
- (b) In the context of these Certification Specifications, a system is considered to be a collection of equipments and/or instruments that perform a function. (See AMC 25.1309)

GM1 MMEL.107 Status of provided data

- (a) Because of the alleviative nature of the MEL, the fact the MMEL is mandatory data means that the MEL is not less restrictive than the MMEL as specified under 8.a.3. of Annex IV to Regulation (EC) No 216/2008 but may be more restrictive.
- (b) The content of the operational and maintenance procedures provided by the applicant is recommended to the end user as defined in ORO.MLR.105 (g).

SUBPART B**GM1 MMEL.110 MMEL purpose**

AIRCRAFT TYPE

An MMEL document may cover more than one aircraft type provided that benefits on commonality can be taken and the applicability of each item is clearly indicated.

GM2 MMEL.110 MMEL purpose

NON-SAFETY-RELATED ITEMS

- (a) All items not included in the list are required to be operative unless they are considered to be non-safety-related items.
- (b) Non-safety-related items include those items related to the convenience, comfort, or entertainment of the passengers and equipment that is used only on ground for maintenance purpose. Convenience, comfort, or entertainment of the passengers may include items such as galley equipment, movie equipment, stereo equipment, overhead reading lamps. Additional guidance is provided in GM1 ORO.OPS.MLR.105(a).
- (c) Non-safety-related items need not be included in the MMEL, unless so desired by the applicant.

GM1 MMEL.120 Format and content of MMEL

GENERAL

- (a) The MMEL should normally be written in a 'five-column format'. Refer to examples in GM2 MMEL.120. Other paper or electronic formats are accepted provided they are clear and unambiguous.
- (b) The MMEL should contain: cover page, revision history, detailed summary of changes at last revision, list of effective pages, and table of contents within the administrative control pages at the beginning of the MMEL, or equivalent information should be made available in the case of MMEL in other than paper format.
- (c) A model of acceptable preamble can be found in GM5 MMEL.120.
- (d) Each item listed in the MMEL should be described and identified in accordance with the Air Transport Association (ATA) specification 100 or 2200 code system. Consistency of terminology and identification means should be maintained, as far as possible, among aircraft documentation. Where appropriate, the MMEL should contain means to identify applicability of items.
- (e) Where a Message Oriented approach is used, the messages displayed may be listed in place of the item title in the relevant section, as this will be considered as a representation of the item(s) affected. Number installed and number required are not applicable for such an approach.
- (f) Rectification interval may be identified through a reference to another item.
- (g) Number installed and number required may not be listed if not practical and not relevant for dispatch determination.
- (h) Where there is a requirement for a specific maintenance procedure, then an (M) symbol should be included as part of the MMEL entry to indicate this. Where there is a requirement for a specific operational procedure, then an (O) symbol should be included as part of the MMEL entry to indicate this.

- (i) When a maintenance procedure is associated to an MMEL item, a dispatch condition, identifying the intent of the procedure (e.g. deactivation of an equipment), should be included in the associated item.
- (j) References to where the content of the operational and maintenance procedures is available should be included in the MMEL.
- (k) A decision on whether the necessary procedure can be assigned as an (O) or an (M) should be based on which is the most appropriately qualified trade to carry out the procedure and which trade would normally carry out such a task in their line of duty, based on the intended types of operation normally performed by the aircraft. On this basis deactivation and securing tasks should normally be assigned an (M) while procedures based on operation of equipment should normally be assigned an (O).
- (l) The periodicity for the accomplishment of the procedures should be clarified either in a generic manner in the MMEL preamble or specifically in the associated dispatch conditions. Maintenance deactivation procedure should normally be performed once prior to the first flight under the associated item. Maintenance verification procedures periodicity may vary and should therefore be clarified in the MMEL. Operational procedures should normally be performed or acknowledged by the flight crew members before each flight, unless otherwise specified.
- (m) Placarding instructions are provided as part of the dispatch conditions or in a generic manner in the preamble to inform the crew members and maintenance personnel of the item condition, to the extent practicable.

GM2 MMEL.120 Format and content of MMEL

FIVE-COLUMN FORMAT EXAMPLE

MASTER MINIMUM EQUIPMENT LIST

AIRCRAFT:		REVISION No:		PAGE:
		DATE:		
(1) Systems & Sequence Numbers ITEM	(2) Rectification Interval Category			
	(3) Number Installed			
	(4) Number Required for Dispatch			
	(5) Remarks or Exceptions			

GM3 MMEL.120 Format and content of MMEL

MESSAGE ORIENTED FORMAT EXAMPLE

Aircraft	Revision No: Rev 3	Sect	Page
	Date:		
1. Message	2. Rectification Interval Category		
	3. Dispatch Consideration		

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GM4 MMEL.120 Format and content of MMEL

ELECTRONIC FORMAT EXAMPLE

MMEL item

Repair interval	Nbr Installed	Nbr required
C	1	0

Placard

O May be inoperative

GM4 MMEL.120 Format and content of MMEL

MMEL PREAMBLE

(SPECIMEN)**EUROPEAN AVIATION SAFETY AGENCY****MASTER MINIMUM EQUIPMENT LIST****(AIRCRAFT TYPE)****PREAMBLE****Introduction**

The following is applicable for operators under European air operations regulations (Regulation Air Operations). Paragraph 1.c.2 of Annex I to Article 5 (essential requirements for airworthiness) of Regulation (EC) No 216/2008 (the 'Basic Regulation') requires that all equipment installed on an aircraft 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 interests of safety under all operating conditions. Experience has shown that with the various levels of redundancy designed into aircraft, operation of every system or installed items 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 applicant and holders of (Supplemental) Type Certificate and approved by the European Aviation Safety Agency to improve aircraft use and thereby providing more convenient and economic air transportation for the public. This MMEL includes those items related to airworthiness, air operations, airspace requirements and other items the Agency finds may be inoperative and yet maintain an acceptable level of safety by 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 "#" symbol which have been based only on European operational requirements using associated guidance developed by the Agency. 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. In this case the MEL content is still considered to be in conformity with the content of this MMEL.

Utilisation

The MMEL is the basis for the development of individual operator's MEL which take into consideration the operator's particular 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, allows operation of the aircraft with inoperative items of equipment for a certain period of time until rectification can be accomplished.

The MEL cannot deviate from Airworthiness Directives, Safety Directives, or any other additional mandatory requirements. It is important to remember that all items related to the airworthiness and the operational regulations of the aircraft 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 rectifications 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 deferred following the MEL or other approved means of compliance acceptable to the competent authority and the Agency prior to further operation. MEL conditions and limitations do not relieve the operator from determining that the aircraft is in a condition for safe operation with items inoperative.

Prior to operation with any item inoperative acceptance by the crew is required in accordance with the continuing airworthiness management procedures.

Operators shall establish a controlled and sound rectification programme including 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 with the stated intent of the preamble, 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 aircraft operation and crew workload shall be considered.

Rectification interval extension

[The operator may be permitted, by its competent authority, to extend the rectification intervals of the MEL.

This MMEL has been evaluated taking into account a one-time extension of the rectification intervals of category B, C and D.]

(The above statement in [] is applicable only if demonstrated during the MMEL review process)

DEFINITIONS AND EXPLANATORY NOTES

[In addition to a preamble arranged and worded along the lines of this Specimen, the MMEL should contain, as part of the preamble, sufficient definitions and explanatory notes to provide the user (this is primarily the operator when compiling the MEL) with a full and proper understanding of the intent and purpose of the items it contains.

While many of the definitions used will be common to all MMELs, others will be specific to particular or individual aircraft types. (Supplemental) TC holders should ensure, when preparing the MMEL, that all relevant definitions are included. Also explanatory notes should be provided in sufficient detail wherever the intent and purpose of a term or phrase or abbreviation etc. is necessary or advisable.]

1. **'Airplane/Rotorcraft Flight Manual'** (AFM/RFM) means the document required for type certification and approved by the Agency. The AFM/RFM for the specific aircraft is listed on the applicable Type Certificate Data Sheet.
2. **'Alternate procedures are established and used'** or similar statement, means that alternate procedures (if applicable), to the affected process, must be drawn up by the operator as part of the MEL approval process, so that they have been established before the MEL document has been approved. Such alternate procedures are normally included in the associated operations (O) procedure.
3. **'Any in excess of those required by regulations'** means that the listed item is required by applicable legislation (e.g. Part OPS, Single European Sky legislation or the applicable airspace requirements) must be operative and only excess items may be inoperative. When the item is not required, it may be inoperative for the time specified by its rectification interval category. Whenever this condition is used in the MMEL, the applicable regulations for the intended routes and the resulting dispatch restrictions need to be clarified at the operator's MEL level.
4. **'As required by (operational) regulations'**, means that the listed item of equipment is subject to certain provisions (restrictive or permissive) expressed in the applicable legislation (e.g. regulation Air Operations, Single European Sky legislation or the applicable airspace requirements). When the equipment is not required, it may be inoperative for the time specified by its rectification interval category.
5. **'Calendar Day'** means a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator. All calendar days are considered to run consecutively.
6. **'Combustible Material'** means the material which is capable of catching fire and burning. In particular: if a MEL item prohibits loading of combustible (or flammable or inflammable) material, no material may be loaded except the following:
 - 1) Cargo handling equipment (unloaded, empty or with ballast);
 - 2) Fly away kits (excluding e.g. cans of hydraulic fluid, cleaning solvents, batteries, capacitors, chemical generators, etc.);
 Note: If serviceable tyres are included, they should only be inflated to a minimum pressure that preserves their serviceability; and
 - 3) Inflight service material (return catering — only closed catering trolleys/boxes, no newspapers, no alcohol or duty free goods).
7. **'Commencement of flight'** is the point when an aircraft begins to move under its own power for the purpose of preparing for take-off.
8. **'Considered Inoperative'**, as used in the dispatch conditions, means that item must be treated for dispatch, taxiing and flight purposes as though it were inoperative. The item shall not be used or operated until the original deferred item is repaired. Additional actions include: documenting the item on the dispatch release (if applicable), placarding, and

complying with all remarks, exceptions, and related MMEL provisions, including any (M) and (O) procedures and observing the rectification interval.

9. **'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.
10. **'Day of discovery'** means the calendar day that a malfunction was recorded in the aircraft maintenance record/log book.
11. **'Deactivated'** and **'secured'**, both terms mean that the specified item must be put into an acceptable condition for safe flight.
12. **'Flight'**, for the purposes of this MMEL, means 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.
13. **'Flight Day'**, a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator, during which at least one flight is initiated for the affected aircraft.
14. **'Item'** means component, instrument, equipment, system or function.
15. **'ETOPS'** or **'ER operations'** refers to extended range operations of a two-engine airplane as defined by Part-SPA.
16. **'Icing Conditions'** means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s) as defined in the AFM/RFM.
17. **'If installed'** means that the item is either optional or is not required to be installed on all aircraft covered by the MMEL.
18. **'Inoperative'** means that the item does not accomplish its intended purpose or is not consistently functioning within its approved operating limits or tolerances.
19. **'Is not used'** in the provisions, remarks or exceptions for an MMEL item may specify that another item relieved in the MMEL 'is not used'. In such cases, crew members should not activate, actuate, or otherwise utilize that item under normal operations. It is not necessary for the operators to accomplish the (M) procedures associated with the item. However, operations-related provisions, (O) procedures must be complied with. An additional placard must be affixed, to the extent practical, adjacent to the control or indicator for the item that is not used to inform crew members that an item is not to be used under normal operations.
20. **'Intended Route'** corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.
21. **'(M)'** indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item inoperative. Normally these procedures are accomplished by maintenance personnel, however, other personnel may be qualified and authorised to perform certain functions. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as part of the Operator's Manual or MEL.
22. **'Master Minimum Equipment List'** means a document approved by the Agency that establishes the aircraft equipment allowed to be inoperative under conditions specified therein for a specific type of aircraft.
23. **'Maximum distance from an adequate aerodrome for two-engine aeroplanes'** as defined in **SPA.ETOPS** and **CAT.OP.AH.140**.
24. **'Minimum Equipment List'** means a document established as specified under 8.a.3. of Annex IV to Regulation (EC) No 216/2008 and approved by the competent authority, in

accordance with ORO.MLR.105, that authorises an operator to dispatch an aircraft with aircraft equipment inoperative as per CAT.IDE.A/H.105 or NCC.IDE.A/H.105 under the conditions specified therein.

25. **'Notes'** provide additional information for flight crew or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the dispatch conditions.
26. **'Number Installed'** is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MMEL. Should the number be a variable (e.g. passenger cabin items), or not applicable, a number is not required; a '-' is then inserted.

Note: Where the MMEL shows a variable number installed, the MEL should reflect the actual number installed.

27. **'Number required for dispatch'** is the minimum number (quantity) of items required for operation provided the conditions specified are met. Should the number be a variable (e.g. passenger cabin items) or not applicable, a number is not required; a '-' is then inserted.

Note: Where the MMEL shows a variable number required for dispatch, the MEL should reflect the actual number required for dispatch or an alternate means of configuration control approved by the competent authority.

28. '-' in the Number Installed Column (respectively Number Required for Dispatch Column) indicates a variable number (quantity) of the item installed (respectively item required) or not applicable.

Note: Where the MMEL shows a variable number installed, the MEL should reflect the actual number installed, as far as practical.

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

Note: The (M) and (O) symbols are required in the operator's MEL.

30. **'Operating minima'** means the set of requirements associated to operations requiring a specific approval (refer to Part-SPA).

31. **'Placarding'** Each inoperative item must be placarded, as applicable, to inform and remind the crew members and maintenance personnel of the item's condition.

Note: To the extent practical, placards should be located adjacent to the control or indicator for the item affected; however, unless otherwise specified, placard wording and location will be determined by the operator.

32. **'Rectification intervals'** Inoperative items or components, deferred in accordance with the MEL, must be rectified at or prior to the rectification intervals established by the following letter designators:

Category A

No standard interval is specified. However, items in this category shall be rectified in accordance with the conditions stated in the MMEL.

- (i) Where a time period is specified in calendar days or flight days, the interval excludes the day of discovery.

- (ii) Where a time period is specified other than in calendar days or flight days, it shall start at the point when the defect is deferred in accordance with the operator's approved MEL.

Category B

Items in this category shall be rectified within three (3) calendar days, excluding the day of discovery.

Category C

Items in this category shall be rectified within ten (10) calendar days, excluding the day of discovery.

Category D

Items in this category shall be rectified within one hundred and twenty (120) calendar days, excluding the day of discovery.

33. **'Remarks or Exceptions'** include statements either prohibiting or allowing operation with a specific number of items inoperative, provisos (conditions and limitations), notes, (M) and/or (O) symbols, as appropriate for such operation.
34. **'Required Cabin Crew Seat'** is a seat in the aircraft cabin which meets the following conditions:
- 1) Where the certification of the cabin requires this seat to be occupied by a qualified cabin crew member as specified in the Operations Manual;
 - 2) This seat is a part of the station to which a qualified cabin crew member is assigned for the flight; and
 - 3) The qualified cabin crew member assigned to the station is a member of the minimum cabin crew designated for the flight.
35. **'Visible Moisture'** means an atmospheric environment containing water in any form that can be seen in natural or artificial light; for example, clouds, fog, rain, sleet, hail, or snow.

GM1 MMEL.125 Operational and maintenance procedures

VALIDATION OF OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) Compliance with CS MMEL.125 does not require an individual review of every and each operational or maintenance procedure.
- (b) A description of the validation methods for the operational and maintenance procedures has to be made available to the Agency upon request.

GM1 MMEL.130 Rectification Interval

USE OF CATEGORY D

The rectification interval category D is normally used for MMEL items of an optional nature or items installed in excess of the requirements.

GM2 MMEL.130 Rectification Interval

RECTIFICATION INTERVAL EXTENSION

- (a) The MMEL should highlight in its preamble when rectification interval extensions have been considered in the development of the MMEL.
- (b) Where quantitative analysis forms part of the justification, rectification interval and rectification interval extensions, if any, should be considered in this analysis (see CS MMEL.145 and GM1 MMEL.145(d)).

GM3 MMEL.130 Rectification Interval

RECTIFICATION INTERVAL FOR 'REFERED TO' ITEM

When an MMEL item is referring to another MMEL item or another document where a rectification interval is provided, the rectification interval does not need to be specified. In such case, a dash symbol may be used.

SUBPART C**GM1 MMEL.140 Level of safety**

AS INTENDED BY THE APPLICABLE REQUIREMENTS

- (a) The applicable requirements to be considered for MMEL development include the Type Certification Basis requirements and any operational requirement (including airspace requirements) applicable to the considered item.
- (b) 'As intended' means that strict compliance with the applicable requirement(s) may not be ensured provided appropriate mitigation means are proposed ensuring that an acceptable level of safety is maintained in line with the overall intent of the requirement(s).

GM2 MMEL.140 Level of safety

MEANS TO MAINTAIN THE LEVEL OF SAFETY

- (a) An acceptable level of safety can be maintained for an MMEL item through one or a combination of the following means:
 - (1) adjustment of operational limitations;
 - (2) transfer of the function/information to an operating system/component performing the required function or providing the required information, provided the change in crew workload and/or crew training remains acceptable;
 - (3) development of operational procedures (e.g. such as alternate procedures; additional pre-flight checks), provided the change in crew workload and/or crew training remains acceptable;
 - (4) development of maintenance procedures (such as deactivating and securing the system/component of concern, additional verification tasks).

GM1 MMEL.145 Justification of MMEL items

JUSTIFICATIONS CONTENT

- (a) The justifications include information necessary to show compliance with applicable CS-MMEL paragraphs.
- (b) The justifications for an MMEL item include the list of functions associated to the candidate item, as well as the associated functional failure(s), failure effect(s) and as far as practical the failure cause(s).
- (c) Where a message-oriented MMEL approach is in use, all failures combination/condition for which this message would be displayed should be considered when preparing the justifications.

GM2 MMEL.145 Justification of MMEL items

USE OF MMEL GUIDANCE BOOK

- (a) The justification of an MMEL item may be based on the guidance material provided in Appendix 1 to GM1 MMEL.145.
- (b) The guidance material provided in Appendix 1 to GM1 MMEL.145 is as an acceptable basis for the development of associated MMEL items justifications. The main purpose of this guidance material is to standardise the level of relief granted in MMELs, in particular when dealing with items that are subject to operational requirements.

- (c) This guidance material is not intended to cancel the need to comply with CS MMEL.140 and CS MMEL.145 but is intended to alleviate this task by allowing the applicant to refer to this material as part of the MMEL justifications. The availability of a guidance material for an item does not prevent the applicant to prepare alternate MMEL content.
- (d) The guidance material for MMEL items is organised by ATA chapters order and proposes MMEL contents in a five-column format.
- (e) Additional interpretative material is proposed under the field 'Additional considerations' which is considered as an integral part of the guidance.
- (f) References to applicable requirements, when available, are also provided for information purposes only.
- (g) Items included in the Appendix 1 to GM1 MMEL.145 marked with the symbol (MC) below the corresponding title are considered to be eligible for MMEL minor change classification in accordance with Part-21.

GM1 MMEL.145(c) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – LATENT FAILURES

Regarding MMEL dispatch configuration leaving the aircraft two failures away from a catastrophic failure condition, particular attention should be paid to combinations involving one failure which is latent for more than one flight. Whenever practical, such combinations should be avoided per MMEL dispatch condition (e.g. verification task clearing the latent failure prior to each flight). Where these latent failures are not avoided, these combinations of failures should be reported and reviewed with the Agency.

GM2 MMEL.145(c) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – PREVIOUS APPROVALS

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.

GM3 MMEL.145(c) Justification of MMEL items

QUALITATIVE SAFETY ASSESSMENT – FLIGHT TEST/SIMULATOR

A flight test or a simulator/FSTD evaluation, on an aircraft or STD representative of the type design, may be used to help evaluate a candidate MMEL item, in particular the consequences of the failed item on crew workload and human factors.

GM4 MMEL.145(c) Justification of MMEL items

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

- (a) When the candidate 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 worsen 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.

GM1 MMEL.145(d) Justification of MMEL items

QUANTITATIVE SAFETY ASSESSMENT

- (a) Items for which a quantitative safety assessment is carried out to supplement the qualitative MMEL development process in accordance with CS MMEL.145(d) should be reported.

- (b) Items for which the probabilities per flight hour of 1.10^{-8} for Catastrophic failure conditions and 1.10^{-6} for Hazardous failure conditions are not met in that dispatch configuration should be reviewed with the Agency. The following guidance applies to these proposed dispatches. This guidance includes equations to control how long these configurations are allowed to exist, such that the fleet average objectives will be achieved.
- (1) For catastrophic failure conditions:
- (i) A probability per flight hour under dispatch condition of $\leq 1.10^{-8}$ is the objective when dispatching with the inoperative item. When this objective is met, no calculation for a maximum allowable dispatch time is considered necessary.
 - (ii) A limited number of items may be considered when $1.10^{-8}/\text{FH}$ objective is not met. In these cases, the maximum allowable probability per flight hour when dispatching with the inoperative item should not exceed $1.10^{-7}/\text{FH}$, and the maximum dispatch time should be less than that calculated using the following Equation (1).
 - (iii) The $1.10^{-8}/\text{FH}$ objective and $1.10^{-7}/\text{FH}$ upper limit apply to each catastrophic failure condition involving the inoperative-at-dispatch MMEL item. If more than one top level event is involved, the maximum allowable dispatch time should be the smallest of those calculated for the affected failure conditions .

Equation (1):

$$\text{Max_Disp_Time}_{\text{CAT}}[\text{FH}] = \frac{1.10^{-9} [\text{probability_per_FH}]}{\text{PF} \cdot \text{FR}}$$

Where

$\text{Max_Disp_Time}_{\text{CAT}}[\text{FH}]$ = Max Dispatch Time [flight hours]

PF [1/FH] = Probability of failure condition [per flight hour] under dispatch condition

FR [1/FH] = Failure Rate of proposed MMEL item [per flight hour]

- (2) For hazardous failure conditions:
- (i) A probability per flight hour of $\leq 1.10^{-6}$ is the objective when dispatching with the inoperative item. When this objective is met, no calculation for a maximum allowable dispatch time is considered necessary.
 - (ii) A limited number of items may be considered when $1.10^{-6}/\text{FH}$ objective is not met. In these cases, the maximum allowable probability per flight hour when dispatching with the inoperative item should not exceed $1.10^{-5}/\text{FH}$, and the maximum dispatch time should be less than that calculated using the following Equation (2).
 - (iii) The $1.10^{-6}/\text{FH}$ objective and $1.10^{-5}/\text{FH}$ upper limit apply to each hazardous failure condition involving the inoperative-at-dispatch MMEL item. If more than one top level event is involved, the maximum allowable dispatch time should be the smallest of those calculated for the affected failure conditions .

$$\text{Equation (2):} \quad \text{Max_Disp_Time}_{\text{HAZ}}[\text{FH}] = \frac{1.10^{-7} [\text{probability_per_FH}]}{\text{PF} \cdot \text{FR}}$$

Where

Max_Disp_Time_{HAZ}[FH] = Max Dispatch Time [flight hours]

PF [1/FH] = Probability of failure condition [per flight hour] under dispatch condition

FR [1/FH] = Failure Probability of proposed MMEL item [per flight hour]

Note 1 The two equations given above for maximum dispatch times for MMEL items or functions involved in catastrophic or hazardous failure conditions provide dispatch times that are compatible with the fleet average top level reliability requirements of CS 25.1309(b).

Note 2 Equation (1) would yield a maximum operating time in the particular configuration to be $\leq 1\%$ of the fleet operating time when the MMEL dispatch configuration has a probability of $1.10^{-7}/\text{FH}$.

Note 3 Maximum dispatch times, as calculated using the above equations or other appropriate methods, should be maintained by the applicant's operations/MMEL group. That group will work with the Operations Evaluation Boards (OEBs) to decide on an acceptable MMEL entry.

Note 4 Probabilities used in above paragraph are average probabilities per flight hours as defined in AMC 25.1309.

- (3) Dispatch times should primarily be based on operational considerations. Whenever possible, the MMEL entry should use the standard Rectification Interval Categories by rounding the calculated maximum dispatch time (in flight hours) to a conservative Category (based on maximum aircraft utilization per day), not exceeding the C category.

GM2 MMEL.145(d) Justification of MMEL items

QUANTITATIVE SAFETY ASSESSMENT — ENGINE TIME LIMITED DISPATCH (TLD)

In case of a turbine engine, if approval is sought for dispatch with Faults present in an Electronic Engine Control System, a quantitative safety assessment should be carried out in compliance with CS-E 1030 (Time Limited Dispatch (TLD)). In this case, the applicant should ensure that assumptions made at engine level remain true at aircraft level for the purpose of the MMEL.

GM1 MMEL.145(e) Justification of MMEL items

OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) The content of the operational and maintenance procedures is normally not required to be finalised and included as part of the justifications, but only the intent is provided as part of the justifications
- (b) The content of a specific procedure may be requested by the Agency on a case-by-case basis
- (c) The applicant should evaluate the complexity of maintenance and/or operational procedures prior to including them in the MMEL.

D. APPENDICES**I APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK****ATA 22 AUTOFLIGHT****Summary of the guidance items:**

Item	ATA
Autopilot	22-10-1
Flight Director	22-10-2
Navigation Databases (MC)	22-71-1

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters:**

ATA Chapter: 22 Autoflight					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval			
		(3) Number installed			
		(4) Number required for dispatch			
		(5) Remarks or Exceptions			
22-10-1	Autopilot (or Autopilot Channel)				
22-10-1A	(Other than CAT)	C	-	0	(M) (O) May be inoperative provided: (a) Affected autopilot/channel is deactivated, and (b) Affected autopilot/channel is not part of the equipment required for intended operation. Procedures (M) — To give guidance on a practical mean to ensure that the affected autopilot/channel will not engage during the flight, and (O) — To specify any applicable restriction for operations requiring a specific approval (e.g. PBN/MNPS, RVSM, Low Visibility, ETOPS, etc.)
22-10-1B	(CAT)	C	-	1	(M) (O) Any in excess of one may be inoperative provided: (a) Affected autopilot/channel is deactivated, and (b) Affected autopilot/channel is not part of the equipment required for intended operation. Procedures See 22-10-1A

22-10-1C (CAT)	B	-	0	<p>(M) (O) May be inoperative provided:</p> <p>(a) Any increase in crew workload caused by the affected autopilot/channel has been considered for intended operation,</p> <p>(b) Operations are conducted under VFR for single pilot operations,</p> <p>(c) Affected autopilot/channel is deactivated, and</p> <p>(d) Affected autopilot/channel is not part of the equipment required for intended operation.</p> <p>Procedures</p> <p>See 22-10-1A</p>
22-10-1-1 Autopilot Functions/Modes				
22-10-1-1A (CAT)	C	-	-	<p>(M)(O) One or more functions/modes may be inoperative provided:</p> <p>(a) Any increase in crew workload caused by the inoperative functions/modes has been considered for intended operation,</p> <p>(b) Inoperative functions/modes are deactivated as applicable,</p> <p>(c) Autopilot heading mode and altitude hold are operative, and</p> <p>(d) Affected functions/modes are not part of the equipment required for intended operation.</p> <p>Procedures</p> <p>(M) — To give guidance reference to ensure the affected function of the autopilot are properly deactivated and do not interact with functions used for the flight.</p> <p>(O) — See 22-10-1A</p>

Additional considerations:

If the autopilot or autopilot functions are required to meet airworthiness requirements (e.g. stabilisation function for rotorcraft, single pilot IFR, etc.), this needs to be taken into account as part of the MMEL evaluation and compliance with CS-MMEL requirements has to be demonstrated.

Some autopilot installations are not dependent on flight director being operative, and basic attitude modes may still be available.

For highly integrated systems the autopilot may not function without the flight director, and therefore autopilot inoperative relief would also apply (see guidance item 22-10-2).

If flight director modes of the autopilot are used to show compliance with requirements applicable to the means of measuring and indicating turn and slip, aircraft attitude or stabilised aircraft heading, in combination with instruments, additional restrictions related to the loss of associated indications may be applicable.

For the intended operations, any increase in crew workload caused by the inoperative functions has to be considered. This condition needs to be specified in the MMEL (e.g. number of flights, leg duration, etc.)

Any additional limitations (e.g. flight time) may result from the above review.

Applicable operating minima (e.g. CAT2/CAT3 operations) or navigation specifications (e.g. B-RNAV, RNP) requirements may be specified at the level of the MMEL or refer to appropriate section of AFM or Operations Manual. The above guidance shows these restrictions covered at operational procedures level but having them reflected at dispatch conditions level is also acceptable.

If the aircraft is certified for ETOPS operations, associated restrictions may be included, as appropriate.

The above guidance indicates the need to deactivate the affected autopilot/channel for dispatch. Some autopilot design may not offer the possibility to fully comply with this requirement. Alternate conditions can in these cases be proposed provided adequate safeguards against erratic autopilot behaviour are demonstrated.

22-10-1C:

For single pilot CAT operations, depending on the use of autopilot in routine procedures, the operations may be restricted to day VMC only.

22-10-1-1 sub-item covers failure of functions of the autopilot, which do not lead to the disconnection of the associated autopilot (autopilot channel).

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters:**

ATA Chapter: 22 Autoflight				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
		(4) Number required for dispatch		
			(5) Remarks or Exceptions	
22-10-2 Flight Director Symbols (FD Bars)				
22-10-2A	C	-	-	(O) May be inoperative provided: (a) Affected flight director is not part of the equipment required for intended operation, and (b) Associated autopilot, if affected, is considered inoperative (Refer to 22-10-1) Procedures (O) — To specify any applicable restriction for operations requiring a specific approval (e.g. PBN/MNPS, RVSM, Low Visibility Operations (LVO), etc.)

Additional considerations:

This item covers display of symbols only (e.g. FD bars).

A shorter rectification interval or a minimum of one FD bars operative may be required based on operational considerations such as the amount of reliance that is placed on the FD and the level of training with the FD inoperative. Additional restrictions due to considerations on the autopilot items may also be applicable in case of integrated architecture.

AFM limitations that may identify any approaches that cannot be flown if the FD is inoperative as a result of certification flight tests have to be taken into account.

Proposed EASA Guidance Book item**Aeroplanes & Helicopters:**

ATA Chapter: 22 Autoflight				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
		(4) Number required for dispatch		
			(5) Remarks or Exceptions	
22-71-1 Navigation Database (MC)				
22-71-1A	C	-	0	<p><u>Note:</u> A database which is out of date is considered to be inoperative.</p> <p>(O) One or more may be inoperative for the intended route where conventional (non-RNAV/RNP) navigation is sufficient, provided</p> <p>(a) Current aeronautical information (e.g. charts) is available for the entire route and for the aerodromes to be used, and</p> <p>(b) Navigation database information is disregarded, and</p> <p>(c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures are manually tuned and identified.</p> <p>Procedures (O) — To give guidance reference to established operator's procedure to ensure the dispatch conditions requirements are met prior to release of the aircraft.</p>
22-71-1B	C	-	1	<p>(O) Any in excess of one may be inoperative provided:</p> <p>(a) The operative database must be up to date for routes, departures, arrival and approach procedures that require the use of navigation Database for RNAV/RNP, and</p> <p>(b) The operative database is available and used by the flight crew member(s) responsible for navigation, and</p>

ATA Chapter: 22 Autoflight				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
			(3) Number installed	
			(4) Number required for dispatch	
				(5) Remarks or Exceptions
22-71-1C	A	-	0	<p>(c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures are manually tuned and identified.</p> <p>Procedures (O) — To give guidance reference to established operator's procedure to ensure dispatch conditions requirements are met prior to release of the aircraft.</p> <p>(O) One or more may be out of date for a maximum of 10 calendar days provided:</p> <p>(a) Area Navigation (RNAV/RNP) departure, arrival and approach procedures are checked not to depend on the data amended in the current database cycle or Conventional (Non-RNAV/RNP) or ANSP assistance are used as an alternative to RNAV/RNP procedures which have been amended in the current database cycle,</p> <p>(b) Before each flight, current aeronautical information is used to verify the database Navigation Fixes, the coordinates, frequencies, status (as applicable) and suitability of Navigation Facilities required for the intended route, and</p> <p>(c) Radio navigation aids, which are required to be flown for departure, arrival and approach procedures and which have been amended in the current database cycle, are manually tuned and identified.</p> <p>Procedures (O) — To give guidance reference to established operator's procedure to ensure the dispatch conditions requirements are met prior to release of the aircraft.</p>

Additional considerations:

The item in the current guidance is separated into two set of provisos:

- 22-71-1B applicable when RNAV/RNP operations are not conducted (C rectification interval), and
- 22-71-1C applicable to operations where RNAV/RNP may be conducted (A rectification interval maximum 10 calendar days). The wording of condition (a) may be customised to the specific types of operations intended to be conducted.

This is to reduce the exposure time for aircraft navigated in RNAV/RNP airspace with downgraded capability due to outdated databases.

Condition (c) is required for system design where the radio nav aids are automatically tuned by using the database data.

ATA 23 COMMUNICATIONS**Summary of the guidance items:**

Item	ATA
Headset	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

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters:**

ATA Chapter: 23 Communications				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
23-10-1 Headset (MC) 23-10-1A	D	-	(3) Number installed	
			-	(4) Number required for dispatch
				(5) Remarks or Exceptions
Any in excess of one headset (including boom microphone) for each required crew member on flight crew compartment duty may be inoperative or missing.				

Additional considerations:

Additional certification requirements may impose additional restrictions (e.g. spare headset on single pilot helicopter).

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters:**

ATA Chapter: 23 Communications				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
23-10-2 Audio Selector Panel 23-10-2A	D	-	(3) Number installed	
			-	(4) Number required for dispatch
				(5) Remarks or Exceptions
Any in excess of one for each required crew member on flight crew compartment duty may be inoperative.				

23-10-2B	D	-	-	<p>May be inoperative provided:</p> <p>(a) The flight is conducted under VFR, and</p> <p>(b) Required communication can be ensured using alternate means.</p>
23-10-2-1 Press To Transmit (PTT) Switch	B	-	-	
23-10-2-1A	B	-	-	<p>(M) Any in excess of one for each required flight crew member may be inoperative provided the affected switch is either verified failed open (non-transmitting) or is deactivated.</p> <p>Procedures</p> <p>(M) Check of the failure of the switch in open (non-transmitting) position or deactivation in open position.</p>

Additional considerations:

Additional requirements may be introduced if the Audio Selector Panel failure has consequences on the aural warning broadcasting.

All aural alerts, messages and other communication which are normally routed through the flight crew compartment speakers must be audible through the headsets.

There may be components of the audio control panel inoperative; however, the panel is still adequate for flight. Above items do not address sub-components (e.g. ADF ident function) and it is considered the captain's decision to dispatch with necessary equipment operative.

Operators of Helicopter Emergency Medical Service (HEMS) or helicopters employing rescue equipment (i.e. winches, etc.) or human external cargo may need to consider whether additional crew members (not situated within the flight crew compartment) are included within their MEL alleviation.

Proposed EASA Guidance Book item:**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		
23-10-3	Flight Compartment Speaker	Crew		
23-10-3A		C	-	0
				(O) May be inoperative provided: (a) A headset is operative for each required crew member on flight crew compartment duty, and (b) A spare operative headset is readily available in the flight crew compartment for use by any of the required crew member on flight crew compartment duty. Procedures (O) To provide alternate procedures for the use of headsets, as appropriate.

Additional considerations:

It should be ensured that the affected speaker is not used for crew intercommunication when smoke masks are used unless single pilot operations are conducted.

If there are emergency (e.g. smoke) procedures which require the crew to establish communication then relief for both cannot be granted, but depending on flight test results, relief for one may be possible.

All aural alerts, messages and other communication which are normally routed through the flight crew compartment speakers should remain audible through the headsets and be recordable by the CVR (or the CVR should be considered inoperative). In the case aural alerts and required communications could be heard only through the headsets, these should be worn permanently by at least one crew member on flight crew compartment duty.

Considerations should be given to audio system configuration in degraded electrical configuration, in particular when credit has been taken on the availability of flight crew compartment speakers.

Proposed EASA Guidance Book item:

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			
23-11-1 HF Communications				
23-11-1A	D	-	-	Any in excess of those required for the intended route, may be inoperative. <u>Note 1:</u> The intended route corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.
23-11-1B	C	-	1	(O) Any in excess of one may be inoperative provided: (a) SATCOM air-ground communications with Air Traffic Service Providers (ATSPs) are available for the intended route, (b) SATCOM Voice or Data transfer functions are operative, (c) Prior to each flight, coordination with the appropriate Air Navigation Service Provider(s) is established where INMARSAT codes, or equivalent, are not available whilst using SATCOM voice function, and (d) Alternate communication procedures are established and used. <u>Note:</u> The intended route corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.

23-11-1C	A	-	1	<p>Procedures</p> <p>(O) To provide alternate communication procedures.</p> <p>SATCOM is to be used only as a backup to normal HF communications unless otherwise authorised by the appropriate Air Navigation Service Provider(s)</p> <p>(O) Any in excess of one may be inoperative for a maximum of 3 calendar days provided alternate communication procedures are established and used.</p> <p>Procedures</p> <p>(O) To provide alternate communication procedures.</p> <p>When the route enters airspace for which an In Flight Blind Broadcast Procedure exists, select the appropriate I.F.B.B. VHF frequency and apply the procedure.</p>
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Additional considerations:

When relief is foreseen for an HF communication system powered under an emergency bus, additional considerations should account for the capability to maintain an acceptable level of safety with residual means of communication and navigation, depending on the kind of operations (e.g. ETOPS) and impose additional restrictions, as necessary.

23-11-1A:

This entry allows dispatch with HF communication in excess of the applicable requirements.

A radio communication system is required for operations in a controlled airspace, under IFR or at night.

In addition, for Commercial Air Transport operations under IFR or under VFR over routes that cannot be navigated by reference to visual landmarks, two independent means of communication are required and each system should have an independent antenna installation, except where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used.

23-11-1B & C:

These entries are applicable for flights on routes that require two long range communication systems.

Although SATCOM voice and data link may be used as long range communication systems in order to meet applicable operational requirements, not all ATC facilities are adequately equipped to handle SATCOM data or voice as the primary means of communication.

SATCOM data or voice may however be accepted as a backup to normal HF communication systems.

HF-voice is the only LRCS currently available for Air Traffic Control communications in many areas.

Therefore, in areas requiring two operational LRCSs, at least one must be HF-voice and in areas requiring one LRCS, that system must be HF-voice.

Additional restriction to ensure availability of ACAS may be considered.

Proposed EASA Guidance Book item:

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			
23-12-1 VHF Communications				
23-12-1A (Other than CAT)	D	-	-	Any in excess of those required may be inoperative.
23-12-1B (CAT)	C	-	1	<p>(O) Any in excess of one, may be inoperative provided:</p> <p>(a) Operations are conducted under VFR over routes navigated by reference to visual landmarks,</p> <p>(b) Applicable airspace requirements for the intended route are complied with, and</p> <p>(c) Alternate procedures are established and used, if applicable.</p> <p>Procedures</p> <p>(O) To provide alternate procedures if the affected VHF was used to accomplish procedures for the intended route.</p> <p>To provide procedures to address next in-flight failure of the remaining system, if not otherwise available.</p> <p><u>Note:</u> The intended route corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.</p>

23-12-1C (CAT)	C	-	2	<p>(O) Any in excess of two, may be inoperative provided alternate procedures are established and used, if applicable.</p> <p>Procedures See 23-12-1B.</p>
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Additional considerations:

When relief is foreseen for a VHF communication system powered under an emergency bus, additional considerations should account for the capability to maintain an acceptable level of safety with residual means of communication and navigation, depending on the kind of operations and impose additional restrictions, as necessary.

Additional condition on SSR transponder availability to cover next in-flight failure may be needed.

Proposed EASA Guidance Book item:**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			
23-13-1 Audio Selector Panel Frequency Controls and Indications				
23-13-1-1 Frequency Transfer Light				
23-13-1-1A	C	-	0	May be inoperative.
23-13-1-2 Frequency Transfer Switch				
23-13-1-2A	C	-	0	May be inoperative.
23-13-1-3 Frequency Selector Knob				
23-13-1-3A	C	-	2	Any in excess of two may be inoperative.
23-13-1-4 Frequency Indication				
23-13-1-4A	C	-	2	Any in excess of two may be inoperative.

Additional considerations:

This guidance may be adapted to the aircraft's specific design.

Proposed EASA Guidance Book item:**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			
23-20-1 Datalink (MC)				
23-20-1A	C	-	0	(O) May be inoperative provided alternate procedures are established and used.
				Procedures To provide alternate procedure to the crew to manage communications, as applicable in the airspaces in which aircraft is operated.
23-20-1B	D	-	0	May be inoperative provided procedures do not require its use.

Additional considerations:

Option 23-20-1B is applicable for aircraft not required to have datalink installed as per Commission Regulation (EC) No 29/2009 or whenever aircraft is operated below FL285.

Proposed EASA Guidance Book item:**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
23-30-1 Public Address (PA) System				
23-30-1A	D	-	-	Any in excess of those required may be inoperative provided procedures do not depend upon their use.
23-30-1B	C	-	-	(O) Any in excess of those required may be inoperative provided alternate procedures are established and used.
23-30-1C	B	-	0	(O) May be inoperative provided: (a) Alternate procedures are established and used, and (b) Flight crew compartment from and to cabin interphone system (including audio and visual alerting system) is operative. Procedures: (O) To provide alternate normal and emergency communication procedures between flight crew compartment and cabin and/or operating restrictions as appropriate for the intended operations.
23-30-1D	D	-	0	(O) May be inoperative provided operations are conducted in cargo only configuration with all occupants in the Flight Crew Compartment. Procedures: (O) To provide alternate normal and emergency communication procedures and/or operating restrictions as appropriate for the intended operations.

23-30-1E	C	-	0	<p>(O) May be inoperative provided:</p> <p>(a) Operations are conducted in cargo only configuration, and</p> <p>(b) Flight crew compartment/cabin interphone system (including audio and visual alerting system) is operative, and</p> <p>(c) Alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures and/or operating restrictions as appropriate for the intended operations.</p>
23-30-1F	D	-	0	<p>(O) May be inoperative provided:</p> <p>(a) Operations are conducted with no passengers,</p> <p>(b) All occupants are in the flight crew compartment.</p>

Additional considerations:

The alternate procedures will have to be developed to account for any procedures based on the use of the PA, in particular in areas such as lavatories and crew rest, etc.

Proposed EASA Guidance Book item:**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			
23-40-1 Flight Crew Interphone System (Flight Crew Compartment Crew Intercommunication) (MC) 23-40-1A	D	-	-	Any system in excess of those required may be inoperative.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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		
23-40-2	Crew Member Interphone System (MC)			
23-40-2A		D	-	- Any in excess of those required may be inoperative provided procedures do not depend upon their use.
23-40-2B		C	-	(O) Any in excess of those required may be inoperative provided alternate procedures are established and used.
23-40-2-1	Flight Crew Compartment to Cabin Cabin to Flight Crew Compartment Interphone			
23-40-2-1A		B	-	(O) May be inoperative provided: (a) An adequate number of interphone terminals, accessible by each required cabin crew from its assigned area or from the nearest assigned area are operative, and (b) Alternate procedures are established and used, and (c) Flight crew compartment interphone aural alerting system is operative.

23-40-2-2 Flight Crew Compartment Handset (if installed)				<p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures between flight crew compartment and cabin including access to the flight crew compartment from the cabin and/or operating restrictions as appropriate for the intended operations</p>
23-40-2-2A	C	-	0	<p>(O) May be inoperative provided:</p> <p>(a) Flight crew compartment to cabin communication is operative, and</p> <p>(b) Alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures between flight crew compartment and cabin and/or operating restrictions as appropriate for the intended operations.</p>
23-40-2-3 Cabin to Cabin Interphone				
23-40-2-3A	C	-	0	<p>(O) May be inoperative provided alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures between affected crew members using or not the public address system and/or operating restrictions as appropriate for the intended operations.</p>
23-40-2-4 Flight Crew Compartment and/or Cabin to Crew Rest Facility/Bunk				
23-40-2-4A	C	-	0	<p>(O) May be inoperative provided:</p> <p>(a) Public address system is operative, and</p> <p>(b) Alternate procedures are established and used.</p>

23-40-2-4B	C	-	0	<p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures between affected crew members and/or operating restrictions as appropriate for the intended operations.</p> <p>(O)(M) May be inoperative provided:</p> <p>(a) Affected crew rest facility/bunk is not occupied, and</p> <p>(b) Affected crew rest facility/bunk is placarded 'DO NOT OCCUPY'.</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures between affected crew members and/or operating restrictions as appropriate for the intended operations.</p> <p>(M) To give guidance reference for placarding the affected area.</p>
23-40-2-5 Alerting System (Audio/Visual)	C	-	-	
23-40-2-5A	C	-	-	<p>(O) May be inoperative provided:</p> <p>(a) Flight crew compartment call audio alerting system is operative,</p> <p>(b) Public Address system is operative, and</p> <p>(c) Alternate procedures are established and used.</p> <p><u>Note:</u> If the lavatory smoke alerting system is affected, the lavatory smoke detector is considered inoperative (refer to 26-17-1) or an alternate indication must be operative (e.g. flight crew compartment alert).</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures for contacting crew members as appropriate for the intended operations.</p>
23-40-2-6 Cabin Handset	C	-	-	
23-40-2-6A	C	-	-	<p>(O) One or more may be inoperative provided:</p> <p>(a) At least 50% of the cabin handset is operative,</p>

23-40-2-6B	C	-	-	<p>(b) One handset is operative at each pair of floor level exit door,</p> <p>(c) Operative handsets are located at operative cabin crew seats, and</p> <p>(d) Alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate normal and emergency communication procedures as appropriate for the intended operations.</p> <p>(O) May be inoperative at any non-required cabin crew seat.</p>
23-40-2-7 Flight Crew to Ground/Ground to Flight Crew Interphone (MC)	C	1	0	<p>(O) May be inoperative provided alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate communication procedures between flight crew compartment and ground as appropriate for the intended operations.</p>
23-40-2-7A	C	1	0	<p>(O) May be inoperative provided alternate procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate communication procedures between flight crew compartment and ground as appropriate for the intended operations.</p>

Additional considerations:

23-40-2-1

In order to determine the minimum required interphone terminals (handsets) in the cabin, the accessibility (cabin layout, monuments impairing visibility) and the distance from any point of the area assigned to the required cabin crew to the next operative interphone terminals have to be considered.

Any crew interphone station that is operative may be used.

Proposed EASA Guidance Book item:**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 alternate procedures are established and used.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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 in excess of those required may be inoperative.
23-71-1B	A	-	0	<p>May be inoperative provided:</p> <p>(a) The aircraft does not exceed 8 further consecutive flights with the cockpit voice recorder inoperative,</p> <p>(b) A maximum of 72 hours have elapsed since the cockpit voice recorder was found to be inoperative, and</p> <p>(c) Any Flight Data Recorder required to be carried is operative.</p> <p><u>Note:</u> This alleviation is not applicable to combined CVR/FDRs. For those combined systems, see the entries for combination recorders in item 31-31-2.</p>

Additional considerations:

N/A

ATA 25 EQUIPMENT/FURNISHINGS**Summary of the guidance items:**

ITEM	ATA
Flight Crew Seats	25-11-1
Observer Seats	25-11-2
Passenger Seats	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 (MC)	25-60-5
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

Proposed EASA Guidance Book item:**Aeroplanes & 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			
25-11-1	Flight Crew Seats (MC)				
25-11-1-1	Power Adjustments				
25-11-1-1A		D	-	0	May be inoperative for each flight crew member.
25-11-1-2	Manual Adjustments				
25-11-1-2-1	Horizontal Adjustments				
25-11-1-2-1A		-	-	-	Must be operative for each flight crew member.
25-11-1-2-2	Vertical and Recline Adjustments				
25-11-1-2-2A		B	-	0	One or more may be inoperative provided the associated power adjustment of the affected flight crew member seat is operative.
25-11-1-2-2B		B	-	0	(M) One or more may be inoperative provided the affected seat is secured or locked in a position acceptable to the flight crew member.
25-11-1-2-3	Other Adjustments				
25-11-1-2-3A		C	-	0	(M) One or more may be inoperative provided the affected seat is secured in a position acceptable to the flight crew member.
Note: If an inoperative armrest will hinder an emergency evacuation or any other flight duties it should be removed.					

				Procedures (M) To give guidance reference for a practical means of securing the seat position.
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Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-11-2 Observer Seats (MC)				
25-11-2A	D	-	0	One or more may be inoperative provided the affected seat is not occupied and is correctly stowed.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-21-1 Passenger Seats (MC)				
25-21-1A	D	-	-	<p>(M) One or more may be inoperative provided:</p> <p>(a) Inoperative seat does not block an emergency exit,</p> <p>(b) Inoperative seat does not restrict any passenger from access to the main aircraft aisle, and</p> <p>(c) Affected seat(s) are blocked and placarded 'DO NOT OCCUPY'.</p> <p><u>Note:</u> A seat with an inoperative or missing occupant restraint system (seat belt, safety harness, as applicable) is considered inoperative.</p> <p>Procedures:</p> <p>(M) To give guidance reference for identifying the affected seat(s) and a practical mean of prohibiting the use of the affected seat(s).</p>

Additional considerations:

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

The passenger seat item includes seat back but the recline function (if installed) is covered under a dedicated item 25-21-1-1.

This item or associated sub-items do not include tray tables that may, if inoperative in other than stowed position, render the seat or seat row, behind the seat to which the tray table is

attached, inoperative. A tray table inoperative in the stowed position is considered as a passenger convenience item.

For single aisle configurations and for seats in the left and right (outboard) sections of two-aisle aircraft, the affected seat(s) may include the seat behind and/or the adjacent outboard seats.

For the centre section of two-aisle configurations, the affected seat may only be the seat aft of the inoperative seat.

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-21-1 Passenger Seats				
25-21-1-1 Recline Functions (MC)				
25-21-1-1A	D	-	-	(M) One or more may be inoperative and the affected seat occupied provided the seat is secured in the take-off and landing position. Procedures: (M) To give guidance reference for a practical means of securing the seat in the take-off and landing position.
25-21-1-1B	C	-	-	One or more may be inoperative and the affected seat occupied provided the seat back is immovable in the take-off and landing position.

Additional considerations:

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

The seat recline position can be failed in take-off and landing position other than the full upright position, when the seat has been certified to this alternate position(s).

Proposed EASA Guidance Book item:**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	
25-21-1	Passenger Seats			
25-21-1-2	Underseat Baggage Restraining Bars (MC)			
25-21-1-2A		D	-	-
				(O) May be inoperative or missing provided: (a) Baggage is not stowed under associated seat, (b) Associated seat is placarded 'DO NOT STOW BAGGAGE UNDER THIS SEAT', and (c) Procedures are established and used to alert cabin crew of inoperative restraining bars. Procedures: (O) To ensure the cabin crew is briefed about affected seat position.

Additional considerations:

Any damage to passenger seats and components must not be detrimental to passenger safety
The basis of certification of the seat or seat assembly will need to be verified to determine if an inoperative or missing underseat baggage restraining bar affects the integrity of the seat.

Proposed EASA Guidance Book item:**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	
25-21-1	Passenger Seats			
25-21-1-3	Passenger Seat Armrests with Recline Control Mechanism (MC)			
25-21-1-3A		D	-	- (M) May be inoperative, damaged or missing and the affected seat occupied, provided: (a) The affected armrest does not block an emergency exit, (b) The affected armrest is not in such a position that it restricts any passengers from access to the aircraft aisle, and (c) If armrest is missing, seat is secured in the full upright position. Procedures (M) To give guidance reference for a practical means of securing the seat in the upright position.
25-21-1-4	Passenger seat armrests without recline control mechanism (MC)			
25-21-1-4A		D	-	- May be inoperative, damaged or missing, and the affected seat occupied provided:

				(a) The affected armrest does not block an emergency exit, and (b) The affected armrest is not in such a position that it restricts any passengers from access to the aircraft aisle.
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Additional considerations:

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

Proposed EASA Guidance Book item:**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		
25-21-1	Passenger Seats			
25-21-1-5	Swivel/Travel Mechanisms (MC)			
25-21-1-5A		D	-	-
				(M) One or more may be inoperative and the affected seat occupied provided: (a) Affected seat is secured in take-off and landing position, (b) Affected seat does not block an emergency exit, and (c) Affected seat does not restrict any passenger from access to the main aircraft aisle. Procedures: (M) To give guidance reference for a practical means of securing the seat in required position.
25-21-1-5B		C	-	-
				One or more may be inoperative and the affected seat occupied provided the affected seat is immovable in take-off and landing position.

Additional considerations:

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

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-21-2 Cabin Crew Seat Assembly (single or dual position)	
25-21-2-1 Required Cabin Crew Seat	
25-21-2-1A	B - - (M)(O) One seat or seat assembly may be inoperative provided: (a) Inoperative seat or seat assembly is not occupied, (b) Cabin crew displaced by inoperative seat occupies the adjacent cabin crew seat or the passenger seat most suitable to perform assigned duties, (c) Alternate procedures are established and used for displaced cabin crew, (d) Folding type seat is stowed or secured in the retracted position, and (e) Where a passenger seat is assigned to the displaced cabin crew it is placarded 'FOR CABIN CREW USE ONLY'. <u>Note:</u> A seat with an inoperative or missing seat belt or harness is considered inoperative. Procedures: (M) to give guidance reference for placarding and securing the folding type seat in the retracted position if failure modes preventing stowage are existing. (O) to give guidance reference for normal, abnormal and emergency procedures

				affected by cabin crew displacement.
25-21-2-2 Excess Cabin Crew Seat				
25-21-2-2A	C	-	0	<p>(M)(O) Seat or seat assembly in excess of requirements and assigned to a cabin crew may be inoperative provided:</p> <p>(a) Inoperative seat or seat assembly is not occupied,</p> <p>(b) Alternate procedures are established and used for displaced cabin crew,</p> <p>(c) Folding type seat is stowed or secured in the retracted position, and</p> <p>(d) Where a passenger seat is assigned to the displaced cabin crew it is placarded 'FOR CABIN CREW USE ONLY'.</p> <p><u>Note:</u> A seat with an inoperative or missing seat belt or harness is considered inoperative.</p> <p>Procedures:</p> <p>(M) To give guidance reference for placarding and securing the folding type seat in the retracted position if failure modes preventing stowage are existing.</p> <p>(O) To give guidance reference for normal, abnormal and emergency procedures affected by cabin crew displacement.</p>
25-21-2-2B	C	-	0	<p>(M) Seat or seat assembly in excess of requirements and not assigned to a cabin crew may be inoperative provided:</p> <p>(a) Inoperative seat or seat assembly is not occupied, and</p> <p>(b) Folding type seat is stowed or secured in the retracted position or removed.</p> <p>Procedures:</p> <p>(M) To give guidance reference for placarding and securing the folding type seat in the retracted position if failure modes preventing stowage are existing.</p>

Additional considerations:

A definition for 'Required Cabin Crew Seat' is provided in GM- GM3 MMEL.120.

The above-mentioned relief is only permissible if more than one cabin crew is assigned to duty or more than one seat or seat assembly is located in the passenger cabin. This is for safety reasons to ensure that at least one cabin crew is seated in a proper cabin crew seat in the cabin.

When only one cabin crew seat is required and the maximum operational passenger seating configuration (MOPSC) is of 20 or more, this cabin crew seat is not allowed to be included in the MMEL. This item has been split into 25-21-2-1 'seats required by regulation' and 25-21-2 'seats in excess of requirements' to facilitate separate categorisations.

If additional cabin crew are carried and duties assigned, then the seat occupied by that cabin crew is no longer considered excess to requirements and that seat must meet the appropriate design requirements. Hence the wording 'assigned' in 25-21-2-2..

A cabin crew seat must be located in the passenger cabin; this excludes a seat located in the cargo area of a passenger/cargo combi configured aircraft. Individual operators, when operating with inoperative seats, must consider the locations and combinations of seats to ensure that the proximity to exits and distribution requirements of the applicable regulations are met.

Because of safety reasons, a note indicates that the use of cabin crew seats with no shoulder harness is not acceptable.

A good view of the area(s) of the cabin for which the displaced cabin crew is responsible has to be maintained, as far possible.

Cabin crew direct view pertains to direct visual contact between the flight attendant and the passenger cabin. It is possible that not all cabin crews will have a direct view of the cabin.

However, the important consideration is that the majority of the passenger cabin is in direct view of some cabin crews.

Proposed EASA Guidance Book item:**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			
25-40-1 Exterior Lavatory Door Ashtrays (MC)				
25-40-1A	A	-	0	One or more may be inoperative or missing provided repairs are made within three consecutive calendar days.
25-40-1B	A	-	-	One or more may be inoperative or missing provided: (a) One operative exterior lavatory door ashtray can be readily seen and accessed from the affected lavatory door, and (b) Repairs are made within ten consecutive calendar days.
25-40-1C	D	-	0	(M)(O) One or more may be inoperative or missing provided: (a) Affected lavatory door is locked closed and placarded to prohibit passengers' entrance, and (b) Affected lavatory is used only by crew members. Procedures (M) to provide instructions to lock closed and placard affected lavatory door. (O) to provide procedures to brief crew members.
25-40-1D	D	-	0	One or more may be inoperative or missing provided flight is non-smoking.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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			
25-40-2 Interior Lavatory Ashtrays (MC)				
25-40-2A	B	-	0	One or more may be inoperative or missing provided associated lavatory fire-extinguishing system, when installed, is operative.
25-40-2B	D	-	0	(M)(O) One or more may be inoperative or missing provided: (a) The affected lavatory door is locked closed and placarded to prohibit passengers' entrance, and (b) The affected lavatory is used only by crew members. Procedures (M) to provide instructions to lock closed and placard affected lavatory door. (O) to provide procedures to brief crew members.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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	
25-60-1 Escape Slides				
25-60-1A	-	-	-	<p>One may be inoperative or missing on each deck provided the associated door/exit is considered inoperative. Refer to item 52-22-xx.</p> <p><u>Note:</u> Refer to item 25-60-6 when escape slide is used as raft.</p>

Additional considerations:

Additional maintenance task may be required depending on the failure modes intended to be covered under this entry (e.g. slide arming circuit deactivation).

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-60-2 Independent portable lights (MC)				
25-60-2A	C	-	-	May be inoperative or missing provided each required crew member has an operative independent portable light readily available when seated at designated station.
25-60-2B (Helicopters and Aeroplanes for other than commercial air transport operations)	D	-	-	May be inoperative or missing for daylight operations under VFR.

Additional considerations:

In compliance with CS 25/29.1411(a) and (b), an additional operational procedure may be required for entry 25-60-2A (e.g. holders) so as to ensure that required crew members are aware of the electric torch/flashlight change in terms of its location and/or alternate stowage provisions.

Proposed EASA Guidance Book item:**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
25-60-3 Protective Breathing Equipment (PBE) (MC)				
25-60-3A	D	-	(M) (O) Any in excess of those required may be inoperative or missing provided: (a) Required distribution is maintained, (b) Inoperative PBE and its installed location are placarded inoperative, (c) Inoperative PBE unit is secured out of sight in an approved stowage, and (d) Procedures are established and used to alert crew members of inoperative or missing equipment. <u>Note:</u> Inoperative PBE units may be subject to dangerous goods requirements. Procedures: (M) To provide instructions to placard the inoperative PBE unit and its installed location, to secure the PBE unit in an approved stowage. (O) To provide procedures to alert crew members.	

Additional considerations:

According to air operations rules for Commercial Air Transport (CAT.IDE.A.245), the number of required portable PBE may vary depending on whether the aeroplane is operated with a flight crew of more than one and a cabin crew member or not.

For helicopters, if one or more cargo or baggage compartments are to be accessible in flight, protective breathing equipment must be available for an appropriate crew member without leaving their seat.

Proposed EASA Guidance Book item:**Aeroplanes & 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
25-60-4 Megaphones (MC) 25-60-4A	D	-	-	(M) (O) Any in excess of those required may be inoperative or missing provided that: (a) Required distribution is maintained, (b) Inoperative megaphone and its installed location are placarded inoperative, (c) Inoperative megaphone is secured out of sight, and (d) Procedures are established and used to alert crew members of inoperative or missing equipment. Procedures: (M) To provide instructions to placard the inoperative megaphone and its installed location, and to secure the megaphone in an out of sight location. (O) To provide procedures to alert crew members.
25-60-4B (Other than commercial air transport operations and cargo-only operations)	D	-	0	May be inoperative.

Additional considerations:

The number of required megaphones in the passenger compartment is depending upon the seating capacity of the aircraft.

Depending upon design, for cargo-only operations, additional limitation may be required in case of crew members/cargo attendants carried (e.g. to call them back from the cargo areas during an emergency).

Proposed EASA Guidance Book item:**Aeroplanes & 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	
25-60-5 Life rafts (MC)				
25-60-5A	D	-	-	<p>(O) May be inoperative or missing provided:</p> <p>(a) Extended overwater flights are not conducted, and</p> <p>(b) Procedures are established and used to alert crew members of inoperative or missing equipment.</p> <p>Procedures:</p> <p>(O) To provide procedures to alert crew members.</p>
25-60-5B	C	-	-	<p>(O) (M) Any in excess of those required for the intended flight may be inoperative or missing for extended overwater flights provided:</p> <p>(a) Required distribution is maintained,</p> <p>(b) Inoperative life raft and its installed location are placarded inoperative,</p> <p>(c) When practical, the inoperative life raft is secured out of sight, and</p> <p>(d) Procedures are established and used to alert crew members of inoperative or missing equipment.</p>

			<p>Procedures:</p> <p>(M) To provide instructions to placard the inoperative life raft and its installed location and to secure life raft in an out of sight location.</p> <p>(O) to provide procedures to alert crew members.</p>
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Additional considerations:

Criteria to define extended overwater operations are available in CAT.IDE.A.285 and CAT.IDE.H.300.

This guidance may be adapted when dispatch conditions are not practical because of considerations related to the type of aircraft.

Proposed EASA Guidance Book item:

Aeroplanes & 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		
25-60-6 Survival Equipment (MC)		<u>Note:</u> For ELT(S), refer to item 25-63-3.		
25-60-6A	D	-	-	(M) Any in excess of those required may be missing or inoperative provided: (a) Inoperative equipment and its installed location are placarded inoperative, and (b) Inoperative equipment is secured out of sight, and (c) Procedures are established and used to alert crew members of inoperative or missing equipment. Procedures: (M) To provide instructions to placard the inoperative equipment and its installed location and to secure the inoperative equipment in an out of sight location. (O) To provide procedures to alert crew members.

Additional considerations:

An additional condition with associated (O) is proposed to ensure proper crew handovers and preclude any confusion in an emergency situation.

Proposed EASA Guidance Book item:**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 in excess of those required may be inoperative.
25-60-7B		D	-	0	May be inoperative for flights over land (including take-off and landing).
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: (a) Take-off and landing are not performed over water, and (b) En route operations are not conducted over water at a distance from land not beyond 10 minutes flying time, at normal cruise speed.
25-60-7E	(Performance Class 3)	C	-	0	May be inoperative provided: (a) Take-off and landing are not performed over water, and (b) Flight is not conducted over water beyond safe forced landing distance.

Additional considerations:

The need for additional deactivation/securing conditions should be considered, based on the design of the system.

Proposed EASA Guidance Book item:**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
25-61-1 Crash Axes and Crowbars (MC)				
25-61-1A	D	-	-	Any in excess of those required may be inoperative or missing.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes & 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			
25-62-1 First-Aid Kits (MC)				
25-62-1A (Aeroplanes)	D	-	-	Any in excess of those required may be incomplete or missing.
25-62-1B (Aeroplanes)	A	-	-	If more than one is required, only one of the required first-aid kits may be incomplete for two calendar days.
25-62-1C (Helicopters)	A	-	0	May be incomplete for one calendar day.
25-62-1D (Helicopters)	D	-	1	Any in excess of one may be incomplete or missing.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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			
25-62-2 Emergency Medical Kits (MC)				
25-62-2A	D	-	-	Any in excess of those required may be incomplete or missing.
25-62-2B	A	-	-	The required emergency medical kits may be incomplete for flight to a destination where repairs or replacements can be made but not to exceed a maximum of two calendar days..

Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes & 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		
25-63	Emergency Locator Transmitter (ELT) (MC)			
25-63-1	Automatic Emergency Locator Transmitter ELT(AF) ELT(AP)			
25-63-1A		D	-	- Any in excess of those required may be inoperative.
25-63-1B	(Aeroplanes)	A	1	0 May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.
25-63-1C	(Aeroplanes)	C	-	1 Any in excess of one may be inoperative.
25-63-1D	(Helicopters)	A	-	0 May be inoperative provided: (a) The helicopter shall not fly 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.
25-63-2	Automatically Deployable Emergency Locator Transmitter ELT(AD)			
25-63-2A		D	-	- Any in excess of those required may be inoperative.

25-63-2B	(Aeroplanes)	A	-	0	May be inoperative for a maximum of 6 flights or 25 flight hours, whichever occurs first.
25-63-2C	(Helicopters)	C	-	0	May be inoperative for overland operations or overwater operations at a distance from land not beyond 10 minutes flying time at normal cruise speed.
25-63-3	Survival Emergency Locator Transmitter ELT(S)				
25-63-3A		D	-	-	<p>(M)(O) Any in excess of those required may be inoperative or missing provided:</p> <p>(a) Inoperative equipment and its installed location are placarded inoperative, and</p> <p>(b) Inoperative equipment is secured out of sight, and</p> <p>(c) Procedures are established and used to alert crew members of inoperative or missing equipment.</p> <p>Procedures</p> <p>(M) To provide instructions to placard the inoperative equipment and its installed location and to secure the inoperative equipment in an out of sight location.</p> <p>(O) To provide procedures to alert crew members.</p>

Additional considerations:

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

- a) Automatic Fixed (ELT(AF)). An automatically activated ELT which is permanently attached to an aircraft;
- b) Automatic Portable (ELT(AP)). An automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft;
- c) Automatic Deployable (ELT(AD)). An ELT which is rigidly attached to the aircraft and which is automatically deployed and activated by impact and, in some cases, also by hydrostatic sensors. Manual deployment is also provided;
- d) Survival ELT (ELT(S)). An ELT which is removable from an 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 tethered to a life raft or a survivor.

An automatic portable ELT (ELT(AP)) may be used to replace one ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).]

Proposed EASA Guidance Book item:

Aeroplanes & Helicopters

ATA Chapter: 25 Equipment/Furnishings				
(1) System & Sequence Numbers ITEM		(2) Rectification Interval		
25-64-1 Life jackets (MC) 25-64-1A		D	-	(3) Number installed
				(4) Number required for dispatch
				(5) Remarks or Exceptions
				(M) (O) Any in excess of those required may be inoperative or missing, provided: (a) Required distribution is maintained, (b) Inoperative lifejacket and its installed location are placarded inoperative, (c) Inoperative life jacket is secured out of sight, and (d) Procedures are established and used to alert crew members of inoperative or missing equipment. Procedures: (M) To provide instructions to placard the inoperative life jacket and its installed location and to secure the inoperative life jacket in an out of sight location and to placard affected seat, as applicable. (O) To provide procedures to alert crew members.

Additional considerations:

N/A

ATA 26 FIRE PROTECTION**Summary of the guidance items:**

Item	ATA
Hand Fire Extinguishers (MC)	26-24-1
Lavatory Smoke Detection System	26-17-1
Lavatory Waste Receptacle Fire-Extinguishing System	26-25-1

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters**

ATA Chapter: 26 Fire Protection				
(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 (MC)				
26-24-1A	D	-	-	<p>(M) (O) Any in excess of those required may be inoperative or missing provided:</p> <p>(a) The inoperative hand fire extinguisher is removed from the aircraft and its installed location is placarded inoperative; or it is removed from the installed location, secured out of sight, and the hand fire extinguisher and its installed location are placarded inoperative,</p> <p>(b) Required distribution of operative units is maintained throughout the aircraft, and</p> <p>(c) Procedures are established and used to alert crew members of inoperative or missing equipment.</p> <p>Procedures</p> <p>(M) to provide instructions to placard the inoperative hand fire extinguisher and its location and to secure hand fire extinguisher in an out of sight location.</p> <p>(O) to provide procedures to inform crew members.</p>

Additional considerations:

When determining the location for storage of the inoperative units, compliance with the dangerous goods requirements must be considered.

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 26 Fire Protection				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
26-17-1 Lavatory Smoke Detection System				
26-17-1A	C	-	0	(M) (O) May be inoperative provided: (a) Lavatory waste receptacle is empty, (b) Associated lavatory door is locked closed and placarded to prohibit passengers from entering, (c) Affected lavatory is used only by crew members, and (d) Associated lavatory is not used for storage of any inflammable or combustible materials. Procedures (M) to provide instructions to lock closed and placard the inoperative lavatory. (O) to provide procedures to brief crew members.
26-17-1B	B	-	0	(M) (O) May be inoperative provided: (a) Lavatory waste receptacle fire-extinguishing system is verified operative, and (b) Procedures are established and used to check periodically absence of smoke in affected lavatory, and (c) Associated lavatory is not used for storage of any inflammable or combustible materials.

26-17-1C (Aeroplanes with passenger capacity of less than 20)	C	-	0	<p>Procedures</p> <p>(M) to provide instructions to verify/test the agent bottle of the lavatory waste receptacle fire-extinguishing system.</p> <p>(O) to provide procedures to ensure affected lavatory is visited periodically by the cabin crew.</p> <p>May be inoperative.</p>
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Additional considerations:

Use of the affected lavatory by the crew members does not authorise storage of inflammable or combustible materials, such as in-flight service waste bags.

The definition of the interval for the periodic check by the crew may appear as arbitrary and this guidance does not mandate any specific interval.

It is proposed to let the operator develop its own procedure depending on the conducted operations under the control of the authority approving the MEL.

Regarding the extinguisher verification, bearing in mind the system is usually verified only through maintenance programme with a period of time between two consecutive checks exceeding the proposed rectification interval, a one-time check before the release for a B (3 days maximum) interval is judged acceptable.

Relief provided under 26-17-1C is applicable only if the installation of lavatory smoke detection system is not required by the type certification basis.

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 26 Fire Protection				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
26-25-1 Lavatory Waste Receptacle Fire-Extinguishing System				
26-25-1A	C	-	0	(M) May be inoperative provided: (a) Lavatory waste receptacle is empty, (b) Associated lavatory door is locked closed and placarded to prohibit passengers from entering, and (c) Affected lavatory is used only by crew members. Procedures: (M) To provide instructions to lock closed and placard the inoperative lavatory. (O) To provide procedures to brief crew members.
26-25-1B (Aeroplanes with passenger capacity of less than 20)	C	-	0	May be inoperative.

Additional considerations:

The lavatory smoke detection system is not considered as an acceptable alternate means to the waste receptacle fire-extinguishing system. However, additional relief may be considered if adequate fire containment capability of the waste receptacle can be demonstrated.

Relief provided under 26-25-1B is applicable only if the installation of lavatory waste receptacle fire-extinguishing system is not required by the type certification basis.

ATA 30 ICE PROTECTION**Summary of the guidance items:**

Item	ATA
Inertial Separators - Position Indicating System	30-00-1
Airframe Aerodynamic Surface Ice Protection Monitoring System	30-10-1
Engine Inlet De-icing/Anti-icing Systems Monitoring System	30-21-1
Pitot Heating Failure Indication System	30-31-2
Alternative Windshield Rain Protection Means (e.g. Rain Repellent System, Coating, etc.) (MC)	30-40-1
Windshield Heating/De-icing Indicating System	30-41-1
Windshield Wipers (MC)	30-42-1
Propeller De-ice/Anti-ice System Monitoring System	30-61-1
Visual Ice Evidence Indication	30-80-1
Ice Detection System	30-80-2

Proposed EASA Guidance Book item:**Aeroplanes**

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				
30-00-1 Inertial Separators — Position Indicating System				
30-00-1A	B	-	0	<p>May be inoperative provided:</p> <p>(a) operations are not conducted at any time in known or forecasted icing conditions, and</p> <p>(b) Operations are conducted in day VMC.</p> <p><u>Note 1:</u> Inertial separators includes pneumatic de-icing systems.</p> <p><u>Note 2:</u> In the absence of any Aircraft Flight Manual limitations, icing conditions should be taken as visible moisture or precipitation, when OAT on the ground and for takeoff, or TAT in flight is 10 °C or below</p>

Additional considerations:

Depending upon the aircraft design, failure of the position indicating system may be compensated by crew monitoring from the flight crew compartment and appropriate wing inspection lights (or alternate means) are operative for night operations.

Condition b) on day VMC may be alleviated based on demonstration of the capability of facing inadvertent encounter of icing conditions during aircraft certification. Aircraft expected types of operation have to be taken into account with regards to the risk exposure to unexpected icing conditions (e.g. FL limitation).

Proposed EASA Guidance Book item:**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
30-10-1 Airframe Aerodynamic Surface Ice Protection Monitoring System				<u>Note</u> : In the absence of any Aircraft Flight Manual limitations, icing conditions should be taken as visible moisture or precipitation, when the OAT is less than +5°C.
30-10-1A	B	-	0	One or more may be inoperative provided operations are not conducted at any time in known or forecasted icing conditions.

Additional considerations:

The above guidance covers items such as wing, vertical/horizontal stabilisers and ice protection monitoring system on airplanes. Additional relief can be granted based on the condition that the airframe aerodynamic surface ice protection system is considered inoperative, provided that such a relief is available in the MMEL. Associated dispatch conditions and rectification intervals may then become applicable.

Proposed EASA Guidance Book item:**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
30-21-1 Engine Inlet De-icing/Anti-icing System Monitoring System				<u>Note</u> : In the absence of any Aircraft Flight Manual limitations, engine icing conditions should be taken as visible moisture or precipitation, when the OAT is less than +10°C.
30-21-1A	B	-	-	May be inoperative provided operations are not conducted at any time in known or forecasted icing conditions.

Additional considerations:

Additional relief can be granted based on the condition that the engine inlet de-icing/anti-icing system is considered inoperative, provided that such a relief is available in the MMEL. Associated dispatch conditions and rectification intervals may then become applicable.

Proposed EASA Guidance Book item:**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
30-31-2 Pitot Heating Failure Indication System 30-31-2A	-	-	-	May be inoperative provided the associated pitot heating system is considered inoperative.

Additional considerations:

Additional relief may be granted based on the certification basis and the applicable operational requirements.

Particular attention shall be paid to design where the failure indication system is covering multiple heaters (e.g. pitot, static, angle-of-attack, TAT/SAT). Cumulative effects should in these cases be evaluated.

Proposed EASA Guidance Book item:**Aeroplanes**

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			
30-40-1 Alternative Windshield Rain Protection Means (e.g. Rain Repellent System, Coating, etc.) (MC)				
30-40-1A	C	-	0	May be inoperative provided: (a) No precipitation is forecasted during a period from one hour before until one hour after the estimated time of departure and arrival at the take-off and destination aerodromes, and (b) Affected system is not part of the equipment required for the intended operation. <u>Note:</u> Take-off and destination aerodromes include any take-off and destination alternate aerodromes required by the operational rules.
30-40-1B	D	-	0	May be inoperative provided windshield wipers are operative.

Additional considerations:

30-40-1A Condition (b) ensures that when low visibility conditions are known or forecasted, approach or take-off minima do not require their use.

This can be verified, for example, by checking the Aircraft Flight Manual for minimum required equipment for Cat II or III approaches and low visibility take-offs.

Proposed EASA Guidance Book item:**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			
30-41-1 Windshield Heating/De-icing Indicating System				
30-41-1A	C	1	(O) May be inoperative provided:	
			(a) The indicating system associated with the pilot handling/flying station is operative, and	
			(b) An alternate procedure is established and used to ensure correct operation of the affected windshield heating system.	
			Procedures	
			(O) To give guidance to perform a pre-flight check of the affected heating system.	
30-41-1B	C	-	0	May be inoperative provided operations are not conducted into known or forecasted icing conditions.

Additional considerations:

The next failure of the heating system may be undetected. Consequently the dispatch is allowed provided that at least the indicating system on the flying pilot's side is operative. This will ensure safe operation into icing conditions.

30-41-1B This option is available only if the windshield heating system does not contribute to structural integrity.

Proposed EASA Guidance Book item:**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			
30-42-1 Windshield Wipers (MC)				
30-42-1A (Aeroplanes)	C	-	0	May be inoperative provided: (a) No precipitation is forecasted during a period from one hour before until one hour after the estimated time of departure and arrival at the take-off and destination aerodromes, and (b) Affected wiper is not part of the equipment required for the intended operation. <u>Note:</u> Take-off and destination aerodromes include any take-off and destination alternate aerodromes required by the operational rules.
30-42-1B (Helicopters)	C	-	-	One or more may be inoperative provided the helicopter is not operated in known or forecast precipitation that requires their use.
30-42-1C	D	-	0	(O) (M) May be inoperative provided an alternative windshield rain protection mean (e.g. Rain Repellent System, Coating, etc.) is installed and verified operative. Procedures (O) or (M) To provide guidance to check correct operation of the system.
30-42-1-1 High Speed Function				
30-42-1-1A	C	-	0	May be inoperative provided that the associated low speed function is operative.

30-42-1-2	Low Speed Function				
30-42-1-2A		C	-	0	May be inoperative provided the associated high speed function is operative.
30-42-1-3	Other Control Function (e.g. Park, Intermittent, etc.)				
30-42-1-3A		C	-	0	One or more may be inoperative provided: (a) It does not affect operation of the wipers, and (b) It is acceptable to the affected flight crew member(s).

Additional considerations:

30-42-1A Condition (b) ensures that when low visibility conditions are known or forecasted, approach or take-off minima do not require their use.

This can be verified, for example, by checking the Aircraft Flight Manual for minimum required equipment for Cat II or III approaches and low visibility take-offs.

30-42-1B accounts for the specific helicopters mission profile (hover capability).

30-42-1C allows dispatch with windshield wipers inoperative when an equivalent system is installed (rain repellent, etc.) provided it has been demonstrated as efficient as the wipers in the certified kind of operations (low speed, light rain, etc.)

30-42-1-1:

It is assumed in this guidance that the efficiency of wipers under low speed is adequate for all kind of precipitations.

Proposed EASA Guidance Book item:**Aeroplanes:**

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
30-61-1 Propeller De-ice/Anti-ice System Monitoring System				<u>Note:</u> In the absence of any Aircraft Flight Manual limitations, engine icing conditions should be taken as visible moisture or precipitation when the OAT is less than +10°C.
30-21-1A	B	-	0	One or more may be inoperative provided operations are not conducted at any time in known or forecasted icing conditions.

Additional considerations:

Additional relief can be granted based on the condition that the propeller de-ice/anti-ice system is considered inoperative, provided that such a relief is available in the MMEL. Associated dispatch conditions and rectification interval may then become applicable.

Proposed EASA Guidance Book item:**Aeroplanes**

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		
30-80-1	Visual Ice Evidence Indication			
30-80-1A		B	-	0
30-80-1B		D	-	0
30-80-1-1	Visual Ice Evidence Indication Lighting system			
30-80-1-1A		D	-	0
30-80-1-1B		B	-	0
<p>Note: In the absence of any Aircraft Flight Manual limitations, icing conditions should be taken as visible moisture or precipitation when the OAT is less than +5°C.</p> <p>May be inoperative provided operations are not conducted in known or forecasted icing conditions.</p> <p>May be inoperative provided procedures are not dependent upon its use.</p> <p>May be inoperative for daylight operations provided procedures are not dependent upon its use.</p> <p>(O) May be inoperative for night operations provided an alternate means is used to illuminate the affected indicator.</p> <p>Procedures</p> <p>(O) An alternate means can be that a portable lamp/light of adequate capacity for wing and/or control surface inspection is available for night operations in icing conditions.</p>				

Additional considerations:

30-80-1B entry applies to systems which are not used as a mean to monitor the ice accretion.

Proposed EASA Guidance Book item:**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				
30-80-1A System certified as an Advisory System	D	-	0	May be inoperative provided procedures do not depend upon its use.
30-80-1B System certified as a Primary Detection System	C	-	0	(O) May be inoperative provided alternate procedures are established and used. Procedures: (O) To provide a procedure to the crew to determine conditions where ice protection system must be activated manually.

Additional considerations:

Advisory detection system on which procedures are based may obtain relief in accordance with the guidance for primary detection system.

Definitions of primary and advisory detection system are provided as follows:

Beside the pilot's appraisal of actual ice built-up (on wiper blades, window frames or propeller spinner), some aeroplanes use in-flight ice detection systems (IIDS). IIDS may either directly detect the presence of ice on the aeroplane surface or detect that the aeroplane is in icing conditions. There are basically two classes of IIDS:

1. The advisory IIDS which trigger a signal in the flight crew compartment. The flight crew is responsible for monitoring the icing conditions or the ice accretion as defined in the Aircraft Flight Manual and activation by the pilot of the ice protection systems remains a requirement.
2. The primary IIDS which is the prime means used to determine when the ice protection systems should be activated. The ice protection systems may be automatically or manually activated.

Considerations for aircraft certified for 'limited' icing conditions have to be taken into account and may result in a different level of relief.

For helicopters, with an optional ice protection/detection system installed for operations into ice conditions, a D rectification interval may be accepted provided that operations are not conducted into known or forecast icing conditions.

ATA 31 INDICATING/RECORDING SYSTEMS**Summary of the guidance items:**

Item	ATA
Clock (MC)	31-21-1
Flight Data Recorder (FDR) (MC)	31-31-1
Combination Recorder (MC)	31-31-2
Quick Access Recorder (or any equivalent Flight Data Monitoring equipment) (MC)	31-31-3
Flight Data Recorder (FDR) Required Parameters (MC)	31-31-4

Proposed EASA Guidance Book item:**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			
31-21-1	Clock (MC)	C	-	0	May be inoperative provided an accurate timepiece is operative in the flight crew compartment indicating the time in hours, minutes and seconds.
31-21-1A					

Additional considerations:

The above is applicable only to those aircraft where the clock has no implication on other equipment, e.g. FDR; otherwise the effects on such other systems must be considered.

If the above is verified and on the basis that the timepiece required does not need to be approved, an accurate pilot's wristwatch which indicates hours, minutes and seconds would be acceptable.

Proposed EASA Guidance Book item:**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 in excess of those required may be inoperative provided the FDR parameters are not required for monitoring purpose.
31-31-1B	A	-	0	<p>May be inoperative provided:</p> <p>(a) The aircraft does not exceed 8 further consecutive flights with the FDR inoperative, and</p> <p>(b) A maximum of 72 hours have elapsed since the FDR was found to be inoperative, and</p> <p>(c) Any Cockpit Voice Recorder required to be carried is operative.</p> <p><u>Note 1:</u> This alleviation is not applicable to combined CVR/FDRs. For those combined systems, see the entries for combination recorders in item 31-31-3.</p> <p><u>Note 2:</u> The flight data recorder is considered to be inoperative when any of the following conditions exist:</p> <p>(i) 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</p> <p>(ii) The need for maintenance has been identified by the system monitors, where available, and the failure origin has not been identified; or</p>

31-31-2A	A	-	0	<p>(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).</p> <p><u>Note 3:</u> Where improper recording affects 5% of the required parameters or less, refer to item 31-31-4.</p> <p>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.</p>
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Additional considerations:

Cockpit voice recorder is covered under item 23-71-1.

Proposed EASA Guidance Book item:**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 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	Flight data recorder and/or 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. <u>Note 1:</u> A combination recorder is a single flight recorder that combines the functions of two or more accident recording functions in a single, crash-protected box.

31-31-2C	A	2	1	<p><u>Note 2:</u> The flight data recorder is considered to be inoperative when any of the following conditions exist:</p> <p>(i) 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</p> <p>(ii) The need for maintenance has been identified by the system monitors, where available, and the failure origin has not been identified; or</p> <p>(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.</p> <p>Note 3: Where improper recording affects 5% of the required parameters or less, refer to item 31-31-4.</p> <p>One of the two required combination recorders may be inoperative for a maximum of 10 calendar days.</p>
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Additional considerations:

Cockpit voice recorder is covered under item 23-71-1.

Proposed EASA Guidance Book item:**Aeroplanes**

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	
31-31-3 Quick Access Recorder (QAR) (or any equivalent Flight Data Monitoring equipment) (MC)				
31-31-3A	C	1	0	(O)(M) May be inoperative when used for Flight Data Monitoring (FDM) purposes, provided that approved alternate procedures, if appropriate to other programmes using associated data, are established and used. Procedures (O) or (M) To provide guidance for alternate procedures associated to data monitoring programmes, as applicable.
31-31-3B	D	1	0	May be inoperative provided that procedures do not depend upon its use.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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	
31-31-4 Flight Data Recorder (FDR) Required Parameters (MC)				
31-31-4A	A	-	-	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:

This item applies whenever the FDR is not considered inoperative in accordance with item 31-31-1B or 31-31-2B but some required parameters have been discovered inoperative.

ATA 33 LIGHTS**Summary of the guidance items:**

Item	ATA
Flight Crew Compartment Lighting	33-10-1
Passenger Compartment Lighting	33-20-1
Cabin Signs ('Fasten Seat Belt', 'No Smoking' Signs, Return to Cabin, NO PED)	33-20-2
Navigation/Position Lights	33-41-1
Anti-Collision Light System	33-42-1
Wing illumination lights	33-43-1
Landing Lights	33-44-1
Cabin Emergency Lighting (Aeroplanes)	33-50-1
Cabin Emergency Lighting (Helicopters)	33-50-1
Exterior Emergency Lighting Systems	33-50-2

Proposed EASA Guidance Book item:**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			
33-10-1	Flight Crew Compartment Lighting				
33-10-1A		C	-	0	May be inoperative for daylight operations.
33-10-1B		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, (b) Sufficient flight crew compartment emergency lighting is operative, and (c) Lighting configuration at dispatch is acceptable to the flight crew.
33-10-1C		C	-	-	Co-pilot's station instrument lights may be inoperative for single pilot operations, provided that no co-pilot's station instrument is required to be used by the pilot.
33-10-1D	(Helicopters and other than CAT Aeroplanes operations)	C	-	0	May be inoperative for daylight operations under VFR.

Additional considerations:

Based on the aircraft flight crew compartment emergency lighting configuration, condition (b) under 33-20-1B has to be clarified to indicate the lights that remain supplied under emergency power supply (e.g. DOME light, etc.).

Proposed EASA Guidance Book item:**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			
33-20-1	Passenger Compartment Lighting				
33-20-1A		D	-	0	May be inoperative provided that passengers are not carried.
33-20-1B	(Aeroplanes)	C	-	-	Individual lights may be inoperative provided that: (a) Lighting is acceptable for the crew located in the cabin to perform their required duties, and (b) Inoperative lights are not part of the cabin emergency lighting.
33-20-1B	(Helicopters)	C	-	-	Individual lights may be inoperative provided that: (a) Inoperative lights do not exceed 50% of the total installed, (b) Lighting is acceptable for the crew located in the cabin to perform their required duties, and (c) Inoperative lights are not part of the cabin emergency lighting.
33-20-1C	(Helicopters)	D	-	0	May be inoperative for daylight operations.

Additional considerations:

If the cabin illumination is used to charge floor mounted emergency photoluminescent lighting system, additional conditions on a minimum of lighting to be provided may be required.

Some lights installed on the aircraft may be part of the cabin emergency lighting equipment. In this case, relief cannot be granted in the MMEL beyond the minimum required configuration.

For cargo and non-passenger carrying operations there must be sufficient lighting for the inspection of cargo for the verification of cargo restraint or for firefighting purposes.

Proposed EASA Guidance Book item:**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
33-20-2 Cabin Signs ('Fasten Seat Belt', 'No Smoking' Signs, Return to Cabin, NO PED)				
33-20-2A	C	-	-	(M)/(O) One or more may be inoperative provided that affected passenger seats, crew member seats or lavatories from which at least one cabin sign is not readily legible are blocked and placarded 'DO NOT OCCUPY'.
33-20-2B	C	-	-	<p>Procedures:</p> <p>(M)/(O) to give guidance reference for a practical mean of prohibiting the use of the affected seat.</p> <p>(O) To alert the crew about affected seats/lavatories.</p> <p>(O) One or more may be inoperative and the affected passenger seats, crew member seats or lavatories may be occupied provided that:</p> <p>(a) The passenger address system is operative and can be clearly heard throughout the cabin during flight, and</p> <p>(b) A procedure is used to notify passengers as appropriate.</p> <p>Procedures:</p> <p>(O) To provide the alternate procedure to crew located in the cabin to notify passengers and crew members when using crew rest facility - bunk, as applicable.</p>

33-20-2C		C	-	-	May be inoperative provided that passengers are not carried.
33-20-2-1	Aural Tone Function	C	-	0	(O) May be inoperative provided that a procedure is established and used to verify that visual indications are taken into account by passengers.
33-20-2-2	Automatic Function	C	-	0	(O) May be inoperative provided that: (a) Manual control function is operative, and (b) An alternate procedure is established and used.

Additional considerations:

The requirement of condition 33-20-2B (a) may not apply to aircraft which are not required to install a passenger address system.

Proposed EASA Guidance Book item:**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			
33-41-1 Navigation/Position Lights				
33-41-1A	C	-	0	One or more may be inoperative for daylight operations.
33-41-1B	C	-	-	Any in excess of those required may be inoperative for night operations.
33-41-1C (Helicopters)	A	-	-	<p>(O) One or more may be inoperative for a single night flight when departing from an offshore or remote installation provided that:</p> <p>(a) The appropriate Air Navigation Service Provider (ANSP) has been informed before departure,</p> <p>(b) The anti-collision light system is operative, and</p> <p>(c) The landing light system is operative.</p> <p>Procedures:</p> <p>(O) To provide guidance to the crew for operations of anti-collision and landing lights.</p>

Additional considerations:

For the purpose of compliance with 33-41-1B for night operations, all except the following minimum may be inoperative:

- One stationary red forward/wing tip light,

- One stationary green forward/wing tip light, and
- One stationary white light on the tail or on each wing tip.

A light composed of more than one bulb or LED, may be partially degraded, but still considered operative for the purpose of the associated requirement, provided that the degraded configuration has been demonstrated acceptable to meet the requirements.

Proposed EASA Guidance Book item:**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			
33-42-1 Anti-Collision Light System				
33-42-1-1 Fuselage Lights (Beacon or Strobe Type)				<u>Note:</u> This guidance may be subject to additional restrictions in accordance with the applicable Rules of the Air.
33-42-1-1A (Aeroplanes)	C	-	1	<u>Note:</u> If the fuselage anti-collision light is inoperative, alternate procedures are established and used when the aircraft is on the ground with engine(s) running. (O) Either the upper or the lower fuselage lights may be inoperative provided that an acceptable number of white wing-tip strobe lights are operative. Procedures: (O) To provide guidance to the crew for operations of anti-collision and strobe lights.
33-42-1-1B (Aeroplanes)	C	-	0	(O) May be inoperative for daylight operations provided that all white wing-tip strobe lights are operative. Procedures: (O) To provide guidance to the crew for operations of anti-collision and strobe lights.
33-42-1-1C (Helicopters)	C	-	1	Any in excess of one may be inoperative.

33-42-1-1D (Helicopters)	A	-	0	<p>(O) One or more may be inoperative for a single night flight when departing from an offshore or remote installation provided that:</p> <p>(a) The appropriate Air Navigation Service Provider (ANSP) has been informed before departure,</p> <p>(b) The navigation light system is operative, and</p> <p>(c) The landing light system is operative.</p> <p>Procedures:</p> <p>(O) To provide guidance to the crew for operations of remaining lights.</p>
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 Wing-Tip/Tail Strobe Lights (if installed)				
33-41-1-2A	C	-	0	One or more may be inoperative.

Additional considerations:

An anti-collision light system is required for Commercial Air Transport (Part-CAT) operations and for other than Commercial Air Transport (Part-NCC) operations under night VFR or IFR.

Additional airspace requirements may apply.

A light composed of more than one bulb or LED, may be partially degraded, but still considered operative for the purpose of the associated requirement, provided that the degraded configuration has been demonstrated acceptable to meet the requirements.

33-42-1-1A:

The acceptable number of white strobe lights has to be defined by the applicant according to the requirements applicable for anti-collision light system.

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 33 Lights				
(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	D	-	0	One or more may be inoperative for daylight operations.
33-43-1B	C	-	0	One or more may be inoperative provided operations are not conducted at any time into known or forecast icing conditions.
33-43-1C	B	-	0	(O) One or more may be inoperative provided a portable lamp/light of adequate capacity for wing and/or control surface inspection is available and used for night operations in icing conditions. Procedures (O) To provide crew procedures in accordance with the above conditions.
33-43-1D	C	-	0	One or more may be inoperative provided ground de-icing procedures do not require their use.

Additional considerations:

Further relief might be granted when the wing illumination lights are not required to ensure ice accretion monitoring (flight/ground).

33-43-1D: For passenger and cargo aeroplanes where view of the wing surfaces from the flight crew compartment is restricted (due to the sweep of the aircraft wing) or for cargo aircraft where access to the aircraft cabin to view ice formation on the wings is not possible, the wing illumination lights may be inoperative provided ground deicing procedures do not require their use.

Proposed EASA Guidance Book item:**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		
33-44-1	Landing Lights				
33-44-1A	(Aeroplanes)	B	-	-	50% of landing lights may be inoperative for night operations.
33-44-1B		C	-	0	One or more may be inoperative for daylight operations.
33-44-1C	(Helicopters)	C	-	1	(O) Any in excess of one adjustable landing light may be inoperative for night operations. Procedures: (O) To provide guidance to the crew for operations of remaining lights

Additional considerations:

The above guidance does not cover the landing light extension/retraction system. Alternate dispatch conditions may be proposed based on the use of Taxi lights, if adequate for the purpose.

A light composed of more than one bulb or LED, may be partially degraded, but still considered operative for the purpose of the associated requirement, provided that the degraded configuration has been demonstrated acceptable to meet the requirements.

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 33 Lights				
(1) System & Sequence Numbers ITEM		(2) Rectification Interval		
		(3) Number installed		
		(4) Number required for dispatch		
		(5) Remarks or Exceptions		
33-50-1	Cabin Emergency Lighting			
33-50-1-1	Overhead Emergency Lighting (each aisle)			
33-50-1-1A		B	-	-
				A maximum of one in four consecutive overhead emergency lights (or light assemblies) may be inoperative. <u>Note:</u> For aeroplanes which have two rows of lights per aisle (i.e. mounted on the overhead bins), then the above alleviation is acceptable for each row of lights but the inoperative lights must not be directly opposite each other.
33-50-1-2	EXIT Signs			
33-50-1-2A		C	-	-
				Up to 50% of the bulbs/LEDs may be inoperative in one or more signs provided that the sign remains legible.
33-50-1-2B		-	-	-
				One may be inoperative provided that the associated door/exit is considered inoperative. Refer to item 52-22. <u>Note:</u> If any twin overwing exits are served by a single sign, both exits should be considered inoperative.
33-50-1-3	Exit Area Lighting			
33-50-1-3A		-	-	-
				May be inoperative provided the associated door/exit is considered inoperative. Refer to item 52-22.

33-50-1-4	Floor Proximity Lighting				
33-50-1-4-1	Individual Lights/ strips				
33-50-1-4-1A		B	-	-	Lights/strips may be inoperative provided that: (a) All lights/strips marking right angle intersection, 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) Along each aisle axis, for a particular lights/strips configuration, specific lights/strips are operative as agreed by the authority.
33-50-1-4-2	EXIT Markers				
33-50-1-4-2A		C	-	-	Up to 50% of the bulbs/LEDs may be inoperative in one or more signs provided that the sign remains legible.
33-50-1-4-2B		-	-	-	One may be inoperative provided that the associated door/exit is considered inoperative. Refer to item 52-22.

Additional considerations:

The proposed guidance is provided as examples of relief generally accepted in MMELs and should be validated on particular cabin design configuration. Different levels of relief may be validated through test showing compliance to requirements even in a degraded configuration. Such relief could then be granted "C" interval relief.

Proposed EASA Guidance Book item:**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			
33-50-1	Cabin Emergency Lighting				
33-50-1-1	Cabin Emergency Lighting System	-	-	-	May be inoperative provided that it is in accordance with the arrangements agreed with the national authority.
33-50-1-2	EXIS Lighting				
33-50-1-2A		B	-	0	May be inoperative for flights over land or for flights over water at a distance from land not beyond 10 minutes flying time at normal cruise speed.
33-50-1-2-1	EXIS 1 Standard Length (24 LEDs)				
33-50-1-2-1A		B	-	0	A maximum of 3 LEDs may be inoperative with no more than 2 adjacent inoperative LEDs.
33-50-1-2-2	EXIS 1 Half Length (12 LEDs)				
33-50-1-2-2A		B	-	0	A maximum of 1 LED may be inoperative.
33-50-1-2-3	EXIS 1 One Third Length (8 LEDs)				
33-50-1-2-3A		B	-	0	A maximum of 1 LED may be inoperative.
33-50-1-2-4	EXIS II				
33-50-1-2-4A		B	-	0	A maximum of 2 LEDs per corner strip, one in each arm, may be inoperative.
33-50-1-2-5	EXIS III				

33-50-1-2-5A	B	-	0	A maximum of 4 LEDs per light assembly may be inoperative; no more than 1 LED is inoperative per band along any side.
33-50-1-3	Helicopter Emergency Egress Lighting System (HEELS)			
33-50-1-3A	B	-	0	May be inoperative for flights over land or for flights over water at a distance from land not beyond 10 minutes flying time at normal cruise speed.
33-50-1-3B	A	-	-	One element on each side of the passenger compartment and/or cockpit may be inoperative for 3 calendar days.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 33 Lights					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval			
		(3) Number installed			
		(4) Number required for dispatch			
		(5) Remarks or Exceptions			
33-50-2	Exterior Emergency Lighting Systems				
33-50-2A		B	-	0	One or more may be inoperative for daylight operations.
33-50-2-1	Escape Slide Lighting				
33-50-2-1A		B	-	0	One or more may be inoperative for daylight operations.
33-50-2-1B		-	-	-	One may be inoperative for night operations provided that the associated door/exit is considered inoperative. Refer to item 52-22-1.
33-50-2-2	Overwing Escape Route Lighting				
33-50-2-2A		B	-	0	One or more may be inoperative for daylight operations.
33-50-2-2B		-	-	-	One may be inoperative for night operations provided that the associated door/exit is considered inoperative. Refer to item 52-22.

Additional considerations:

N/A

ATA 34 NAVIGATION**FLIGHT INSTRUMENTS****Summary of the guidance items:**

Item	ATA
Primary Airspeed Indication	<u>34-10-1</u>
Primary Altitude Indication	<u>34-10-2</u>
Turn and Slip Indicator /Turn Co-ordinators (if installed)	<u>34-10-3</u>
Vertical Speed Indicator	<u>34-10-4</u>
OAT Indicator	<u>34-10-5</u>
Radio Altimeter with an Audio Voice Warning (or equivalent)	<u>34-15-2</u>
Stabilised direction Indication	<u>34-20-1</u>
Magnetic/Standby Compass	<u>34-22-1</u>
Primary Attitude Indication	<u>34-20-2</u>
Standby Attitude Indication	<u>34-20-3</u>

Proposed EASA Guidance Book item:**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		
34-10-1	Primary Airspeed Indication			
34-10-1A	(Aeroplanes)	B	-	-
				<p><u>Note</u>: Standby airspeed indication is not considered as a primary airspeed indication by this guidance.</p> <p>(O) May be inoperative provided that:</p> <p>(a) A primary independent airspeed indication is available at each required pilot's station, and</p> <p>(b) Procedures are established and used to cover the loss of primary airspeed indication in-flight.</p> <p>Procedures:</p> <p>(O) To provide guidance to the crew for monitoring of erroneous indication and to ensure safe flight in case of the failure in-flight of a primary indication.</p> <p><u>Note</u>: The procedure can be based on the use of a secondary (standby) airspeed indication, if installed.</p>
34-10-1B	(Helicopters)	D	-	-
				<p>(O) May be inoperative provided that:</p> <p>(a) A primary independent airspeed indication is available at each required pilot's station, and</p> <p>(b) Procedures are established and used to cover the loss of primary airspeed indication in-flight.</p>

34-10-1C (Helicopters)	B	-	1	<p>Procedures:</p> <p>(O) To provide guidance to the crew for monitoring of erroneous indication and to ensure safe flight in case of the failure in-flight of a primary indication.</p> <p><u>Note:</u> The procedure can be based on the use of a secondary (standby) airspeed indication, if installed.</p> <p>(O) Any in excess of one may be inoperative provided that:</p> <p>(a) The primary airspeed indication is available at the handling pilot's side,</p> <p>(b) Flight is conducted by day under VFR,</p> <p>(c) Operations are not conducted over water, and</p> <p>(d) Procedures are established and used to cover the loss of a primary airspeed indication in-flight.</p> <p>Procedures:</p> <p>(O) To provide guidance to the flight crew to ensure safe flight in case of the failure in-flight of a primary indication.</p> <p><u>Note:</u> The procedure can be based on the use of a secondary (standby) airspeed indication, if installed.</p>
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Additional considerations:

The intent of this guidance is to ensure that the remaining indication essential to the safety of flight still satisfies the applicable requirements.

Applicable requirements are defined as both the airworthiness standards under which the aircraft was certificated and the operating rules under which it is operated.

Relief can therefore be granted for an indication that is provided in excess of the applicable requirements. This may be achieved by the introduction of dispatch conditions to prevent certain kind of operations (e.g. IFR, dual pilot operations).

To comply with the applicable requirements, acceptable means other than duplication of instruments/indicators can be foreseen to ensure that sufficient information is available (e.g. switching of sources, speed tapes, etc.).

Consequently the guidance refers to primary indication rather than indicators or instruments. Additional clarification may be provided at the level of the aircraft type MMEL.

Compliance with airworthiness requirements may lead to the installation of secondary (standby) attitude indication.

The above guidance item does not cover such standby airspeed indication. If a standby airspeed indication is required to comply with airworthiness requirements for certification of

the aircraft, (e.g. CS-23 with EFIS, CS-25, etc.), no relief can be given unless an acceptable level of safety is demonstrated, on a case-by-case basis, in accordance with CS-MMEL.

34-10-1A:

For aircraft fitted with EFIS, the airspeed indicator displays (tape) are considered as the primary airspeed indication and are therefore required at each required pilot station.

For single pilot operations, if credit has been taken during the certification, on the availability of the off side primary airspeed indication in order to meet applicable requirements, this may result in additional restrictions.

34-10-1B:

Same as 34-10-1A, except for the rectification interval.

34-10-1C:

The airspeed indication is less critical for the helicopters to ensure a safe landing further to the loss of airspeed under day VFR overland operations.

Dispatch is authorised with one primary airspeed indication left.

VFR condition allows departure from field under IMC under special VFR procedures.

Proposed EASA Guidance Book item:**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		
34-10-2 Primary Altitude Indication				<u>Note:</u> A secondary/standby altitude indication is not considered as a primary altitude indication.
34-10-2A (Aeroplanes) (Other than commercial air transport operations)	C	-	-	May be inoperative provided that: (a) Flight is conducted under VFR, and (b) An altitude indication is available at each required pilot's station. <u>Note:</u> For single pilot operations, a secondary/standby or off-side indication may satisfy condition (b), if visibility requirements are met.
34-10-2B (Aeroplanes)	B	-	-	May be inoperative provided that: (a) 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. <u>Note:</u> For single pilot operations, a secondary/standby or off-side indication may satisfy condition (b) or (c), if visibility requirements are met.
34-10-2C (Aeroplanes)	B	-	1	May be inoperative provided that: (a) Flight is conducted under VMC in sight of the surface, and

34-10-2D (Helicopters)	C	-	1	<p>(b) A primary altitude indication is available on pilot flying's side.</p> <p>May be inoperative provided that:</p> <p>(a) A primary altitude indication is available at the handling pilot's side, and</p> <p>(b) Operations are conducted under day VFR over routes navigated by reference to visual landmarks.</p>
34-10-2E (Helicopters)	C	-	1	<p>May be inoperative provided that:</p> <p>(a) A primary altitude indication is available at handling pilot's station, and</p> <p>(b) Alternate independent altitude or height indication is operative,</p> <p><u>Note:</u> A secondary/standby altitude indication or radio altimeter indication may satisfy condition (b) if visibility requirements are met.</p>

Additional considerations:

Primary Altitude indication should normally be a sensitive pressure altitude indication.

Proposed EASA Guidance Book item:**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			
34-10-3 Turn and Slip Indicator/Turn Coordinators (if installed)				
34-10-3-1 Turn Indication				
34-10-3-1A (Aeroplanes)	B	-	0	May be inoperative for single pilot operations provided that operations are conducted under day VMC.
34-10-3-1B (Aeroplanes & Helicopters)	C	-	0	May be inoperative for single pilot operations provided that standby attitude indication is operative.
34-10-3-1C (Aeroplanes & Helicopters)	B	-	0	May be inoperative provided that three independent attitude indications are operative
34-10-3-1D (Aeroplanes)	C	-	1	May be inoperative provided that: (a) The operative inclinometer is on the pilot-in-command station, and (b) Primary attitude indications are operative at required pilot's station.
34-10-3-1E (Aeroplanes)	B	-	1	May be inoperative provided that: (a) Operations are conducted under day VMC, and (b) Primary attitude indications are operative at required pilot's station.
34-10-3-2 Slip/Skid Indication				

34-10-3-2A (Aeroplanes & Helicopters)	C	-	1	Any in excess of one may be inoperative provided that the operative slip/skid indication is on the pilot's-in-command station.
34-10-3-2A (Helicopters)	B	-	0	<p>May be inoperative provided that:</p> <p>(a) Operations are conducted under VFR over routes navigated by reference to visual landmarks, and</p> <p>(b) Operations are not conducted over water.</p>

Additional considerations:

Inclinometer entry may apply to equivalent indication displayed as part of an integrated system.

Proposed EASA Guidance Book item:**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			
34-10-4	Vertical Speed Indication (VSI)				
34-10-4A	(Aeroplanes)	C	-	1	Any in excess of one may be inoperative provided that the operative VSI is on the pilot's -in-command side.
34-10-4B	(Aeroplanes)	C	-	1	Any in excess of one may be inoperative for operations under day VMC provided that procedures are not dependent upon its use.
34-10-4C	(Helicopters)	C	-	1	Any in excess of one may be inoperative provided that the operative VSI is on the pilot's -in-command side.
34-10-4D	(Helicopters)	B	-	0	May be inoperative for operations under day VFR over routes navigated by reference to visual landmarks.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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
34-10-5 OAT Indicator				
34-10-5A	C	-	0	<p>(O) May be inoperative provided that another air temperature indication is operative that is convertible to OAT.</p> <p>Procedures:</p> <p>(O) To provide guidance to the crew to convert the alternate temperature indication in OAT, as required.</p>

Additional considerations:

Further relief might be granted for non-commercial operations, short -range flights or when the OAT indicator is not required by the certification basis (e.g. CS-27).

Additional considerations:

RVSM restrictions may apply. One altitude alerting system is required to be operative for RVSM operations.

Rectification interval C may be considered for other than turbo-jet aeroplanes. These aircraft may not have an autopilot installed in which case the autopilot would not be a condition of relief.

Proposed EASA Guidance Book item:**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
34-15-2				
Radio Altimeter with an Audio Voice Warning (or equivalent)				
34-15-2A	A	-	0	<p>(O) May be inoperative provided that:</p> <p>(a) No more than 6 hours shall be flown over water since the radio altimeter was found to be inoperative,</p> <p>(b) A maximum of 24 hours have elapsed since the radio altimeter was found to be inoperative,</p> <p>(c) The helicopter shall not fly over water at an altitude of less than 500 feet except for take-off and landing, and</p> <p>(d) The helicopter shall not descend below 500 feet on approach to landing over water unless the landing site is clearly visible to the pilot.</p> <p>Procedures</p> <p>(O) To provide operational procedures to the flight crew to ensure that applicable dispatch conditions are satisfied.</p>

Additional considerations:

In addition to the equipment required by CAT.IDE.H.145, helicopter involved in NVIS operations shall be equipped with a radio altimeter and a low height warning system giving visual and audio warnings selectable by the pilot and discernible during NVIS operation.

Proposed EASA Guidance Book item:**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			
34-20-1	Stabilised Direction Indication				
34-20-1A	(Aeroplanes other than commercial air transport operations & Helicopters)	C	-	1	May be inoperative provided: (a) a stabilised direction indication is operative on the pilot's-in-command side, and (b) Magnetic/standby compass is operative,
34-20-1B	(Aeroplanes)	C	-	1	May be inoperative for single pilot operations provided that: (a) Operations are conducted under day VFR, and (b) A stabilised direction indication is operative on the pilot's-in-command side, (c) Magnetic/standby compass is operative.
34-20-1C	(Aeroplanes)	C	-	2	May be inoperative provided that: Independent stabilised direction indication is operative at each required pilot's station. <u>Note:</u> A standby heading indication cannot be considered to meet the above dispatch conditions.
34-20-1D	(Aeroplanes)	B	-	1	(O) May be inoperative provided that:

34-20-1E (Helicopters with MCTOM < 3 175 kg)	A	-	0	<p>(a) Operations are conducted under day VFR, and</p> <p>(b) The stabilised direction indication is displayed at each required pilot's station, and</p> <p>(c) Magnetic/standby compass is operative.</p> <p>Procedures:</p> <p>(O) To provide switching procedure to the flight crew to ensure adequate configuration of the displays in accordance with the above condition (b)</p> <p>May be inoperative for a maximum of 5 flights provided that:</p> <p>(a) The operations are conducted under day VFR, and</p> <p>(b) The operations are not conducted over water out of sight of land or with a visibility less than 1 500 m, and</p> <p>(c) A non-stabilised direction indication (e.g. magnetic/standby compass) is operative.</p>
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Additional considerations:

34-20-1C

System architecture and functional integration should be considered in determining additional relief or restrictions.

If electronic flight deck displays are installed, a review of the failure conditions involving loss of heading displays and display of misleading heading information should be conducted in accordance with CS-MMEL 145 prior to considering using this guidance.

34-20-1D

Relief can be considered for night VFR and IFR operations based on a case-by-case evaluation and in accordance with CS-MMEL requirements.

Justifications may take advantage of available equipment providing stabilised direction indication or equivalent (e.g. GPS track).

Whenever independent stabilised direction indication is required for dispatch, compliance is ensured by the availability of independent sources (e.g. stabilised gyros) and so that no single failure can lead to the loss of both heading indications.

Proposed EASA Guidance Book item:**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			
34-22-1 Magnetic/Standby compass				
34-22-1A	B	-	0	May be inoperative for single pilot operations provided that: (a) Operations are conducted under day VFR, and (b) A stabilised direction indication is operative on the pilot's-in-command side, and (c) Another source of magnetic heading is available and visible by the pilot-in-command.
34-22-1B	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	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-in-command.
34-22-1D (Helicopters)	B	-	0	May be inoperative provided that:

				(a) Operations are conducted under VFR, and (b) Two independent stabilised direction indications are operative.
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Additional considerations:

Relief can be considered for night VFR and IFR operations based on a case-by-case evaluation and in accordance with CS-MMEL requirements.

Justifications may take advantage of available equipment providing stabilised direction indication or equivalent (e.g. GPS track).

Whenever independent stabilised direction indications are required for dispatch, compliance is ensured by the availability of independent sources (e.g. stabilised gyros) so that no single failure can lead to the loss of both heading indications.

The two independent stabilised direction indicator systems may be achieved by any combination of two gyroscopic or INS (IRU) stabilised compass systems.

Proposed EASA Guidance Book item:**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			
34-20-2	Primary Attitude Indication				<u>Note</u> : A secondary/standby attitude indication is not considered as a primary indication.
34-20-2A	(Aeroplanes for other than CAT operations)	B	-	0	May be inoperative provided that: (a) Operations are conducted under VFR, and (b) Standby attitude indication is operative.
34-20-2B	(Helicopters for other than CAT operations)	D	-	0	May be inoperative provided that operations are conducted under day VFR.
34-20-2C	(Aeroplanes & Helicopters)	C	-	1	Any in excess of one may be inoperative for single pilot operations provided that: (a) Operations are conducted in day VMC in sight of the surface with adequate external attitude reference, and (b) The primary attitude indication is operative on the pilot's-in-command side, and (c) Standby attitude indication is operative.
34-20-2D	(Aeroplanes & Helicopters)	C	-	2	Any in excess of two may be inoperative provided that:

34-20-2E	(Aeroplanes & Helicopters)	B	-	1	<p>(a) Operations are conducted under VFR, and</p> <p>(b) An independent primary attitude indication is operative at each required pilot's station</p> <p><u>Note:</u> A secondary/standby indication cannot satisfy the above condition (b).</p> <p>(O) Any in excess of one may be inoperative provided that:</p> <p>(a) Operations are conducted under VFR, and</p> <p>(b) The primary attitude indication is displayed on both pilot's stations, and</p> <p>(c) Standby attitude indication is operative.</p> <p>Procedures:</p> <p>(O) To provide switching procedure to the crew to ensure adequate configuration of the displays in accordance with the above condition (b)</p>
34-20-2F	(Aeroplanes) (Single pilot)	A	-	0	<p>May be inoperative for single pilot operations only for a maximum of 2 calendar days provided that:</p> <p>(a) Operations are conducted under day VMC in sight of the surface with adequate external attitude reference, and</p> <p>(b) A standby attitude indication is installed and operative.</p>
34-20-2G	(Helicopters with MCTOM < 3 175 kg)	C	-	0	<p>May be inoperative provided that:</p> <p>(a) Operations are conducted under day VFR, and</p> <p>(b) Operations are not conducted over water out of sight of the land, and</p> <p>(c) Visibility is more than 1 500m.</p>

34-20-3	Standby Attitude Indication				
34-20-3A	(Other than commercial air transport operations)	D	-	0	May be inoperative provided that flight is conducted under VFR with a visual horizon.
34-20-3B	(Aeroplanes & Helicopters)	B	-	0	May be inoperative provided that flight is conducted under day VFR with a visual horizon.

Additional considerations:

34-20-2F:

Prior to allowing dispatch without any attitude indication, a review of the certification requirements as well as the handling qualities and training of the flight crew is required.

34-20-3A & B Standby attitude indication:

It is assumed in this guidance that the standby attitude indicator is needed to meet the applicable requirements (e.g. CS-23.1311 Electronic Flight Display or CS-25.1309) and thus no relief is allowed by this guidance for night VFR or IFR operations. Case-by-case evaluations are however possible, based on the applicable CS-MMEL requirements.

ATA 34 NAVIGATION**NAVIGATION EQUIPMENT****Summary of the guidance items:**

ITEM	ATA
Marker Beacon (MC)	34-31-1
ILS (or MLS) (MC)	34-32-1
Airborne Collision Avoidance System (ACAS) (MC)	34-40-1
Area Navigation System	34-40-2
Weather Detection System (Antenna(s), XCVR(s), Controller(s), Display(s))	34-41-1
Wind shear Detection/Warning System (if installed)	34-41-2
Navigation Systems (based on VOR, DME, ADF, GNSS, INS)	34-51-1
Terrain Awareness Warning System (TAWS)	34-43-1
SSR Transponder Mode A/C	34-54-1
SSR Transponder Mode S	34-54-2

Proposed EASA Guidance Book item:**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
34-31-1 Marker Beacon (MC)				
34-31-1A	C	-	0	May be inoperative under IFR operations provided that approach procedures do not require marker fixes.
34-31-1B	D	-	0	May be inoperative under VFR operations.

Additional considerations:

One marker beacon receiving system is required to be installed where a marker beacon is required for approach navigation purpose.

Proposed EASA Guidance Book item:**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)			
34-32-2A	B	-	0	May be inoperative under IFR operations provided that approaches and missed approaches where navigation is based on ILS are not included in the flight plan.
34-32-2B	D	-	0	May be inoperative under VFR operations.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**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			
34-40-1 Airborne Collision Avoidance System (ACAS) (MC)				
34-40-1A	A	-	0	(O)(M) May be inoperative for a maximum of 10 calendar days provided that: (a) ACAS is deactivated, and (b) Operating procedures do not require its use. Procedures: (O) To provide alternate crew procedures, as applicable. (M) To provide guidance for deactivation of the ACAS.
34-40-1B	C	-	-	(M) Any in excess of those required may be inoperative provided that it is deactivated. Procedures: (M) To provide guidance for deactivation of the ACAS.
34-40-1-1 Combined TA and RA Dual Display				
34-40-1-1A	C	-	1	(O) May be inoperative on the pilot monitoring's side provided that: (a) TA and RA elements and audio functions are operative on the pilot flying's side, and (b) TA and RA display indications are visible to the pilot monitoring.

				<p>Procedures:</p> <p>(O) To provide alternate crew procedures, as applicable.</p>
34-40-1-2 Resolution Advisory (RA) Display Systems				
34-40-1-2A	C	-	1	<p>(O) One may be inoperative on the pilot monitoring side.</p> <p>Procedures:</p> <p>(O) To provide alternate flight crew procedures, as applicable.</p>
34-40-1-2B	C	-	0	<p>(O) One or more may be inoperative provided that:</p> <p>(a) All Traffic Alert (TA) display elements and voice command audio functions are operative, and</p> <p>(b) TA only mode is selected by the crew, and</p> <p>(c) Operating procedures do not require its use.</p> <p>Procedures:</p> <p>(O) To provide alternate crew procedures, as applicable.</p>
34-40-1-3 Traffic Alert (TA) Display System(s)				
34-40-1-3A	C	-	0	<p>(O) One or more may be inoperative provided that:</p> <p>(a) RA display and audio functions are operative, and</p> <p>(b) Operating procedures do not require its use.</p> <p>Procedures:</p> <p>(O) To provide alternate flight crew procedures, as applicable.</p>

Additional considerations:

The deactivation of the ACAS can alternatively be performed through an operational procedure, if acceptable.

34-40-1B covers the failure of the ACAS when the system is not required by operating rules.

Proposed EASA Guidance Book item:**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
34-40-2 Area Navigation System				
34-40-2A	C	-	-	<p>(O) may be inoperative provided that:</p> <p>(a) Applicable airspace requirements for the intended route are complied with,</p> <p>(b) Certified RNP/ RNAV capabilities relevant for the intended route are maintained, and</p> <p>(c) Operational procedures do not require its use.</p> <p><u>Note:</u> The intended route corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.</p> <p>Procedures:</p> <p>(O) To provide information about which procedures require its use .To provide alternate navigation procedures, if applicable.</p>
	A	-	0	<p>(O) May be inoperative for one flight provided that:</p> <p>(a) Routing is planned via ground-based navigational aids taking account of promulgated range, and</p> <p>(b) Permission is obtained from the Air Navigation Service Provider(s) when required for the intended route.</p>

Additional considerations:

The RNAV systems are stated in the Aeronautical Information Publications (or their equivalent) as being required to satisfy operational requirements for airspace procedures.

Additionally, the certified capability may be dependent on a number of systems which may vary from one aircraft type to another. The reference to appropriate operational documentation (Aircraft Flight Manual, FCOM, etc.) may be necessary in order to allow the dispatch, depending on the intended route.

Proposed EASA Guidance Book item:**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			
34-41-1	Weather Detection System (Antenna(s), XCVR(s), Controller(s), Display(s))				
34-41-1A		D	-	-	Any in excess of those required may be inoperative provided that procedures do not require their use.
34-41-1B		C	-	0	May be inoperative provided that operations are conducted in daylight VMC.
34-41-1C		C	-	0	May be inoperative provided that no thunderstorm or other potentially hazardous weather conditions, regarded as detectable with the airborne weather detection system, are forecasted along the route. <u>Note:</u> The route corresponds to any point on the route including diversions to reach alternate aerodromes required by the operational rules.
34-41-1-1	Wind shear Detection/Warning System Predictive Function				
34-41-1-1A		C	-	0	May be inoperative.

Additional considerations:

ACAS item may drive the relief as the same display may be used. Refer to item 34-40-1.

ETOPS requirements are to be considered.

34-41-1-1A:

Considerations have to be taken that the failure of the predictive wind shear function may be a consequence of the loss of inputs from other items (e.g. radio altimeter). In that case, the associated guidance also applies.

Proposed EASA Guidance Book item:**Aeroplanes & helicopters**

ATA Chapter: 34 Navigation				
(1) System & Sequence Numbers ITEM		(2) Rectification Interval		
34-41-2 Wind shear Detection/Warning System (if installed) 34-41-2-1 Reactive Function 34-41-2-1A		(3) Number installed		
		(4) Number required for dispatch		
		(5) Remarks or Exceptions		
		C	-	0

Additional considerations:

The operational procedure shall be developed to:

- Assess and minimise the probability of encountering wind shear during take-off/departure and approach/landing.
- Minimise the effects of unexpected wind shear encounter during take-off/departure and approach/landing.

The above guidance has to be consolidated with the associated restrictions applicable to ground proximity warning system (GPWS) (ATA 34), weather radar system (ATA 34), flight guidance system (ATA 22) or flight director (Guidance Item 22-10-2) should the wind shear predictive or reactive function be performed by those systems.

Proposed EASA Guidance Book item:**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			
34-43-1	Terrain Awareness Warning System (TAWS)				
34-43-1A		A	-	0	May be inoperative for a maximum of 6 flights or 2 calendar days, whichever occurs first.
34-43-1B		C	-	0	Any in excess of those required may be inoperative.
34-43-1-1	Modes 1 to 4				
34-43-1-1A		B	-	0	One or more mode may be inoperative provided that FLTA and PDA functions are operative.
34-43-1-2	Test Mode				
34-43-1-2A		A	-	0	May be inoperative for a maximum of 6 flights or 2 calendar days, whichever occurs first.
34-43-1-3	Glideslope Deviation (Mode 5)				
34-43-1-3A		B	-	0	May be inoperative.
34-43-1-3B		C	-	0	May be inoperative for day VMC only.
34-43-1-4	Terrain System-Forward Looking Terrain Avoidance (FLTA) and Premature Descent Alert (PDA) functions				
34-43-1-4A		B	-	0	May be inoperative provided that: (a) Mode 1-4 are operative, and

34-43-1-5	Advisory Callouts			(b) Approaches procedures do not require its use.
34-43-1-5A	C	-	0	(O) May be inoperative provided that: (a) Low visibility approaches requiring the use of affected callouts are not performed, and (b) Alternate procedures are established and used. <u>Note:</u> Check Flight Manual limitations for approach minima.

Additional considerations:

The above guidance is applicable to either Class A or Class B TAWS.

The mode 1-5 referenced in the guidance correspond to:

Mode 1 — Excessive descent rate (sink rate);

Mode 2 — Excessive terrain closure rate (ground proximity);

Mode 3 — Altitude loss after take-off or go around;

Mode 4 — Unsafe terrain clearance during high speed flight or while not in the landing configuration;

Mode 5 — Below glideslope deviation alert.

FLTA & PDA functions are required for RNP-AR (Required Navigation Performance (RNP) instrument approach procedures with Special Aircraft and Aircrew Authorization Required (SAAAR) operations.

Proposed EASA Guidance Book item:**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		
34-51-1 Navigation Systems (based on VOR, DME, ADF, GNSS, INS)				
34-51-1A (Except for commercial air transport operations)	D	-	0	May be inoperative provided that: (a) Operations are conducted under VFR, and (b) Applicable airspace requirements are complied with.
34-51-1B	C	-	-	(O) One or more may be inoperative provided that: (a) The navigation systems required for each segment of the intended route are operative, and (b) Alternate procedures are established and used, where applicable. <u>Note:</u> The intended route corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules. Procedures: (O) To give alternate procedures in case existing operational procedures are affected.

Additional considerations:

This entry covers failure of navigation systems, e.g. VOR, DME, ADF, INS, and GNSS, that provide approved navigation information to the flight crew as either a stand-alone system or in combination with a navigation management system (e.g. FMS, R-NAV).

However, this entry does not cover the failure of navigation management system.

Others aircraft systems may be affected by the failed navigation system (e.g. TAWS). This has to be reflected on a case-by-case basis when this guidance is applied.

Heading, airspeed, and clock data are not considered as a navigation system by this guidance.

Additional restrictions may apply if required during certification of the navigation systems. As an example, if raw navigation data have been used to achieve an acceptable level of safety, in addition to any multi-sensor computed data, to avoid 'hazardously misleading' navigation information, further restriction on the availability of such raw data information may be required.

Operational rules for the selection of alternate aerodromes are available in operational requirements.

Proposed EASA Guidance Book item:**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			
34-54-1	SSR Transponder Mode A/C			
34-54-1A	A	-	0	(O) May be inoperative for a maximum of 5 flights provided that: (a) Flight is conducted under VFR over routes navigated by reference to visual landmarks, and (b) Permission is obtained from the Air Navigation Service Provider(s) along the route or any planned diversion. <u>Note:</u> Mode C function is required to be operative for RVSM operations
34-54-1B	D	-	-	Any in excess of those required may be inoperative.
34-54-2	SSR Transponder Mode S			
34-54-2A	D	-	-	Any in excess of those required for the intended route, may be inoperative. <u>Note:</u> A SSR transponder with an operative Mode S function is defined as a transponder which can provide, at least, Elementary Surveillance capability.

ATA Chapter: 34 Navigation					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval			
			(3) Number installed		
				(4) Number required for dispatch	
				(5) Remarks or Exceptions	
34-54-2B		C	-	0	<p>One or more may be inoperative provided that permission is obtained from the Air Navigation Service Provider(s) when required for the intended route.</p> <p><u>Note 1:</u> An SSR transponder with an operative Mode S function is defined as a transponder which can provide, at least, Elementary Surveillance capability.</p> <p><u>Note 2:</u> Elementary Surveillance (ELS) capability (Mode S including Aircraft Identification and Pressure Altitude Reporting) is required in European Mode S designated airspace.</p> <p><u>Note 3:</u> Altitude reporting, provided by an SSR transponder Mode S function, is required for ACAS II operation. Refer to item 34-40 for flight with ACAS II inoperative.</p> <p><u>Note 4:</u> Altitude reporting, provided by an SSR transponder Mode S function, is required for flight into RVSM airspace.</p>
34-54-2-1	Enhanced Surveillance Functions				
34-54-2-1A		D	-	0	<p>One or more Downlinked Aircraft Parameters (DAPs), which provide Enhanced Surveillance, may be inoperative when not required for the intended route.</p>
34-54-2-1B		C	-	0	<p>One or more Downlinked Aircraft Parameters (DAPs), which provide Enhanced Surveillance, may be inoperative when required for the intended route.</p> <p><u>Note:</u> Enhanced surveillance capability is required in Mode S EHS notified airspace.</p>

ATA Chapter: 34 Navigation					
(1) System & Sequence Numbers ITEM		(2) Rectification Interval			
		(3) Number installed			
		(4) Number required for dispatch			
		(5) Remarks or Exceptions			
34-54-2-2	Extended Squitter (ADS-B OUT) Transmissions				
34-54-2-2A		D	-	0	One or more extended squitter transmissions may be inoperative when not required for the intended route.
34-54-2-2B		C	-	0	One or more extended squitter transmissions may be inoperative when required for the intended route.

Additional considerations:

Enhanced surveillance is not applicable to helicopters. They are only required to install elementary surveillance. This does not preclude a helicopter from voluntary installation of enhanced surveillance.

24-54-2 SSR Mode S Transponder

If ELS capability of the Mode S transponder is maintained, the 34-54-2B entry is not applicable, but reference to 34-54-2-1 enhanced surveillance functions may be required.

If ELS capability is affected, prior ANSP permission is required.

As an example, this may be achieved through the utilisation of Item 10 of the FPL that can be completed using the designator letters for the surveillance/SSR equipment element as follows:

'S' — Transponder, Mode S, including both pressure altitude and aircraft identification transmission. [This equates to ELS compliant]

'P' — Transponder, Mode S, including pressure altitude transmission but no aircraft identification transmission.

'I' — Transponder, Mode S, including aircraft identification transmission but no pressure altitude transmission.

'X' — Transponder, Mode S, without both pressure altitude and aircraft identification transmission.

'C' — Transponder, Mode A (4 digits - 4096 codes) and Mode C.

'A' — Transponder, Mode A (4 digits - 4096 codes).

'N' — Nil (Hardly likely to be accepted into European airspace).

From a practical ATC perspective, most probably only 'S', 'P', and 'C' would be acceptable to Air Navigation Service Providers (ANSPs), whilst 'C' would reply to ground Mode S interrogations, this level of functionality in a Mode S environment might not be acceptable to all ANSPs in the long term.

ATA 35 OXYGEN**Summary of the guidance items:**

Item	ATA
Supplemental Oxygen System (Non- Pressurized Aircraft)	35-00-1
Flight Crew Fixed Oxygen System (Supplemental)	35-10-1
Passenger/Cabin Crew Oxygen System (Supplemental) (if installed)	35-20-1
First-Aid Oxygen	35-50-1

Proposed EASA Guidance Book item:**Non-pressurised Aeroplanes and Helicopters**

ATA Chapter: 35 Oxygen				
(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- Pressurized Aircraft)			
35-00-1-1	Flight Crew Compartment			
35-00-1-1A		C	-	- One or more may be inoperative provided that the aircraft is not operated above 10 000 ft pressure altitude.
35-00-1-2	Cabin Compartment			
35-00-1-2A		C	-	- Any in excess of those required may be inoperative.
35-00-1-2B		C	-	- One or more may be inoperative provided that the aircraft is not operated above 10 000 ft pressure altitude.

Additional considerations:

35-00-1-1A:

Additional restrictions on air conditioning system, and/or availability of portable oxygen units, may be needed to mitigate the risk against smoke in the flight crew compartment.

35-00-1-2A:

Additional restrictions on air conditioning system, and/or availability of portable oxygen units, may be needed to mitigate the risk against smoke in the cabin.

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 35 Oxygen				
(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 Crew Compartment Pressure Indications			
35-10-1-1A		C	-	-
				(O)(M) One or more may be inoperative provided that a procedure is used to ensure that oxygen supply is above the minimum for the intended flight. Procedures: (O)/(M) to provide an alternate means to compute the available oxygen quantity, e.g. using the pressure gauge located on the bottle.
35-10-1-2	Bottle Gauges			
35-10-1-2A		C	-	0
				One or more may be inoperative provided that the associated flight crew compartment pressure indication is operative.
35-10-1-3	Additional Oxygen Masks (e.g. Supernumerary)			
35-10-1-3A		C	-	0
				One or more may be inoperative provided that the associated seat is not occupied.
35-10-1-3B		C	-	0
				One or more may be inoperative provided that the maximum altitude is limited to 10 000 ft pressure altitude.

Additional considerations:

N/A

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 35 Oxygen				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
35-20-1 Passenger/Cabin Crew Oxygen System (Supplemental oxygen) (if installed)				
35-20-1A	B	-	0	<p>(O)(M) May be inoperative provided that:</p> <p>(a) Maximum altitude is limited to 10 000 ft pressure altitude,</p> <p>(b) An adequate supply of fresh air is provided to the cabin, and</p> <p>(c) Passengers are appropriately briefed.</p> <p>Procedures:</p> <p>(O) or alternatively (M) To set the aircraft in a configuration providing an adequate supply of fresh air to the cabin.</p> <p>(O) To provide a passenger briefing in accordance with the dispatch configuration.</p>
35-20-1B	B	-	0	<p>(O) May be inoperative provided that:</p> <p>(a) Maximum altitude is limited to 25 000 ft pressure altitude,</p> <p>(b) Air conditioning packs are operative,</p> <p>(c) All components of the</p>

				<p>pressurisation system are operative,</p> <p>(d) Aeroplane is able to descend within 4 minutes to a cabin pressure altitude of 13 000 ft at all points along the route to be flown,</p> <p>(e) Portable oxygen units are available for all required cabin crew members,</p> <p>(f) Sufficient oxygen quantity is available for at least 10 % of the passengers for the entire flight time when the cabin pressure altitude is between 10 000 ft and 13 000 ft following a decompression event at the most critical point of the intended route, and</p> <p>(g) Passengers are appropriately briefed.</p> <p>Procedures:</p> <p>(O) to provide passenger briefing in accordance with the dispatch configuration.</p>	
35-20-1-1	Automatic Presentation System				
35-20-1-1A		B	-	0	<p>May be inoperative provided that:</p> <p>(a) The manual deployment from the flight crew compartment is operative, and</p> <p>(b) The maximum altitude is limited to 30 000 ft pressure altitude.</p>
35-20-1-2	Passenger Service Units (Drop-Down Oxygen)				
35-20-1-2A		B	-	-	<p>(M)(O) One or more passenger service units may be inoperative provided that:</p> <p>(a) Affected seats are blocked and placarded to prevent occupancy, and</p> <p>(b) Units are operative for all operative passenger seats, toilet compartments and cabin crew locations.</p> <p>Procedures:</p> <p>(M) or alternatively (O) To give guidance reference for a practical mean of prohibiting the use of the affected seat(s).</p>

Additional considerations:

35-20-1A:

The fresh air is non-re-circulated air.

35-20-1B:

The total amount of supplemental oxygen required in Portable Passenger Oxygen units (e) is in addition to the amount required for first-aid oxygen. The oxygen quantity requirements are based on CAT rules.

The intent of the CAT rules is to ensure that 10% of passenger, wherever there are should have access to oxygen.

This requirement is mainly applicable to small aircraft not certified to fly above FL250. For those small aircraft, portable oxygen units can be embarked for 10% of the passengers and circulated in the aircraft whenever needed.

This is not relevant to big aircraft since it would not be realistic to embark additional portable oxygen bottles for 10% of the passengers and ensure those bottles would be circulated throughout the aircraft in the case of necessity.

35-20-1-1A Automatic Presentation System:

The automatic function of the passenger oxygen system can only be tested by simulation. This is usually done by an MRB task.

The normal system is also checked by MRB task with similar intervals by actuating the flight crew compartment manual control.

The distinction between automatic and manual is made in the certification specification for design requirements as a decompression at flight altitudes of more than 30 000 ft would result in rapid loss of consciousness that justifies the automatic presentation.

Failure of the automatic function is generally not detected until the maintenance task is performed and thus MMEL guidance to cover the loss of this particular function is only justified to release the aircraft after maintenance.

Proposed EASA Guidance Book item:

Aeroplanes

ATA Chapter: 35 Oxygen				
(1) System & Sequence Numbers ITEM		(2) Rectification Interval		
		(3) Number installed		
		(4) Number required for dispatch		
		(5) Remarks or Exceptions		
35-50-1 First-Aid Oxygen				
35-50-1A		D	-	-
		<p>(M)(O) Any portable oxygen dispensing unit in excess of those required may be inoperative or missing provided that:</p> <ul style="list-style-type: none"> (a) Required distribution of operative units is maintained throughout the aircraft, (b) The inoperative portable oxygen dispensing unit is placarded inoperative, removed from the installed location (if portable) and placed out of sight so that it cannot be mistaken for a functional unit, and (c) Procedures are established and used to alert crew members of inoperative or missing equipment. <p>Procedures:</p> <p>(M) To provide instructions to placard the inoperative portable oxygen dispensing unit and its installed location, and to secure the portable oxygen dispensing unit in an out of sight location.</p> <p>(O) To provide procedures to alert crew members.</p>		

Additional considerations:*First-Aid Oxygen Supply Time:*

The minimum oxygen supply time should be equal to the time needed for the aircraft to land on an aerodrome. The minimum oxygen supply time depends of the amount of oxygen needed to supply 2 % of the passengers with oxygen after a decompression.

Number of portable oxygen cylinders:

The number of mandatory portable oxygen cylinders, defined for each aircraft type, is calculated as follows:

- One portable oxygen cylinder is required for each required cabin crew, and
- Portable oxygen cylinders are required for 2 % of the passengers.

The minimum number of required portable oxygen cylinders is determined by the highest number due to the above requirements.

The actual number of portable oxygen cylinders is determined by the operator itself and depends on the flight duration, in particular the time needed to reach the nearest aerodrome for landing.

Relief can be considered for partially filled bottles provided that the oxygen quantity is in accordance with the applicable regulations. In this case, a procedure should be developed to ensure that the total quantity of oxygen in the operative bottles is adequate.

When determining the location for storage of the inoperative units, compliance with the dangerous goods requirements must be considered.

ATA 46 INFORMATION SYSTEMS**Summary of the guidance items:**

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

Proposed EASA Guidance Book item:**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			
ATA				
46-20-1 Electronic Flight Bag (EFB) Systems				
46-20-1A	C	-	0	(M)(O) May be inoperative provided that alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB.
46-20-2 Class 2 EFB				
46-20-2-1 Mounting Device				
46-20-2-1A	C	-	1	(M) (O) Any in excess of one 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 EFB stowage criteria, and (b) Alternate procedures are established and used where operating procedures are dependent upon 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 may be inoperative provided that an alternative means of data connectivity is used.

<p>46-20-3 Power Connection for Class 1 and Class 2 EFB</p>	C	- _	0	<p>(M) (O) May be inoperative provided that alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB.</p> <p>Procedures:</p> <p>(M) To give guidance reference for deactivation of the affected item, as appropriate, and to establish alternate means, as applicable.</p> <p>(O) To provide instructions to the flight crew for alternate procedures to be used.</p>
46-20-3A	C	-	1	<p>(M) (O) Any 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.</p>
46-20-3B	C	-	0	<p>(M) (O) May be inoperative provided that alternate procedures are established and used.</p> <p>Procedures:</p> <p>(M) To give guidance reference for deactivation of the affected item, as appropriate, and to establish alternate means, as applicable.</p> <p>(O) to provide instructions to the flight crew for alternate procedures to be used.</p>

Additional considerations:

The purpose of entry 46-20-1 is not to require inclusion of Class 1 & 2 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.

ATA 52 DOORS**Summary of the guidance items:**

Item	ATA
Door/Exit	52-51-1
Door/Exit (All Cargo Configuration only)	52-51-2

Proposed EASA Guidance Book item:**Aeroplanes**

ATA Chapter: 52 Doors				
(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed	(4) Number required for dispatch		
		(5) Remarks or Exceptions		
52-51-1 Door/Exit 52-51-1A	A	-	-	<p>(O)(M) One, on each deck, may be inoperative for a maximum of 5 flights provided that:</p> <p>(a) The number of passengers carried and the position of the seats which they occupy is in accordance with the the Maximum Passenger Capacity (MPC) table [see guidance provided in 'Additional Considerations'], and</p> <p>(b) Adequate cabin safety procedures are established and used, and</p> <p>(c) Affected door/exit is closed and locked, and</p> <p>(d) The affected door/exit is not used for passenger boarding, nor for any purpose whilst passengers are on board,</p> <p>(e) Affected door/exit is marked with a placard to prohibit utilisation, as applicable, and</p> <p>(f) All the door/exit markings, signs and lights associated with the affected door/exit must be obscured, as applicable.</p> <p>Procedures:</p> <p>(O) To ensure that:</p> <ul style="list-style-type: none"> — All crew members are briefed on the location and condition of the affected door/exit, passenger distribution and modified cabin safety procedures; — Where the affected door/exit can be opened, the briefing should address the possible use of the door for emergency

				<p>evacuation in certain circumstances;</p> <ul style="list-style-type: none"> — The affected emergency exit, escape paths, and blocked seating layout are checked before each take-off and landing; — The pre-take-off briefing to passengers accurately represents the current state and condition of the aircraft's escape facilities; — A verbal briefing by cabin crew, or a briefing using automatic audio/visual presentation, or a briefing by reference to a briefing card, is immediately complemented by a verbal/public announcement to inform passengers that a particular door/exit is inoperative and displays an appropriate placard. <p>(M) To ensure that:</p> <ul style="list-style-type: none"> — Affected door/exit is closed and locked if the closing/locking function is not affected; — If the closing/locking mechanism is affected, the door is secured closed and locked; — A conspicuous barrier, strap or rope and a placard stating 'DO NOT USE' are placed across the affected door/exit, as applicable, prior to passenger boarding; — Associated door/exit markings, signs and lights are obscured or removed. 	
52-51-2	Door/Exit (All Cargo Configuration only)				
52-51-2A		C	-	2	Any in excess of two door/exit not located in the flight crew compartment and intended to be used by the persons on board to evacuate the aeroplane may be inoperative.
52-51-2B		A	-	1	<p>(O) Any in excess of one door/exit not located in the flight crew compartment and intended to be used by the persons on board to evacuate the aeroplane may be inoperative for a maximum of 5 flights.</p> <p>Procedures:</p> <p>(O) To ensure that:</p> <ul style="list-style-type: none"> — All crew members are briefed on the location and condition of the affected emergency exit and modified cabin safety procedures; — A pre-take-off briefing to occupants accurately represents the current state and condition of the escape facilities.

52-51-2C	A	-	1	<p>(O) Any in excess of one door/exit not located in the flight crew compartment may be inoperative for a maximum of 10 calendar days provided that:</p> <p>(a) A specific evacuation procedure is established, and</p> <p>(b) Only flight crew members and authority or operator inspector(s) essential for the flight are on board, and</p> <p>(c) Its external opening mechanism is operative, and</p> <p>(d) Its internal opening mechanism is operative,</p> <p>(e) Its escape slide or slide raft is operative unless an approved alternate means of escape is available, and an appropriate raft (if required) is available,</p> <p>(f) Its associated exit marking or locator sign and its associated floor proximity emergency escape path marking system and its associated exit interior emergency lighting and its exit exterior emergency lighting (for night operations) are operative, unless an operative torch is available for each flight crew member, and</p> <p>(g) Flight crew members are to review the evacuation procedure before each flight.</p> <p>Procedures:</p> <p>(O) To ensure that:</p> <ul style="list-style-type: none"> — All crew members are briefed on the location and condition of the affected door/exit and modified cabin safety procedures; — An alternate evacuation procedure is established and used to cover the specific dispatch configuration.
52-51-2D	A	-	0	<p>(O) All doors/exits not located in the flight crew compartment may be inoperative for a maximum of 3 flights provided that:</p> <p>(a) Specific procedures are established to enter/evacuate the aeroplane,</p>

				<p>(b) An appropriate raft (if required) is available,</p> <p>(c) Only flight crew members and authority or operator's inspector(s) essential for the flight are on board, and</p> <p>(d) Flight crew members are to review the evacuation procedure before each flight.</p> <p>Procedures:</p> <p>(O) refer to 52-51-1C.</p>
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Additional considerations:

52-51-1 Door/exit

52-51-1A

Condition (d):

This condition accounts for human factor considerations. However, it does not preclude the dispatch with a door/exit used for passengers boarding or other purposes when passengers are on board and found to be inoperative afterwards. In this case additional considerations regarding operational procedures have to be taken into account.

In the event that a door/exit which has been used for boarding becomes unserviceable, then, prior to take-off, all passengers must be fully briefed on the inoperative door/exit and the revised emergency procedures are to be used.

Condition (e):

This condition ensures that the door/exit is marked with a placard to prohibit utilization if the failure mode prevents safe opening of the door/exit.

If the affected emergency exit can be opened manually (no failure in the mechanical opening system is present), it may still be used for evacuation in the case of emergency. In this case, the passenger briefing has to be adapted.

The same applies to condition (f).

Condition (f):

In case of 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

52-51-2 Door/exit (All Cargo Configuration only):

Additional conditions may be required if cabin occupants other than flight crew members are carried.

PASSENGER NUMBER REDUCTION AND DISTRIBUTION GUIDANCE

Applicability:

An exit is considered to be inoperative when, e.g. (non-exhaustive list):

- (1) the external exit opening means does not function correctly;
- (2) the internal exit opening means does not function correctly;
- (3) the exit opening power assist mechanism does not function correctly;

- (4) the door gust lock does not function correctly;
- (5) the assisting evacuation means, if required, is inoperative;
- (6) the exit marking or locator sign is inoperative;
- (7) the floor proximity exit marker is inoperative;
- (8) the exit interior emergency lighting is inoperative; or
- (9) the exit exterior emergency lighting or slide illumination, in case of night operation, is inoperative.

Passenger/Seat Occupancy Reduction Guidance:

1. GENERAL

- (1) Any aeroplane configured with two pairs of Type III or larger exits only, is considered to be in an airworthy condition with one passenger emergency exit inoperative provided that the number of passengers is reduced to less than 20 and the entry door is operative.
- (2) Any aeroplane configured with more than two pairs of exits is considered to be in an airworthy condition with one passenger emergency exit inoperative provided that the number and distribution of passengers is in accordance with the maximum permitted (for the complete aeroplane and in each zone) capacity tables (MPC tables) that are specified in the relevant MEL in accordance with paragraph 2 below.

MPC tables are to be established for each exit inoperative configuration in every aeroplane type and model and for each individual passenger seating configuration that shall be operable with the respective exit inoperative.

- (3) ***Not more than one exit may be inoperative.***

In this respect, twin overwing exits (separated by less than three rows) in a side of the aeroplane are considered as a single exit if declared inoperative because of a single common failure (e.g., but not limited to a common slide failure or a common exit locator sign failure.)

2. Calculation of MAXIMUM PASSENGER CAPACITY (MPC) TABLES

(a) General

- (1) For the calculation, it is to be assumed that **both exits of the exit pair are inoperative, if one exit fails.**

An exit pair consists of two exits located essentially directly opposite each other but the combination of a single side exit and a tailcone exit is also considered to be a pair of exits.

- (2) A zone is defined as any section of the passenger cabin which is longitudinally bounded by a pair of exits on both ends or, where passenger seats are installed beyond the most forward or aft pair of exits, by the start or end of the cabin and the nearest pair of exits. If a zone has only an exit pair on one end, it is called a dead end zone.

A zone may also exist between the last exit pair and the tailcone exit (opening), or between an exit pair and a single ventral exit, if there are passenger seats installed in this area.

In aeroplanes where a single side exit and a tailcone exit are considered to be an exit pair and where seats are installed behind the side exit, the last zone starts and the penultimate zone ends at a centre line midway between the side exit and the

tailcone exit (opening). The last zone in this configuration is also considered to be a dead end zone.

Note: Seats installed between the side exit and the tailcone exit are considered to be in the zone forward (or aft respectively) of the centreline midway between the two single exits if their front studs are forward (or aft respectively) of the centreline.

- (3) 'Aeroplane capacity' means the number of passengers calculated for the aeroplane; 'zone capacity' means the number of passengers calculated for a designated zone of the passenger cabin.
- (4) The maximum number of passengers permitted for each *operative* exit pair/exit is defined as follows:

Table 1

Emergency exit	Passenger exit/ exit pair rating
Type A (exit pair)	110
Type B (exit pair)	75
Type C (exit pair)	55
Type I (exit pair)	45
Type II (exit pair)	40
Type III (exit pair)	35
Adjacent type III (less than 3 seat rows)* see Note 2	65
Type IV (exit pair)	9
Ventral exit (single exit)	12
Large tailcone exit (single exit)	25
Other tailcone exit (single exit)	15
Large tailcone exit combined with a Type I or larger exit (exit pair)	45

Note 1: Type B and C are listed above, for aircraft that were certificated using these ratings, if any. Other ratings (e.g. oversized type I, etc.), as determined during certification, may be considered.

Note 2: Dual overwing exit pairs located more than three seat rows apart from each other are considered as separate exit pairs.

Note 3: Two adjacent Type III overwing exit pairs located within three seat rows from each other are considered as one pair of exits (dual Type III exit pair) having a rating of 65. To determine the start or end of a zone bounded on one end by the two adjacent exit pairs, a new centerline midway between the two adjacent exit pairs shall be established. Seats whose front studs are forward of the new centerline are considered to be in the forward zone, seats whose front studs are aft of the new centerline are considered to be in the aft zone.

In case of a single common failure of the adjacent exit pairs, all four exits are assumed to be inoperative. In case of a non-common single failure related to one exit out of the four exits only, one operative Type III exit pair with a rating of 35 remains.

Note 4: Exits of an exit pair that are not of the same size, e.g. a Type III exit on one side of the fuselage and a Type II exit opposite, have the (exit pair) rating of the smaller exit type.

Note 5: A *large* tailcone exit is an exit incorporating a floor level opening of not less than 20 inches wide by 60 inches high, with corner radii not greater than 7 inches, in the pressure shell and incorporating an approved assist means.

Note 6: Any *other* tailcone exit is an exit incorporating an opening in the pressure shell which is at least equivalent to a type III exit and has the top of the opening not less than 56 inches from the passenger compartment floor.

Note 7: The rating of each emergency exit in the passenger compartment installed in excess of the minimum number of required passenger emergency exits is zero for the calculation of the Maximum Passenger Capacity.

(b) Calculation method

Based on the passenger seat layout approved for the individual aeroplane, a drawing of the passenger compartment must first be established clearly showing:

- the position of exits,
- the type of exits,
- the exits above the waterline ('ditching exits')
- the passenger zones,
- the number and position of all passenger seats in each zone,
- the overload capacities of the rafts available at each exit.

Using the above drawing, initial aeroplane capacities for the different inoperative exit cases are to be calculated according to (b) (1) below to ensure that an acceptable level of safety is maintained.

Then initial zone capacities are to be calculated for each case according to (b) (2) below for all zones to avoid overloading of individual zones and to ensure that passenger seating arrangement is optimized.

Finally, the *maximum permitted zone capacities* (MPZC) are to be calculated according to (b) (3) below.

(1) Initial aeroplane capacity:

If only one of the operative exit pairs of the aeroplane is a Type A, Type B, or Type C, this exit pair has to be downrated to Type I before starting the following calculation.

The initial aeroplane capacity with one exit inoperative is the most limiting figure of the following:

- (i) the sum of the passenger exit ratings for all *operative exit pairs/exits* as specified in table 1 of section 2 (a) above;
- (ii) the maximum number of passengers approved for the emergency evacuation as specified on Type Certificate Data Sheet (TCDS) of the aeroplane type or model reduced by the passenger exit rating of the inoperative exit pair or, in case of a single exit, of the inoperative exit;
- (iii) **9**, if only one operative exit pair including doors smaller than Type III is available,

19, if only one operative exit pair of Type III or larger is available,

40, if at least two operative exits pairs are available, of which one pair is Type II or larger,

110, if at least two operative exits pairs are available, of which one pair is Type I or larger,

If at least two operative exit pairs of type I or larger are available, this paragraph (iii) is not applicable.

Note: A dual Type III exit pair (exit rating: 65) is also considered to be 'larger' than a Type I exit pair in this context.

- (iv) whether ditching certification is requested or not, the number of operative exits in both sides of the aeroplane, which meet at least the dimensions of a Type III exit and are above the waterline, has to be multiplied by 35.

If a higher passenger seat/exit ratio has been granted for type certification for any exit above the waterline, this ratio may be used instead of 35.

If there is only one top hatch or one operative side exit above the waterline in each side of the aeroplane that has at least the dimensions of a Type III exit, the initial aeroplane capacity is limited to 35.

If there is only one operative exit above the waterline in each side of the aeroplane that has at least the dimensions of a Type IV exit, the initial aeroplane capacity of the aeroplane must be limited to 9.

- (v) If life rafts are required to be carried:
- a. the sum of the rated capacities of all slide rafts of operative exit pairs including the rated capacity of any life raft, or
 - b. the sum of the overload capacities of all slide rafts of operative exit pairs including the overload capacity of any life raft taking into account the loss of one slide/life raft of the **largest rated** capacity
- whichever is the most limiting.

(2) Initial zone capacities:

To get the initial zone capacities, the following criteria must be applied one after the other using the most limiting zone capacity achieved so far for the next calculation step.

- (i) **Individual zone capacity limitation:**

The capacity of each individual zone shall not exceed the sum of the exit ratings of the operative exit pairs bordering the zone.

In addition, passengers shall not be seated on seat rows adjacent to the affected exit(s).

In case a dead end zone is made up of two adjacent zones one forward and one rearward of the inoperative exit (e.g. first pair of exits is considered inoperative and passengers are seated forward of the pair of exits), the sum of the capacities of the adjacent zones shall not exceed 75 % of the rating of the operative exit pair bordering the dead end zone.

In order to account for potential increased distance between occupied seats and the nearest operative exit, each zone adjacent to an inoperative exit has to be treated as a dead end zone and the associated passenger capacity of the affected zones is downgraded to 75% of the rating of the single pair of exits bordering the zone (rounded down).

Sequential zone capacity limitation:

While traversing the cabin from nose to tail and from tail to nose, the passenger capacity of combined consecutive zones shall not exceed the sum of the ratings of the operative exit pairs bordering and included in the consecutive zones being analysed. The combination of all zones is excluded from the analysis (e.g. for a 4 zones (A/B/C/D) cabin: A+B, A+B+C and D+C, D+C+B combinations have to be analysed). If necessary, the passenger capacity of the affected zone(s) in this combination (i.e. bordered by an inoperative exit pair) shall be reduced accordingly. These reduced capacities, if any, have to be taken into account for the next sequences of the calculation when traversing the cabin in one direction.

(3) Maximum permitted zone capacities (MPZC):

The initial zone capacities must be reduced to maximum permitted zone capacities, the sum of which is limited by the initial aeroplane capacity.

The reduction may be applied equally to all zones or mainly to the zone(s) adjacent to the inoperative exit, as appropriate.

Proposed EASA Guidance Book item:**Aeroplanes & Helicopters**

ATA Chapter: 52 Doors				
(1) System & Sequence Numbers ITEM		(2) Rectification Interval		
		(3) Number installed		
		(4) Number required for dispatch		
		(5) Remarks or Exceptions		
52-52-1	Flight Crew Compartment Door			
52-51-1-1	Locking System			
52-51-1-1A		B	-	0
				(M) (O) May be inoperative provided that: (a) It is deactivated, and (b) A safe position of the door is ensured for take-off and landing, and (c) Alternate crew procedures are established and used for controlling access to the flight crew compartment, in accordance with the applicable national civil aviation security programme. Procedures: (M) To provide guidance for deactivation of the locking system and, if necessary, the means to ensure proper position of the door in accordance with condition (b). (O) To provide alternate crew procedures for controlling access to the flight crew compartment.
52-52-1-2	Flight Crew Compartment Access/Control Functions			
52-52-1-2A		B	-	0
				(O) May be inoperative provided that:

				<p>(a) Emergency means are operative to enable a crew member to enter the pilot compartment in the event that the flight crew becomes incapacitated, and</p> <p>(b) Alternate crew procedures are established and used.</p> <p>Procedures:</p> <p>(O) To provide alternate procedures for the crew to manage access control to the flight crew compartment.</p>
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Additional considerations:

The proposed guidance refers to alternate procedures to be established and used when the locking system of the door is inoperative for controlling access to the flight crew compartment.

These procedures may rely on available locking features installed on the aircraft to meet applicable security requirements.

These procedures will have to consider appropriate actions when a decompression function is dependent on the affected locking system in order to ensure that an acceptable level of safety is maintained.

A restriction of the rectification interval may be considered when evaluating the consequences on airworthiness and security of the proposed dispatch configuration.

The utilisation of part of these procedures for some designs features that may incorporate additional locking features or locking features that were originally designed for use in other than in-flight operations, and which may be accompanied by placards labelled 'For Ground Use Only', etc., is not considered to be part of this guidance.

E. ANNEXES**ANNEX 1****CLASSIFICATION OF CHANGE IN TYPE DESIGN****Subpart D – Changes to type certificates****GMx 21A.91 Classification of changes to a type design****Complementary guidance for classification of changes affecting the MMEL**

- (a) A change to the MMEL is judged to have an 'appreciable effect on the operational suitability of the aircraft' and therefore should be classified major, in particular but not only, when one or more of the following conditions are met:
- (1) The change corresponds to the introduction of a new MMEL item, except when:
 - (i) the item is considered as non-safety-related;
 - (ii) the item has already been approved through a temporary revision or a change proposal; or
 - (iii) the item is indicated as eligible for minor change classification in Appendix 1 to GM1 MMEL.145.
 - (2) The change corresponds to the reduction of the number of items required for dispatch.
 - (3) The change corresponds to an increase of the permitted maximum time prior to repair of an item.
 - (4) The change alters the operating limitations associated to an MMEL item, except when the change has already been approved by the Agency (e.g. AFM).
- (b) A change to the MMEL is judged not to have an 'appreciable effect on the operational suitability of the aircraft' and therefore should be classified minor, in particular but not only, when one or more of the following conditions are met:
- (1) The change only corresponds to the applicability of an item for configuration management purposes.
 - (2) The change is to align with a change of Appendix 1 to GM1 MMEL.145 content associated to an item indicated as eligible for minor change classification.
 - (3) The change corresponds to a reduction of the permitted maximum time prior to repair of an item provided that the Agency is informed about the reason for the change within 2 months after the change is issued.
 - (4) The change corresponds to minor editorial corrections.

ANNEX 2**AVAILABILITY OF MMEL OPERATIONAL AND MAINTENANCE PROCEDURES****Subpart B – Type certificates****GMx 21A.62 Availability of operational suitability data****Availability of MMEL operational and maintenance procedures**

- (a) The operational or maintenance procedures are provided by the holder of the type certificate or restricted type certificate as part of the MMEL or a reference to the appropriate document is available.
- (b) The operational and maintenance procedures are made available by the holder of the type certificate or restricted type certificate to the EU operator of the aircraft before the associated MMEL item becomes applicable.
- (c) The operational and maintenance procedures should be verified by the holder of the type certificate or restricted type certificate before they are made available to the operators.

F. Draft Amendment to AMC and GM to Annex III Organisation Requirements for Air Operations

(PART-ORO)

Subpart GEN – General requirements

Section I - General

AMC1 ORO.GEN.110(e) Operator responsibilities

MEL TRAINING PROGRAMME

- (a) The operator should develop a training programme for ground personnel dealing with the use of the MEL and detail such training in the continuing airworthiness maintenance exposition CAME and OM as appropriate. Such training programme should include:
- (1) the scope, extent and use of the MEL;
 - (2) placarding of inoperative equipment;
 - (3) deferral procedures;
 - (4) dispatching; and
 - (5) any other operator's MEL related procedures.
- (b) The operator should develop a training programme for crew members and detail such training in the Operations Manual. Such training programme should include:
- (1) the scope, extent and use of the MEL;
 - (2) the operator's MEL procedures;
 - (3) elementary maintenance procedures in accordance with with Commission Regulation (EC) No 2042/2003; and
 - (4) pilot in command/commander responsibilities.

GM1 ORO.GEN.110 Operator responsibilities

GROUND PERSONNEL

Ground personnel include maintenance personnel, flight dispatchers and operations officers.

Subpart MLR – Manuals, Logs and Records

GM1 ORO.MLR.105(a) Minimum equipment list

GENERAL

The Minimum Equipment List (MEL) is a document that lists the equipment that may be temporarily inoperative, subject to certain conditions, at the commencement of flight. This document is prepared by the operator for his/their own particular aircraft taking account of their aircraft configuration and all those individual variables that cannot be addressed at MMEL level, such as operating environment, route structure, geographic location, aerodromes where spare parts and maintenance capabilities are available etc., in accordance with a procedure approved by the competent authority.

NON-SAFETY-RELATED EQUIPMENT

- (a) Most aircraft are designed and certified with a significant amount of equipment redundancy, such that the airworthiness requirements are satisfied by a substantial

margin. In addition, aircraft are generally fitted with equipment that is not required for safe operation under all operating conditions, e.g. instrument lighting in day VMC.

- (b) All items related to the airworthiness, or required for the safe operation, of the aircraft and not included in the list are automatically required to be operative.
- (c) Equipment, such as entertainment systems or galley equipment, may be installed for passenger convenience. If this non-safety-related equipment does not affect the airworthiness or operation of the aircraft when inoperative, it does not require a rectification interval, and need not be listed in the operator's MEL, if it is not addressed in the MMEL. The exceptions to this are as follows:
 - (1) Where non-safety-related equipment serves a second function, such as movie equipment being used for cabin safety briefings, operators should develop and include operational contingency procedures in the MEL in case of an equipment malfunction.
 - (2) Where non-safety-related equipment is part of another aircraft system, for example the electrical system, procedures should be developed and included in the MEL for deactivating and securing in case of malfunction. In these cases, the item should be listed in the MEL, with compensating provisions and deactivation instructions if applicable. The rectification interval will be dependent on the secondary function of the item and the extent of its effect on other systems.
- (d) If the operator chooses to list non-safety-related equipment in the MEL, not listed in the MMEL, they should include a rectification interval category. These items may be given a 'D' category rectification interval provided any applicable (M) procedure (in the case of electrically supplied items) is applied.
- (e) Operators should establish an effective decision making process for failures that are not listed to determine if they are related to airworthiness and required for safe operation. In order for inoperative installed equipment to be considered non-safety-related, the following criteria should be considered:
 - (1) the operation of the aircraft is not adversely affected such that standard operating procedures related to ground personnel, and crew members are impeded;
 - (2) the condition of the aircraft is not adversely affected such that the safety of passengers and/or personnel is jeopardised;
 - (3) the condition of the aircraft is configured to minimise the probability of a subsequent failure that may cause injury to passengers / personnel and/or cause damage to the aircraft;
 - (4) the condition does not include the use of required emergency equipment and does not impact emergency procedures such that personnel could not perform them.

AMC1 ORO.MLR.105(c) Minimum equipment list

AMENDMENTS TO THE MEL FOLLOWING CHANGES TO THE MMEL – APPLICABLE CHANGES AND ACCEPTABLE TIMESCALES

- (a) The following are applicable changes to the MMEL that require amendment of the MEL:
 - (1) a reduction of the rectification interval;
 - (2) change of an item, only when the change is applicable to the aircraft or type of operations and is more restrictive.
- (b) An acceptable timescale for submitting the amended MEL to the competent authority is 90 days from the date of applicability specified in the approved change to the MMEL.
- (c) Reduced timescales for the implementation of safety-related amendments may be required if the Agency and/or the competent authority consider it necessary.

AMC1 ORO.MLR.105(d) Minimum equipment list

MEL FORMAT

- (a) The MEL format and the presentation of items and dispatch conditions should reflect those of the MMEL.
- (b) The ATA 100/2200 Specification numbering system for MEL items is preferred.
- (c) Other formats and item numbering systems ~~are acceptable~~ may be used provided they are clear and unambiguous.

AMC1 ORO.MLR.105(d)(1) Minimum equipment list

MEL PREAMBLE

The MEL preamble should:

- (a) reflect the content of the MMEL preamble as applicable to the MEL scope and extent;
- (b) contain terms and definitions used in the MEL;
- (c) contain any other relevant specific information for the MEL scope and use that is not originally provided in the MMEL;
- (d) provide guidance on how to identify the origin of a failure or malfunction to the extent necessary for appropriate application of the MEL.
- (e) contain guidance on the management of multiple unserviceabilities, based on the guidance given in the MMEL; and
- (f) contain guidance on placarding of inoperative items to inform crew members of equipment condition as appropriate. In particular when such items are accessible to the crew during flight; the control(s) and indicator(s) related to inoperative unit(s) should be clearly placarded.

AMC1 ORO.MLR.105(d)(3) Minimum equipment list

SCOPE OF THE MEL

The MEL should include:

- (a) The dispatch conditions associated with flights conducted in accordance with special approvals held by the operator in accordance with Part-SPA.
- (b) specific provision for particular types of operations carried out by the operator. in accordance with ORO.AOC.125.

AMC12 ORO.MLR.105(d)(3) Minimum equipment list

EXTENT OF THE MEL

The operator should include guidance in the MEL on how to deal with any failures that occur between the commencement of the flight and the start of the take-off. If a failure occurs between the commencement of the flight and the start of the take-off, any decision to continue the flight should be subject to pilot judgement and good airmanship. The pilot-in-command/commander may refer to the MEL before any decision to continue the flight is taken.

GM1 ORO.MLR.105(d)(3) Minimum equipment list

SCOPE OF THE MEL

- (a) Examples of special approvals in accordance with Part-SPA may be:
 - (1) RVSM
 - (2) ETOPS

(3) LVO

- (b) Examples of operations carried out by the operator in accordance with ORO.AOC.125 may be:
- (1) crew training
 - (2) positioning flights
 - (3) demonstration flights
- (c) When an aircraft has installed equipment which is not required for the operations conducted, the operator may wish to delay rectification of such items for an indefinite period. Such cases are considered to be out of the scope of the MEL, therefore modification of the aircraft is appropriate and deactivation, inhibition or removal of the item should be accomplished by an appropriate approved modification procedure.

GM2 ORO.MLR.105(d)(3) Minimum equipment list**PURPOSE OF THE MEL**

The MEL is an alleviating document having the purpose to identify the minimum equipment and conditions to operate safely an aircraft having inoperative equipment. Its purpose is not, however, to encourage the operation of aircraft with inoperative equipment. It is undesirable for aircraft to be dispatched with inoperative equipment and such operations are permitted only as a result of careful analysis of each item to ensure that the acceptable level of safety, as intended in the applicable airworthiness and operational requirements is maintained. The continued operation of an aircraft in this condition should be minimized.

GM1 ORO.MLR.105(e);(f) Minimum equipment list**RECTIFICATION INTERVAL (RI)**

The definitions and categories of rectification intervals are provided in CS-MMEL.

AMC1 ORO.MLR.105(f) Minimum equipment list**RECTIFICATION INTERVAL EXTENSION (RIE) - OPERATOR PROCEDURES FOR THE APPROVAL BY THE COMPETENT AUTHORITY AND NOTIFICATION TO THE COMPETENT AUTHORITY**

- (a) The operator's procedures to address the extension of rectification intervals and ongoing surveillance to ensure compliance should provide the competent authority with details of the name and position of the nominated personnel responsible for the control of the operator's rectification interval extension (RIE) procedures and details of the specific duties and responsibilities established to control the use of RIEs.
- (b) Personnel authorising RIEs should be adequately trained in technical and/or operational disciplines to accomplish their duties. They should have necessary operational knowledge in terms of operational use of the MEL as alleviating documents by flight crew and maintenance personnel and engineering competence. The authorising personnel should be listed by appointment and name.
- (c) The operator should notify the competent authority within 1 month of the extension of the applicable rectification interval or within the appropriated timescales specified by the approved procedure for the RIE.
- (d) The notification should be made in a form determined by the competent authority and should specify the original defect, all such uses, the reason for the RIE and the reasons why rectification was not carried out within the original rectification interval.

GM1 OR.OPS.MLR.105(f) Minimum equipment list

RECTIFICATION INTERVAL EXTENSION (RIE)

Procedures for the extension of rectification intervals should only be applied under certain conditions, such as a shortage of parts from manufacturers or other unforeseen situations (e.g. inability to obtain equipment necessary for proper troubleshooting and repair), in which case the operator may be unable to comply with the specified rectification intervals.

AMC1 ORO.MLR.105(g) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) The operational and maintenance procedures referenced in the MEL should be based on the operational and maintenance procedures referenced in the MMEL. Modified procedures may, however, be developed by the operator when they provide the same level of safety as required by the MMEL. Modified maintenance procedures should be developed in accordance with Commission Regulation (EC) No 2042/2003.
- (b) Providing appropriate operational and maintenance procedures referenced in the MEL, regardless of who developed them, is the responsibility of the operator.
- (c) Any item in the MEL requiring an operational or maintenance procedure to ensure an acceptable level of safety should be so identified in the 'remarks' or 'exceptions' column/part/section of the MEL. This will normally be '(O)' for an operational procedure, or '(M)' for a maintenance procedure. '(O)(M)' means both operational and maintenance procedures are required.
- (d) The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator.

GM1 ORO.MLR.105(g) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES

- (a) Operational and maintenance procedures are an integral part of the compensating conditions needed to maintain an acceptable level of safety, enabling the competent authority to approve the MEL. The competent authority may request presentation of fully developed (O) and/or (M) procedures in the course of the MEL approval process.
- (b) Normally, operational procedures are accomplished by the flight crew; however, other personnel may be qualified and authorised to perform certain functions.
- (c) Normally, maintenance procedures are accomplished by the maintenance personnel; however, other personnel may be qualified and authorised to perform certain functions in accordance with Commission Regulation (EC) No 2042/2003.
- (d) Operator's manuals may include the OM, the CAME or other documents. Operational and maintenance procedures, regardless of the document where they are contained, should be readily available for use when needed for the application of the MEL.
- (e) Unless specifically permitted by a maintenance procedure, an inoperative item may not be removed from the aircraft.

AMC1 ORO.MLR.105(h) Minimum equipment list

OPERATIONAL AND MAINTENANCE PROCEDURES - APPLICABLE CHANGES

- (a) Changes to the operational and maintenance procedures referenced in the MMEL are considered applicable and require the amendment of the maintenance and operating procedures referenced in the MEL when the:
 - (1) modified procedure is applicable to the operator's MEL; and
 - (2) purpose of this change is to improve compliance with the intent of the associated MMEL dispatch condition.

- (b) An acceptable timescale for the amendments of maintenance and operating procedures as defined in (a), should be 90 days from the date when the amended procedures referenced in the MMEL are made available. Reduced timescales for the implementation of safety related amendments may be required if the competent authority consider it necessary.

AMC1 ORO.MLR.105(j) Minimum equipment list

OPERATION OF AN AIRCRAFT WITHIN THE CONSTRAINTS OF THE MMEL - OPERATOR'S PROCEDURES FOR THE APPROVAL BY THE COMPETENT AUTHORITY

- (a) The operator's procedures to address the operation of an aircraft outside the constraints of the MEL but within the constraints of the MMEL and ongoing surveillance to ensure compliance should provide the competent authority with details of the name and position of the nominated personnel responsible for the control of the operations under such conditions and details of the specific duties and responsibilities established to control the use of the approval.
- (b) Personnel authorising operations under such approval should be adequately trained in technical and operational disciplines to accomplish their duties. They should have the necessary operational knowledge in terms of operational use of the MEL as alleviating documents by flight crew and maintenance personnel and engineering competence. The authorising personnel should be listed by appointment and name.

GM1 ORO.MLR.105(j) Minimum equipment list

OPERATION OF AN AIRCRAFT WITHIN THE CONSTRAINTS OF THE MMEL - OPERATOR'S PROCEDURES FOR THE APPROVAL BY THE COMPETENT AUTHORITY

Procedures for the operation of an aircraft outside the constraints of the MEL but within the constraints of the MMEL should only be applied under certain conditions, such as a shortage of parts from manufacturers or other unforeseen situations (e.g. inability to obtain equipment necessary for proper troubleshooting and repair), in which case the operator may be unable to comply with the constraints specified in the MEL.