



Workshop on Specific Approvals organized by ICAO WACAF

MMEL/MEL Module: 5. Beyond MMEL

Presentation by Airbus

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AIRBUS
EC_NotTechnical

Agenda

Quizz

Rectification Interval Extension

Additional considerations for dispatch

Aircraft dispatch beyond MMEL

Best Practices

QUIZ

What is the duration of the widespread category “D” Repair Interval (or Rectification Interval) as specified in the EASA CS-MMEL regulations?

- A. 10 flights
- B. 120 consecutive calendar days
- C. 10 working days
- D. 120 flight hours

QUIZ

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- A. 10 flights
- B. 120 consecutive calendar days**
- C. 10 working days
- D. 120 flight hours

QUIZ

Which one of the following statement is true?

- A. The MMEL lists some non-safety equipment, which may be inoperative for an unlimited period of time.
- B. The aircraft manufacturer develops the MMEL.
- C. The MEL provides the flight crew with the abnormal procedures to apply in case of an aircraft system failure during the flight.
- D. The MEL is used prior to the flight in order to check that all NO-GO items are operative.

QUIZ

Which one of the following statement is true?

- A. The MMEL lists some non-safety equipment, which may be inoperative for an unlimited period of time.
- B. The aircraft manufacturer develops the MMEL.**
- C. The MEL provides the flight crew with the abnormal procedures to apply in case of an aircraft system failure during the flight.
- D. The MEL is used prior to the flight in order to check that all NO-GO items are operative.

QUIZ

- All aircraft LRUs are covered by the (M)MEL Yes or No
- A/C is Airworthy when dispatched under M(MEL) Yes or No
- You can extend a repair interval A Yes or No

QUIZ

- All aircraft LRUs are covered by the (M)MEL Yes or **No**
- A/C is Airworthy when dispatched under M(MEL) **Yes** or No
- You can extend a repair interval A Yes or **No**

QUIZ

The MEL....: (Several answers might be possible)

- A. ...is a document developed by the operator.
- B. ...is less restrictive than the MMEL.
- C. ... is the list of all the safety equipment, which may be inoperative for a limited period of time.
- D. ... is the list of all the safety and non-safety equipment, which may be inoperative for a limited period of time.
- E. ... is a major contributor to achieve a smooth and uninterrupted operation of the aircraft.

QUIZ

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- A. ...is a document developed by the operator.**
- B. ...is less restrictive than the MMEL.
- C. ... is the list of all the safety equipment, which may be inoperative for a limited period of time.
- D. ... is the list of all the safety and non-safety equipment, which may be inoperative for a limited period of time.**
- E. ... is a major contributor to achieve a smooth and uninterrupted operation of the aircraft.**

QUIZ

The Stabilizer Actuator Electrical Motor 1 is reported inoperative in the logbook of the aircraft.

The associated MEL item is as follows:

27-40-02

Stabilizer Actuator Electric Motor

■ 27-40-02A Electric motor 3 inoperative

Repair Interval	Nbr Installed	Nbr Required
C	3	2

The stabilizer actuator electric motor 3 may be inoperative.

■ 27-40-02B Electric motor 2 inoperative

Repair Interval	Nbr Installed	Nbr Required
C	3	2

The stabilizer actuator electric motor 2 may be inoperative provided that:

- 1) ETOPS is not conducted, and
- 2) ELAC 1 pitch channel is considered inoperative.
Refer to [Item 27-93-01 ELAC 1](#)

The aircraft only flies on ETOPS routes. There is no available spare. Is it possible to apply the MEL for the next flight?

Note: Swapping of equipment is not permitted.

- A. YES: the Flight Crew must perform an operational procedure and the maintenance must perform a deactivation procedure.
- B. YES: the maintenance must perform a deactivation procedure.
- C. YES, for one flight only before midnight (23:59).
- D. NO

QUIZ

The Stabilizer Actuator Electrical Motor 1 is reported inoperative in the logbook of the aircraft.

The associated MEL item is as follows:

27-40-02

Stabilizer Actuator Electric Motor

■ 27-40-02A Electric motor 3 inoperative

Repair Interval	Nbr Installed	Nbr Required
C	3	2

The stabilizer actuator electric motor 3 may be inoperative.

■ 27-40-02B Electric motor 2 inoperative

Repair Interval	Nbr Installed	Nbr Required
C	3	2

The stabilizer actuator electric motor 2 may be inoperative provided that:

- 1) ETOPS is not conducted, and
- 2) ELAC 1 pitch channel is considered inoperative.
Refer to [Item 27-93-01 ELAC 1](#)

The aircraft only flies on ETOPS routes. There is no available spare. Is it possible to apply the MEL for the next flight?

Note: Swapping of equipment is not permitted.

- A. YES: the Flight Crew must perform an operational procedure and the maintenance must perform a deactivation procedure.
- B. YES: the maintenance must perform a deactivation procedure.
- C. YES, for one flight only before midnight (23:59)
- D. **NO**

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Quizz

Rectification Interval Extension

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Repair Interval Extension

Rectification Interval	B	C	D
Calendar days (excluding the day of discovery)	3	10	120



Rectification Interval A

- ❑ No standard interval specified
- ❑ Interval defined during quantitative assessment or by engineering judgment
- ❑ Interval may be reflected by number of flight hours, number of flights, etc.

Repair Interval Extension

ARO.OPS.205 Minimum equipment list approval

- (a) When receiving an application for initial approval of a minimum equipment list (MEL) or an amendment thereof from an operator, the competent authority shall assess each item affected, to verify compliance with the applicable requirements, before issuing the approval.
- (b) The competent authority 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 competent authority.
- (c) The competent authority 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 competent authority.

EU Regulation ARO-OPS extract

RIE may be assessed by Operator as per a sound process agreed with Local Aviation Authorities

Repair Interval Extension

EU AMC & GM to Part-ORO extract

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.

RIE may be assessed by Operator as per a sound process agreed with Local Aviation Authorities

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Rectification Interval Extension

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Additional Options - Dispatch conditions switching

Benefit:

For special operations restrictions: ETOPS vs non-ETOPs, landing capability,

To cope with maintenance personnel availability: no (m) vs (m)

To cope with spare availability: use longer repair interval

How to Use:

“When necessary, the Operator may **successively apply other dispatch conditions** of the same item provided that the Operator complies with the MEL requirements and provided that the **starting point of the repair interval countdown is not modified.**”

Dispatch condition switching example

Due to short Turn Around:
→ Aircraft first dispatched under 24-23-01A for C repair interval

APU repair not possible within 20 days:

→ Second dispatch under 24-23-01C with APU GEN deactivation or removal
But for “D” repair interval: 120 days

24-23-01AC Auxiliary Generation (APU Generator, APU GCU or GAPCU Auxiliary Power Control function, Line Contactor)

☒ 24-23-01A APU considered inoperative

Repair Interval	Nbr Installed	Nbr Required
C	1	0

Placard

May be inoperative provided that:

1) ETOPS beyond 180 min is not conducted, and

2) The APU is considered inoperative.

Refer to [Item 49-10-01 Power Plant \(APU\)](#)

☐ 24-23-01B Electrical failure

Repair Interval	Nbr Installed	Nbr Required
C	1	0

Placard

o

m

May be inoperative provided that:

1) ETOPS beyond 180 min is not conducted, and

2) The failure is not mechanical related (as defined in the maintenance procedure), and

3) The APU GEN pb-sw is set to OFF.

☐ 24-23-01C AC auxiliary generation deactivated or removed (mechanical failure)

Repair Interval	Nbr Installed	Nbr Required
D	1	0

Placard

o

m

May be inoperative provided that:

1) ETOPS beyond 180 min is not conducted, and

2) The AC auxiliary generation is deactivated or removed.

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Additional Options - Swapping

Benefit:

For special operations restrictions for one position vs another for the same LRU:

- ❑ NOGO vs GOIF
- ❑ ETOPS vs non-ETOPS, ...

TSM introduction: Swapping for aircraft dispatch purpose

When an suspected faulty LRU is a NO GO as per MEL in its original position (A) but less penalizing in another position (B)

It is allowed to swap the faulty LRU (X) with the same P/N LRU (Y) on the same aircraft if and only if

- **The subject LRU is confirmed faulty by the applicable TSM fault isolation**

Additional Options - Swapping - Example

Example 1: ADR 1 inop

Swap ADR from position 1 to 2 o recover ETOPS

Example 2: LGCIU 1 inop

Swap LGCIU from position 1 to 2 to avoid AOG

34-10-01

ADR

■ 34-10-01A ADR 1 or ADR 3 inoperative

Repair Interval	Nbr Installed	Nbr Required
A	3	2

Placard

o ADR 1 or ADR 3 may be inoperative for 10 consecutive calendar days provided that ETOPS is not conducted.

Note: If ADR 1 is inoperative, the GPWS basic modes are considered inoperative and the predictive GPWS functions are inoperative.
Refer to [Item 34-40-01 GPWS Basic Modes](#), and
Refer to [Item 34-40-02 Predictive GPWS Functions](#)

■ 34-10-01B ADR 2 inoperative

Repair Interval	Nbr Installed	Nbr Required
A	3	2

Placard

o ADR 2 may be inoperative for 10 consecutive calendar days.

32-31-01

LGCIU 1

32-31-01B

Repair Interval	Nbr Installed	Nbr Required
-	1	1

Must be operative.

32-31-02

LGCIU 2

32-31-02A

Repair Interval	Nbr Installed	Nbr Required
C	1	0

o

m

LGCIU 2 may be inoperative provided that both SFCCs are operative.

Additional Options - Intermittent Failure

Scenario:

Crew reports a failure in the logbook but the maintenance cannot confirm the fault on ground.

TSM introduction

Philosophy and Use

Fault isolation procedure

The TSM has been designed to isolate/troubleshoot hard faults. However depending on the airlines organization, the following can be applied for intermittent fault indications:

- if the test result is "TEST OK" (fault not confirmed), dispatch the aircraft, then monitor the reported symptom on the following flights by checking:
 - * the previous leg reports
 - * the PFR/Previous PFRs (if available)
 - * the logbook of the previous flights.

After three occurrences of the same fault indication, (even though the test is still OK), the fault isolation procedure must be applied.

→ After three occurrences, either run the fault isolation procedure or dispatch the aircraft under MEL

Agenda

QUIZZ

Additional options for the dispatch

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Aircraft dispatch beyond MMEL

Best Practices

Regulatory Context

Article 14

Flexibility provisions

4. Member States may grant exemptions from the substantive requirements laid down in this Regulation and its implementing rules in the event of unforeseen urgent operational circumstances or operational needs of a limited duration, provided the level of safety is not adversely affected. The Agency, the Commission and the other Member States shall be notified of any such exemptions as soon as they become repetitive or where they are granted for periods of more than two months.

EU Regulation 216/2008 extract

Aircraft dispatch beyond MEL

Regulatory Context

AIRBUS holds a **DOA** (Design Organization Approval).

RIGHTS:

Airbus has received the authorization to design, certify and sell aircraft, and to ensure safe in-service operations of the aircraft.

RESPONSIBILITIES:

Airbus has to demonstrate a satisfactory level of organisation, procedures, competencies and resources.



**Design Organisation Approval
(DOA)**

Aircraft dispatch beyond MEL

Regulatory Context

In the scope of this DOA agreement with the Airworthiness Authorities, Airbus can support the management of AOG linked to Flight Operations with 3 types of documents:

› Out of DOA scope, Airbus Flight Operations department is also able to propose an STC, that will require an operational approval from the National Authorities:

Repair and Design Approval Form (RDAF)

Flight Condition Document (FCD)

Approved Deviation to OSD MMEL (ADOM)

Statement of Technical Concurrence (STC)

Aircraft dispatch beyond MEL

Airbus Amber

ADOM (Approved Deviation to OSD MMEL)

ADOM can be issued on MMEL for:

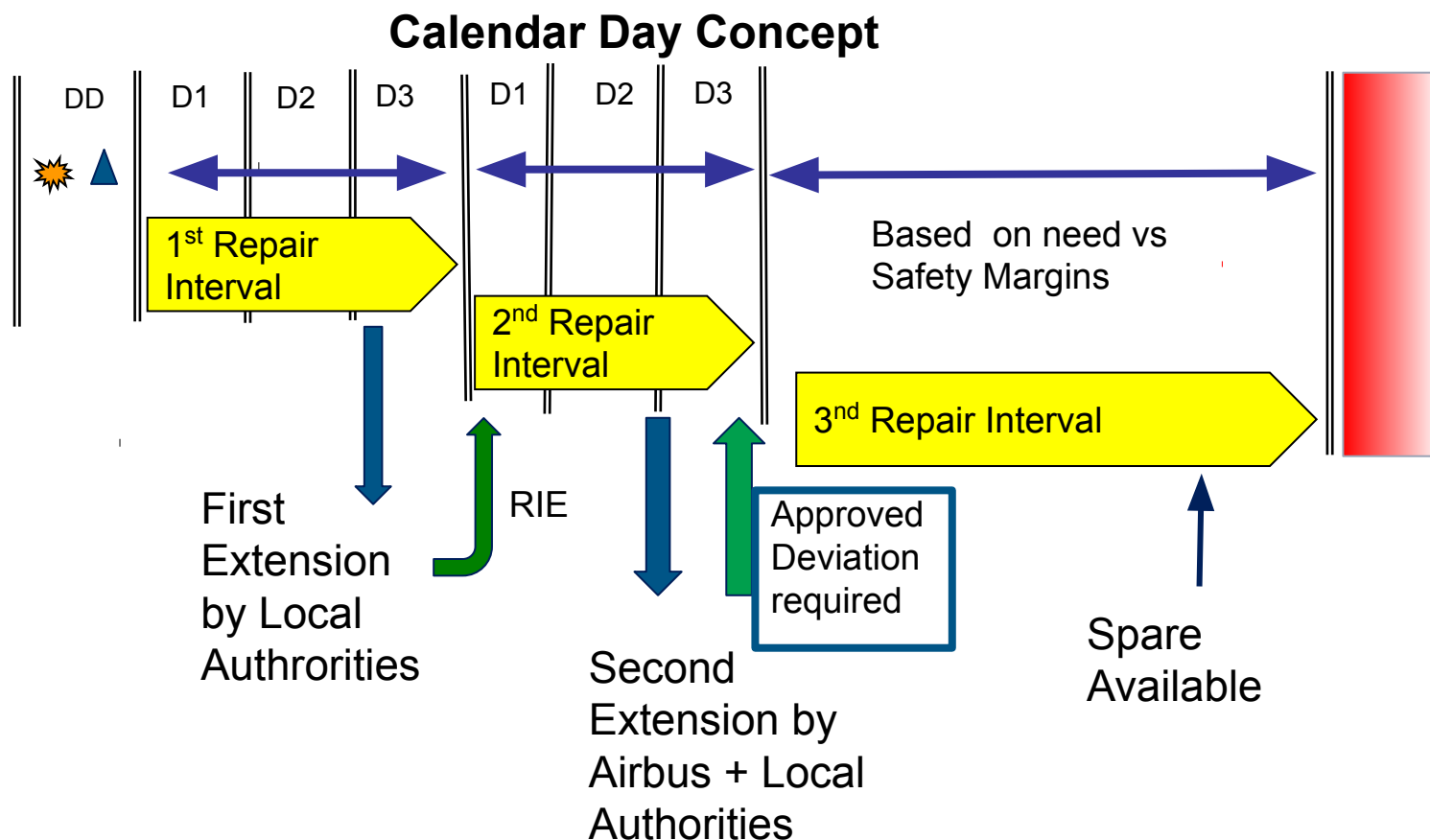
- MMEL repair interval extension after a “one time” extension
- MMEL dispatch condition not fulfilled
- MMEL NO GO cases
- An ADOM can be considered as an official update to the MMEL but temporary.

	Approved Deviation to OSD-MMEL	1. Date: 23/07/2018
		2. ADOM ref.: SA32FM1804128
3. Subject: MMEL Extension for MMEL item 31-09-01 BRAKE3-NW3 Minor Fault Alert		
4. Aircraft Type: A319	5. MSN: 2535	6. Y/Ref.: TR 80187077
7. Operator request: EZY have identified and are unable to remove the backshell on connector 1005GA from conduit Assy D9244024613000 without damaging the conduit. History on purchase orders: 1. EZY has Placed a P/O with AIRBUS. Spares 2. Airbus has supplied D9244024613000 but not able to supply ABS0541V10-09P The Next Higher Assy D9244024613000 is also not available from AIRBUS. A/C currently operating under MEL item 32-09-01A, expiry Midnight 2nd August 2018. EZY confirms that: - The alert is confirmed to be caused by a fault on an alternate braking system pressure transducer by troubleshooting, and - The associated BRAKES pressure indicator is considered inoperative (MMEL 32-44-03A), and - The BSCU system 1 and the BSCU system 2 are operative. Question: Can AIRBUS supply us with the ADOM discussed for this MSN, with the expiry of 2nd August 2018 due spares availability. EZY is currently in Consultation with EZY Flight Operations and with the local authority to find the exact new Process that we will follow in the future.		
8. Airbus response: Airbus technically concurs in allowing EZY A319 MSN 2535 continuing operations until August 2nd 2018 with BRAKES-NW3 Minor Fault Alert displayed under dispatch conditions 32-09-01A provided that: - The alert is confirmed to be caused by a fault on an alternate braking system pressure transducer by troubleshooting, and - The associated BRAKES pressure indicator is considered inoperative (MMEL 32-44-03A), and - The BSCU system 1 and the BSCU system 2 are operative.		

**Approved Deviation to OSD MMEL
(ADOM)**

Aircraft dispatch beyond MEL - Repair Interval Extension Beyond one-time

Example: 'B' RI for 3 consecutive calendar days



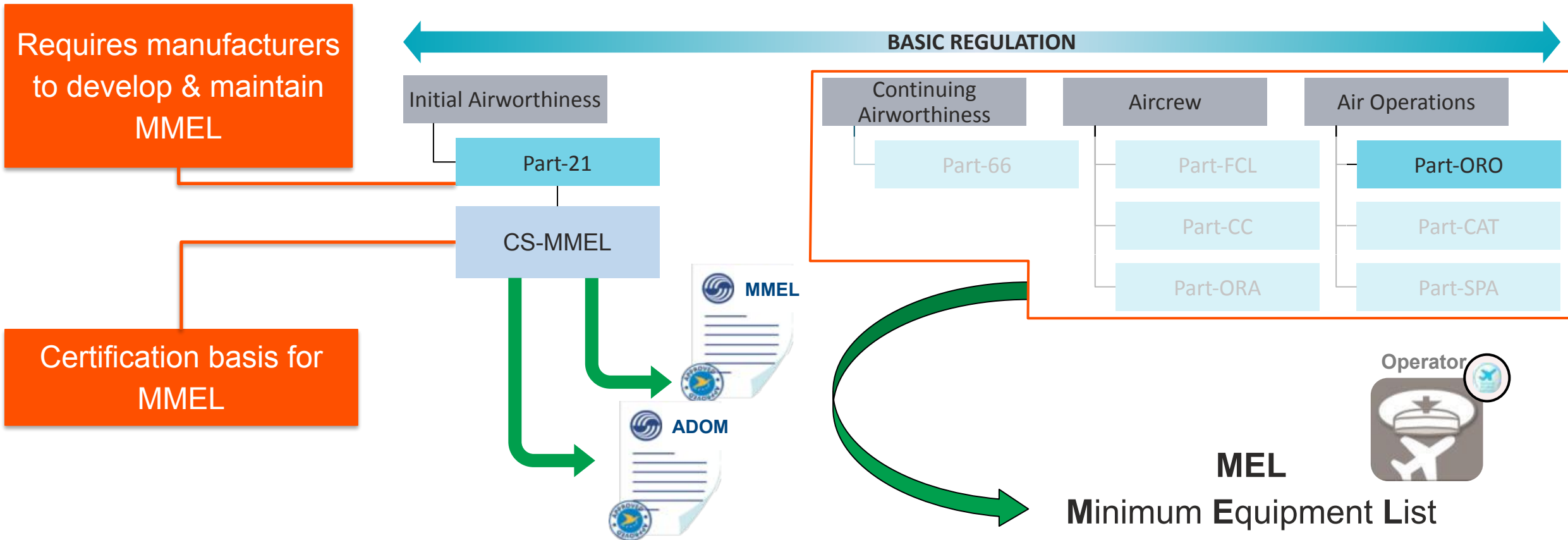
Aircraft dispatch beyond MEL

ADOM (Approved Deviation to OSD MMEL)

It is the responsibility of the Operator to define the way to implement the information provided in an ADOM, and to communicate the information to the relevant actors (Authorities, flight crew, maintenance as applicable).



Aircraft Dispatch Beyond MEL – ADOM regulatory basis



Part-66 Aircraft Maintenance Licences
 CC: Cabin Crew
 CS: Certification Specifications

FCL: Flight Crew Licence
 ORA: Organisation Requirements for Aircrew
 ORO: Organisation Requirements for air operations

OSD: Operational Suitability Data
 SPA: SPCific Approvals

Aircraft Dispatch Beyond MEL – ADOM

ADOM: Approved Deviation to OSD-MMEL

- ADOM is an approved MMEL change applicable to **One specific MSN** and **Time Limited**
- ADOM is technically justified by Airbus through demonstration of the **compliance with CS-MMEL**
- ADOM is a deviation to OSD-MMEL, **approved by EASA** under **Airbus DOA** delegation
- Maintain **acceptable level of safety** with **additional condition** and considering **limited exposure** (one MSN, limited in time), **when possible**
- **Chargeable**

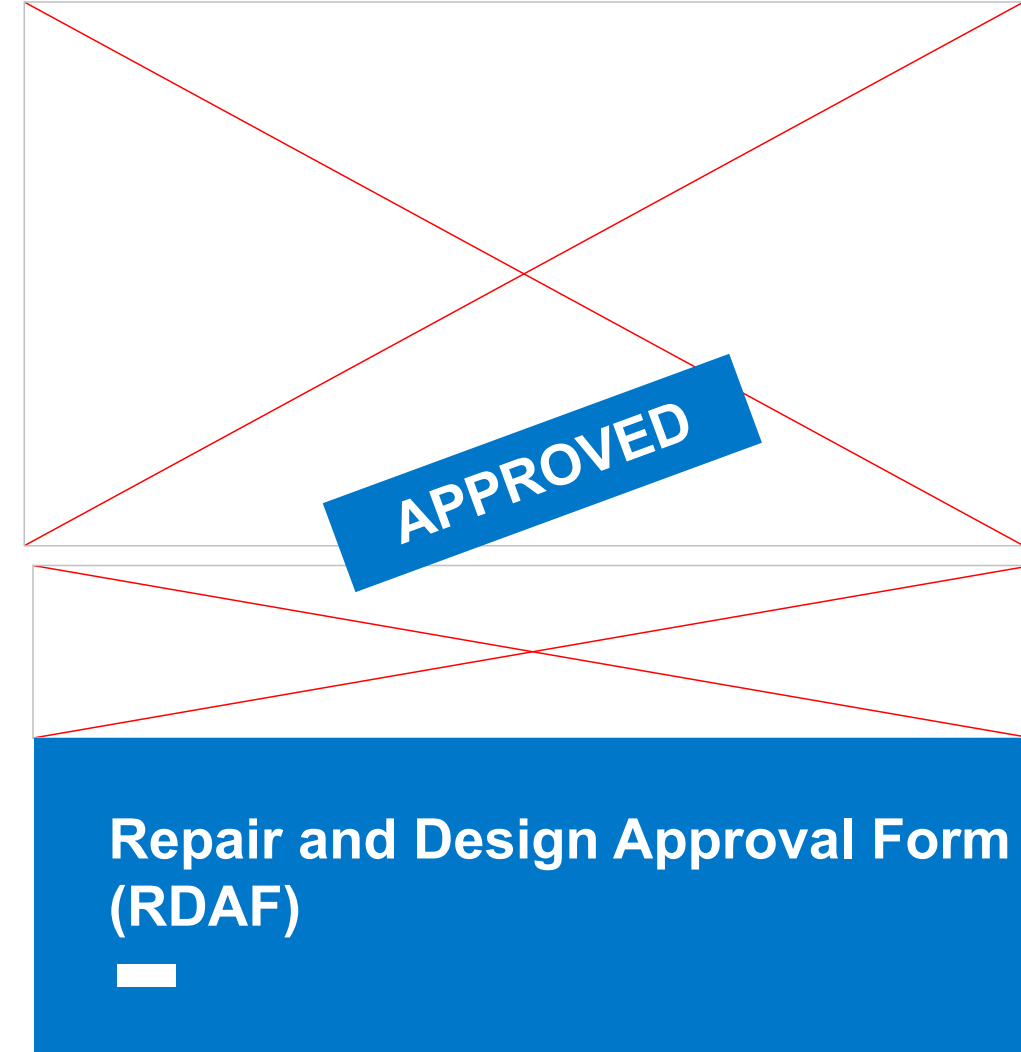
ADOM form example

		Approved Deviation to OSD-MMEL	1. Date: 23/07/2016
			2. ADOM ref.: 8A32FM1604128
3. Subject: MMEL Extension for MMEL Item 31-08-01 BRAKES-N/W3 Minor Fault Alert			
4. Aircraft Type: A319		5. MSN: 2338	6. Y/Ref.: TR 30187077
7. Operator request: EZY have identified and are unable to remove the backshell on connector 100GGA from conduit Assy D9244024618300 without damaging the conduit. History on purchase orders: 1. EZY has Placed a P/O with AIRBUS Spares 2. Airbus has supplied D9244024618300 but not able to supply ABS0841V10-09P The Next Higher Assy D9244024618300 is also not available from AIRBUS A/C currently operating under MEL Item 32-09-01A: expiry Midnight on the 24/07/2016. EZY confirms that: - The alert is confirmed to be caused by a fault on an alternate braking system pressure transducer by troubleshooting, and - The associated BRAKES pressure indicator is considered inoperative (MMEL 32-44-03A), and - The BSCU system 1 and the BSCU system 2 are operative. Question: Can AIRBUS supply us with the ADOM Document discussed for the extension of expiry of 2nd August 2016 due to spares availability. EZY is currently in Consultation with EZY Flight Operations to find the exact new Process that we will follow in the future.			
8. Airbus response: Airbus technically concurs in allowing EZY A319-2338 continuing operations until August 2nd 2016 with BRAKES-N/W3 Minor Fault Alert displayed under dispatch conditions 32-09-01A provided that: - The alert is confirmed to be caused by a fault on an alternate braking system pressure transducer by troubleshooting, and - The associated BRAKES pressure indicator is considered inoperative (MMEL 32-44-03A), and - The BSCU system 1 and the BSCU system 2 are operative.			
9. Procedure: No specific procedure.			
The technical information described above is approved under the authority of EASA approved Design Organisation Number EASA.21J.031. These data are based on the information provided by the requester to Airbus. Airbus disclaims any and all responsibilities for incorrect, inaccurate or incomplete information provided by the requester. This ADOM is an approved MMEL change applicable to this specific MSN and is time limited. It is the operators' responsibility to obtain formal agreement from its National Aviation Authority to deviate from its applicable approved MEL.			
10. Flight Operations Specialist:			
Approved Deviation to OSD MMEL (ADOM)			
Name & Dept: Eric LESAGE, EIAV		Signature:	
Date: 23/07/2016			

Operator responsibility to obtain **formal agreement** from Local Aviation Authorities to deviate from MEL

Aircraft dispatch Beyond MMEL - RDAF (Repair and Design Approval Form)

- › RDAFs are approved under Airbus DOA.
- › RDAF can be issued on AFM/MCDL:
 - Configuration approved but not available in the Operator's AFM:
 - ☐ Approved AFM/MCDL content not dispatched yet to Operators
 - ☐ Approved AFM/MCDL content linked to an option not selected by the Operator.
 - A RDAF can be considered as an official update of the AFM.
- › RDAF cannot be issued against MMEL.



Aircraft dispatch Beyond MMEL - FCD (Flight Condition Document)

FCD can be issued by Airbus Flight Ops & Training Support to provide the Operator with data supporting the request to get a **Permit to Fly** for a **FERRY FLIGHT**.

FCDs are approved under Airbus DOA.

⇒ **Permit to Fly** has to be obtained by the Operator from the appropriate Authorities, with the support of the FCD.

› Need to get authorization to overfly foreign countries.



 AIRBUS		
Flight Conditions for a Permit to Fly - Approval Form -		
1. Applicant approval nr. DOA EASA.21J.031		2. Approval form number & issue:
3. Aircraft manufacturer/type:	4. MSN:	FC: FH:
5. Identification of the Aircraft configuration:		
		
6. Substantiations:		
8. Statement - The determination of the flight conditions has been made in accordance with the relevant DOA procedure agreed by the Agency. The aircraft has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions.		
9. Declaration - 9.a The technical information described above is approved under the authority of EASA approved Design Organization Number EASA.21J.031.		

**Flight Condition Document
(FCD)**

Agenda

Rectification Interval Extension

Additional options for the dispatch

Aircraft dispatch beyond MMEL

Best Practices

Best Practices

- When an aircraft is deferred under MEL, report and track in the Maintenance Information System:
 - The troubleshooting action and recommendation with target date of the MEL repair interval
 - Identify spare part required to fix the MEL item
 - Schedule the replacement of the spare part at the soonest

All above actions may be launched at the same time when the MEL item is deferred in the techlog

Best Practices

- When a deferred MEL item will reach repair interval target date in 2 or 3 days, re-assess the situation based on the Maintenance Information System reports
- Confirm the availability and the replacement of the spare part before target date
 - As necessary, consider spare part order in AOG basis
- If not confirmed, 1 day before target date, apply procedure for **RIE** (Repair Interval Extension)
 - Indicate reason of the RIE request (spare part availability, difficult troubleshooting, etc.)
 - Report all maintenance actions performed

Best Practices

- When a deferred MEL item will reach **second** repair interval target date in 2 or 3 days, re-assess the situation based on the Maintenance Information System reports
- Confirm the availability and the replacement of the spare part before target date
- If not confirmed, 2 days before target date, apply procedure for **ADOM** request
 - Indicate reason of the ADOM request (Spare part availability, difficult troubleshooting, etc.)
 - Report all maintenance actions performed

Wrap-up

✓ To ensure a safe MEL application, Airbus recommends to:

- **Coordinate** MEL users
- **Anticipate** MEL application
- Perform **quick fault identification** and **MEL decision**
- **Strictly adhere to dispatch conditions but also associated procedures**
- **Define policies for MEL applicability**



Optimization of MEL use revealed significant gains in **Operational Reliability.**

M MEL is a dispatch document

- ✓ **Designed in accordance to Regulations**
- ✓ **Part of Aircraft Airworthiness**
- ✓ **Maintaining an acceptable level of safety**

Good MEL application = Keep acceptable level of safety with inoperative equipment

Getting to Grips with MMEL / MEL available in AirbusWorld

AIRBUSWorld

ContextAIBA300 | A300-600 | A310 | A319 | A320 | ...modify context

Search documents by keyword or reference

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Customization & Delivery

Events

Flight Operations

Manuals

Operational Expertise

Operational Material

Specific Flight Operations Topics

Miscellaneous

In Service Experience

Information on applications

Leasing

Maintenance and Engineering

Material Solutions

Publications

Flight Operations

Manuals

Additional Info - Main FCOM - FCTM - MMEL Changes

Additional Info - Modification Documentary Impact

Aircraft Performance Data

Airplane Flight Manual

Cabin Crew Operating Manuals

Cabin Crew Operating Manuals - Generic

Flight Crew Operating Manual

Flight Crew Techniques Manual

Flight Crew Training Standards Manuals

In-Service Aircraft Technical Flight Manual

Master Minimum Equipment List

Quick Reference Handbook

Weight and Balance Manual

Operational Expertise

Digest of available enhancements

FOBN - Flight Operations Briefing Notes

Flight Deck and Systems Briefing For Pilots

Operational Material

ATQC - Airbus Temporary Quick Change

Communication Navigation and Surveillance - Air Traffic Management

External Documents Referenced in AFM

Specific Flight Operations Topics

Abnormal V Alpha Prot

Airplane upset recovery

Golden rules

High AOA Protection

Incorrect Vertical Profile during non precision approaches

Stall recovery

Miscellaneous



Thank you

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