



EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

OSD Workshop

Master Minimum Equipment List

CS-MMEL

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- CS-MMEL: Key differences with JAR-MMEL/MEL
- Transition
- Role of Aircraft Manufacturers(Dassault)
- Role of Operators
- Role of National Aviation Authorities



- ASAWG – MMEL Recommendation
- MMEL Guidance Book
- (M) and (O) Procedure Validation
- Effective Date
- Full EASA MMEL
- DOA Privileges



MMEL Relief is accepted based on the ability to maintain an acceptable level of safety, as intended by the applicable requirements:

- **JAA MMEL Procedures manual talks of the need for quantitative analysis,**
- **But what is an acceptable level of safety relative to CS XX.1309?**
- **When does this need to be demonstrated?**

ARAC – ASA WG sub-group involving industry and regulators



CS-MMEL-145 (d) Justification of MMEL items

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.**

ASA WG – MMEL Recommendation



- MMEL Guidance Book created to help standardise entries for common items.
- Replaces TGL26, utilised through “As req’d by...”, but at MMEL level instead of MEL level.
- Operational items can be identified at MMEL level to allow third country operators ability to differ.



Reason for change;

- Legally allow dispatch below the OPS implementing rules, when appropriate,
- Better adapt to the aircraft design,
- Eliminate the risk of operator taking relief when items are not applicable to them,
- Simplify the process for operators to generate their MEL,
- Align with other regulatory systems that have guidance at MMEL level and not MEL level.



- TC holder still required to produce Operational (O) & Maintenance (M) procedures as guidance for operators.
- However, they now need to show that the (O) & (M) are appropriately validated.



- Introduction of Effective Date concept.
- Allows for delays in (S)TC Holder publication process
- Operators have 90 days from when the MMEL becomes available to them



- JAR-MMEL/MEL & JAA MMEL Procedures Manual both contained reference to supplements for foreign manufactured aircraft.
- Now full EASA MMEL expected for all.
- Addresses issues of trying to align two frequently changing documents



DOA Privileges

- As MMEL will need to be added to (S)TC Holders DOA, then the possibility to have privileges will exist.
- No formal guidance will exist initially (on-going RM task)
- But criteria were agreed as part of CS-MMEL process and the possibility would exist to base privileges on these criteria if applicable.

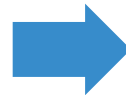


- Process Transition
- Reference Documents
- Transition – Practical Examples



OEB Today

- Voluntary basis
- Conducted under MoU between EASA and Member States
- Output is a recommendation to the NAAs
- Ownership unclear



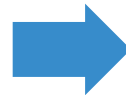
OSD Tomorrow

- Required for all models before entry into service within EASA Member state
- Conducted under Part 21 as part of Operational Suitability Data (OSD)
- Output is an EASA approved MMEL
- Held by (S)TC holder



OEB Today

- JAR-MMEL/MEL
- JAA MMEL Procedures Manual
- TGL 26 JAA Guidance Document for MEL Policy



OSD Tomorrow

- Part 21
- CS-MMEL (Books 1 & 2)
- (CS-Generic MMEL for non-complex)
- Internal Procedures and Work Instructions
- Certification Handbook
- MMEL Guidance Book (appendix to CS-MMEL Book 2)



Existing EASA MMEL established through (J)OEB Process

- The amendment to 748/2012 proposes a new Article 7a (Operational Suitability Data) which contains the following sub-paragraph 3:
*"Operational Evaluation Board reports and **master minimum equipment lists** issued in accordance with JAA procedures or by the Agency before the entry into force of this Regulation shall be deemed to constitute the operational suitability data.... Before 18 June 2014 the relevant type certificate holders shall propose the Agency a division of the operational suitability data in mandatory data and non-mandatory data."*
- No change in format of MMEL anticipated.
- Update of MMEL Preamble (as per CS-MMEL) in conjunction with EASA Operating rules is sufficient to detail status of data.
- Regulatory basis remains unchanged.
- MMEL to be recognised on associated TCDS.



Ongoing Evaluation – application filed

- Regulatory basis can be JAR-MMEL/MEL or CS-MMEL
 - If already agreed remains unchanged
- MMEL Preamble as per CS-MMEL in conjunction with EASA Operating rules is sufficient to detail status of data.
- For in-production models approval shall be obtained by 18th December 2015 or before the aircraft is operated by an EU operator, whichever is the latest (i.a.w. article 7a Operational Suitability Data)
- MMEL to be recognised on associated TCDS.



New Model/ Change to be added to existing MMEL for Type

- Through the CPR process, if the Agency finds the change to be not significant then the Regulatory basis may remain the same as for the existing MMEL.
- Approval shall be obtained by 18th December 2015 or before the aircraft is operated by an EU operator, whichever is the latest (i.a.w. article 7a Operational Suitability Data)
- MMEL to be recognised on associated TCDS.



In Production Model without existing EASA MMEL

- TC holder to apply for a catch-up process based upon existing MMEL approved by their primary certification authority.
- A reduced review process giving credit for approval status.
- Appropriate certification basis would be considered to be CS-MMEL
- Approval shall be obtained by 18th December 2015 or before the aircraft is operated by an EU operator, whichever is the latest (i.a.w. article 7a Operational Suitability Data)
- MMEL to be recognised on associated TCDS.

OSD MMEL - Agenda

- ***Impacts of CS-MMEL on Dassault Falcon MMELs***
 - ◆ Scope and substantiation methods
 - ◆ Format of MMEL
 - ◆ Approval process
 - ◆ Availability of MMEL to end-users
 - ◆ Foreign MMELs

OSD MMEL – Impact on Substantiation (1/2)

- **Scope and substantiation methods**
 - ◆ Justification of MMEL items [CS MMEL.145 and associated GM]
 - Qualitative assessment first...
 - * Includes evaluation of items involved in non-normal or emergency procedure [GM4 MMEL.145(c)]
 - ... to be supplemented by a Quantitative assessment when the MMEL dispatch conditions leaves the aircraft:
 - * 1 failure away from Hazardous failure conditions (objective 10^{-6} with few exception down to 10^{-5} per FH)
 - * 2 failures away from Catastrophic failure conditions (objective 10^{-8} with few exception down to 10^{-7} per FH)

OSD MMEL – Impact on Substantiation (2/2)

- **Scope and substantiation methods (cont'd)**

- ◆ Procedures for (O) and (M)

- (O) and (M) are Box 2 [§(a)(2) CS MMEL.107]
 - * TCH/Applicant has to provide data, Operator/end user may use the Data or has to Provide an alternate Equivalent Safety Level
- Intent of (O) and (M) should be specified in the item justification [§(e) CS MMEL.145]
- Description of the validation method of (O) and (M) should be made available to the Agency upon request [§(b) of GM1 MMEL.125]

- ◆ TGL26 / CS-MMEL Book2

- Dispatch cases « As required by the regulation » previously managed by the Operators (TGL26), should now be addressed by Manufacturers (CS-MMEL Book2)

OSD MMEL – Impact on Format

- **Impact on Format**

- ◆ Preamble *[GM5 MMEL.120]*

- New Preamble to take into account (< June 18th, 2014)

- ◆ ATA specification 100 or 2200 code system *[§(d) of GM1 MMEL.120]*

- New item numbering if 2200 is chosen by Applicant

OSD MMEL – Approval Process

- ***Impact on Approval process***
 - ◆ Manufacturers are required to extend their design organisation approval to include operational suitability aspects before 18 December 2015.
 - ◆ Rulemaking task has started for Changes to OSD (RMT.0607), to provide guidance on how to approve « minor » MMEL changes
 - Principles for Classification of changes [*draft GM 21A.91*] should be made consistent with those for AFM minor changes.
 - ◆ Dassault Aviation will request DOA privileges for MMEL, since MMEL is the most mature OSD based on decades of experience

OSD MMEL – Availability of MMEL

- **Availability of MMEL to end-users**
 - ◆ Notion of « Effective Date » (starting point for the 90 days), different from « Approval Date » [§b)1) CS-MMEL.120, and §(b) AMC1 ORO.MLR.105(c)]

OSD MMEL – Foreign MMEL (1/2)

- **FAA MMEL**

- ◆ Industry recalls its will for a change to the TIP for implementing validation principles about MMEL approval
- ◆ Start harmonizing technical standards which drive FAA and EASA approval of MMEL
- ◆ Enable a process allowing manufacturers to address MMEL changes in the same time frame as for other activities for product certification
- ◆ Allow candidate TC Holder to handle the MMEL in the same way as for the other manuals related to the product (Flight Manual, Maintenance Manual, ...).

OSD MMEL – Foreign MMEL (2/2)

- **Other than FAA MMEL**
 - ◆ Most of foreign CAA (ANAC, TCCA, CAAC) accept EASA MMEL as the basis for their Operator's MEL
 - Concern that foreign Authorities rely on EASA MMEL, having different Air Operations rules, and therefore different MMEL/MEL Policy compared to European ones published in CS-MMEL Book2
 - EASA will agree on a mean (example: Preamble) to identify operational items « As required by the regulations » as non-binding for foreign CAA



- MEL Regulatory Framework
- 965/2012 Air Operations
 - Article 9 Minimum Equipment List
- Annexes to 965/2012
 - ORO.MLR.105 Minimum Equipment List
 - ARO.OPS.205 Minimum equipment list approval



**BR annex IV 8.a.3
implemented
through**

**Reg. 965/2012
for Air Operations**

**Cover Regulation
Article 9**

(on transition measures)

Most relevant Annexes

Part-ARO

Part-ORO

**references to OSD and
MEL also in other
Annexes**

**ARO.OPS.205
ORO.MLR.105**

**CAT.IDE.A/H.105
NCO.GEN.155**

...

**Supplemented by
extensive**

AMCs & GMs

**MEL format
MEL content
Specific issues**



Article 9 Minimum equipment lists

Minimum equipment lists ('MEL') approved by the State of Operator or Registry before the application of this Regulation, are **deemed to be approved** in accordance with this Regulation and may **continue to be used by the operator**.

Changes to above MEL, for which an EASA MMEL is established as part of OSD shall be made in compliance with ORO.MLR.105, at the earliest opportunity and not later than **18 December 2017** or 2 years after the OSD was approved whichever is the latest.

Changes to MEL, for which no OSD MMEL exists, shall continue to be made in accordance with the MMEL accepted by the State of Operator or Registry as applicable.



ORO.MLR.105

(a) A minimum equipment list ('MEL') shall be established as specified in point 8.a.3 of Annex IV to Regulation (EC) No 216/2008, based on the relevant master minimum equipment list ('MMEL') as defined in the mandatory part of the operational suitability data established in accordance with Regulation (EU) No 748/2012.

Note: To be amended to take account of case where no OSD MMEL exists



ARO.OPS.205 Minimum equipment list approval

- NAA remain responsible for approval of MELs
- The NAAs shall approve the operator's procedure for the extension of the applicable rectification intervals B, C and D, if the conditions specified in ORO.MLR.105(f) are demonstrated by the operator and verified by the NAA.
- The NAAs shall approve, on a case-by-case basis, the operation of an aircraft outside the constraints of the MEL but within the constraints of the master minimum equipment list (MMEL), if the conditions specified in ORO.MLR.105 are demonstrated by the operator and verified by the NAA.



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Questions?

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