



**NOTICE OF PROPOSED AMENDMENT (NPA) 2012-08**

**DRAFT OPINION OF THE EUROPEAN AVIATION SAFETY AGENCY**

**for a Commission Regulation amending Commission Regulation (EU)  
No xxx/2012 laying down technical requirements and administrative procedures  
related to air operations pursuant to Regulation (EC) No 216/2008 of the  
European Parliament and the Council**

**and**

**DRAFT DECISION OF THE EXECUTIVE DIRECTOR OF THE EUROPEAN AVIATION SAFETY AGENCY**

**amending draft Decision 2012/.../R of the Executive Director  
of the European Aviation Safety Agency of day month 2012  
on acceptable means of compliance and guidance material to Commission  
Regulation (EU) No .../2012 of day month 2012 laying down technical  
requirements and administrative procedures related to air operations pursuant  
to Regulation (EC) No 216/2008 of the European Parliament and the Council**

**and**

**amending Decision 2003/19/RM of the Executive Director  
of the European Aviation Safety Agency of 28 November 2003  
on acceptable means of compliance and guidance material to Commission  
Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing  
airworthiness of aircraft and aeronautical products, parts and appliances, and  
on the approval of organisations and personnel involved in these tasks**

**'Maintenance check flights (MCFs)'**

## **EXECUTIVE SUMMARY**

A significant number of aviation accidents and serious incidents occur during non-revenue flights. Among them, a particular case is maintenance check flights (MCFs). These flights, under the control of the operator, may be required to assist in the identification of a defect, to complete certain maintenance instructions, to verify that maintenance has been properly performed, or to avoid operational disruptions after major maintenance.

In 2011 EASA created a rulemaking group with the participation of experts from industry and aviation authorities and tasked it with the development of this Notice of Proposed Amendment (NPA).

This NPA proposes to amend the envisaged rules on air operations, and in particular Annex VIII thereof, containing the requirements of Specialised Operations (Part-SPO). A new section, Section E, is introduced in Part-SPO, specifically addressing the new requirements for maintenance check flights, such as: the need for a specific manual; dedicated pilot requirements including training; and the definition of crew and persons on board. This NPA proposes a set of proportionate rules, depending on the complexity of the aircraft used and foreseen flight procedures. In addition, Acceptable Means of Compliance (AMC) and Guidance Material (GM) are proposed as means of compliance and to support the understanding of the rule.

Also, in accordance with the resulting text proposed in this NPA, maintenance organisations may be able to release the inconclusive maintenance to allow for a maintenance check flight when this is required by the aircraft maintenance manual, or a permit to fly may be required if there is a need to perform a maintenance check flight but, in accordance with the maintenance organisation requirements, the aircraft cannot be released.

## TABLE OF CONTENTS

|           |   |           |
|-----------|---|-----------|
| <b>A.</b> | <b>EXPLANATORY NOTE .....</b>   | <b>4</b>  |
| I.        | GENERAL .....   | 4         |
| II.       | CONSULTATION .....  | 4         |
| III.      | COMMENT-RESPONSE DOCUMENT (CRD).....  | 5         |
| IV.       | CONTENT OF THE DRAFT OPINION/DECISION .....   | 5         |
| V.        | REGULATORY IMPACT ASSESSMENT .....  | 8         |
| <b>B.</b> | <b>DRAFT OPINION(S) AND DECISION(S) .....</b>   | <b>11</b> |
| I.        | DRAFT OPINION — REGULATION ON AIR OPERATIONS.....   | 11        |
| II.       | DRAFT DECISION — AMC/GM TO REGULATION ON AIR OPERATIONS: ANNEX VIII<br>(SPECIALISED OPERATIONS — PART-SPO)..... | 16        |
| III.      | DRAFT AMENDMENT TO DECISION 2003/19/RM .....  | 20        |

## **A. Explanatory Note**

### **I. General**

1. The purpose of this NPA is to envisage amending the OPS draft Regulation, as amended after Part-SPO and OPS draft AMC/GM, and Decision 2003/19/RM of the Executive Director of 28 November 2003<sup>1</sup> to develop AMC/GM material to paragraphs M.A.301 and 145.A.50 of Commission Regulation (EC) No 2042/2003<sup>2</sup>.
2. The scope of this rulemaking activity is outlined in the Terms of Reference (ToR) for the rulemaking task MDM.097(a) & (b)<sup>3</sup> (RMT.0393 & RMT.0394) and is described below.
3. The European Aviation Safety Agency (hereafter referred to as the 'Agency') is directly involved in the rule shaping process. It assists the Commission in its executive tasks by preparing draft regulations, and amendments thereof, for the implementation of the Basic Regulation<sup>4</sup> which are adopted as 'Opinions' (Article 19(1)). It also adopts Certification Specifications, including Airworthiness Codes and Acceptable Means of Compliance and Guidance Material to be used in the certification process (Article 19(2)).
4. When developing rules, the Agency is bound to follow a structured process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'<sup>5</sup>.
5. This rulemaking activity is included in the Agency's Rulemaking Programme for 2013-2016. It implements the rulemaking task MDM.097(a) & (b) (RMT.0393 & RMT.0394).
6. The text of this NPA has been developed by the Agency with the support of a rulemaking group established for this task. It is submitted for consultation of all interested parties in accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.
7. The proposed rule has taken into account the development of European Union and international law (ICAO), and the harmonisation with the rules of other authorities of the European Union's main partners as set out in the objectives of Article 2 of the Basic Regulation.

### **II. Consultation**

8. To achieve optimal consultation, the Agency is publishing this NPA on its website. Comments should be provided within 3 months in accordance with Article 6(4) of the Rulemaking Procedure.

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<sup>1</sup> Decision 2003/19/RM of the Executive Director of the Agency of 28.11.2003 on acceptable means of compliance and guidance material to Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks. Decision as last amended by Decision 2012/004/R of the Executive Director of the Agency of 19 April 2012.

<sup>2</sup> OJ L 315, 28.11.2003, p. 1. Regulation as last amended by Commission Regulation (EU) No 593/2012 (OJ L 176, 6.7.2012, p. 38).

<sup>3</sup> See EASA website: [http://www.easa.europa.eu/rulemaking/docs/tor/mdm/EASA-ToR-MDM.097\(a\)\\_MDM.097\(b\)-00-04042011.pdf](http://www.easa.europa.eu/rulemaking/docs/tor/mdm/EASA-ToR-MDM.097(a)_MDM.097(b)-00-04042011.pdf)

<sup>4</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.03.2008, p. 1). Regulation as last amended by Regulation 1108/2009 of the European Parliament and of the Council of 21 October 2009 (OJ L 309, 24.11.2009, p. 51).

<sup>5</sup> Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (Rulemaking Procedure), EASA MB Decision 08-2007, 13.6.2007. Decision as last amended and replaced by EASA MB Decision No 01-2012, 13.03.2012.

9. Please submit your comments using the **automated Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>.<sup>6</sup>
10. The deadline for the submission of comments is **30 October 2012**.

### **III. Comment-Response Document (CRD)**

11. All comments received in time will be responded to and incorporated in a Comment-Response Document (CRD). The CRD will be available on the Agency's website and in the Comment-Response Tool (CRT).

### **IV. Content of the draft Opinion/Decision**

12. Background

Part-M M.A.301 refers to maintenance check flights as one of the means to ensure the aircraft's continuing airworthiness and the serviceability of both operational and emergency equipment. There is, however, no guidance material to identify when and how these flights should be performed.

Nor do the rules on air operations proposed by the Agency to the European Commission for adoption, soon to enter into force, define the particular requirements, procedures and limitations for such specific flights.

The ToR for this task were published on 1 April 2011, together with the group composition of the task.

Various accidents and serious incidents (see ToR) have occurred when aircraft were being flown for reasons other than their normal operation. In these cases, the aircraft may be operated outside the rules applicable for a standard operation. Among these flights, maintenance check flights are a particular case and are treated in this NPA.

The relevant safety recommendations that stem from accidents and serious incidents include the following:

- (a) 'That EASA detail in EU-OPS the various types on non-revenue flights that an operator from an EU Member State is authorised to perform.'
- (b) 'That EASA require that non-revenue flights be described precisely in the approved parts of the operations manual, this description specifically determining their preparation, programme and operational framework as well as the qualifications and training of crews.'
- (c) 'It is recommended that the European Aviation Safety Agency require AOC operators to have, and comply with, a detailed procedure and a controlled test schedule and record of findings for briefing, conducting and debriefing check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.'
- (d) 'It is recommended that the European Aviation Safety Agency provide guidance on minimum crew proficiency requirements and recommended crew composition and training for those undertaking check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.'

13. Objectives

The first objective identified in the ToR is:

- *Establish Acceptable Means of Compliance or Guidance Material to help determining when a maintenance check flight should be performed and under which protocol and responsibilities.*

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<sup>6</sup> In case the use of the Comment-Response Tool is prevented by technical problems please report them to the CRT webmaster ([crt@easa.europa.eu](mailto:crt@easa.europa.eu)).

In order to fulfil this objective, in the draft Opinion of this NPA, a definition of a maintenance check flight is proposed, and furthermore the different occasions for such a flight to be performed are described. The responsibility for the operation of this flight lies with the operator, but the maintenance organisation has to communicate to the operator the airworthiness status of the aircraft before a maintenance check flight is performed.

The second objective identified in the ToR is:

- *Establish operational requirements and crew competence criteria for the performance of these flights. This will not be limited to operators subject to EU-OPS approval but to any operator performing these flights.*

Depending on the flight category level (as defined in the proposed rule amendment) and on the complexity of the aircraft, this objective was fulfilled by providing regulatory text proposing different operational requirements and criteria for the crew competence.

#### 14. The process of agreeing on a text proposal

In accordance with the task's ToR, a group of experts from industry and authorities was established to support the Agency in this rulemaking task.

Considering the objectives defined in the ToR, the group members contributed with their knowledge and expertise to the establishment of the draft regulatory text presented in Section B of this NPA.

When developing the draft regulatory text, existing related material established in the past by other organisations, such as aviation authorities guidance and industry internal procedures, were considered. Section 3 of the UK CAA Check Flight Handbook<sup>7</sup> was among these documents and it was considered as appropriate guidance by the rulemaking group. The material being drafted by the Flight Safety Foundation was also discussed and the rulemaking group concluded that it would be beneficial, when available, to prepare flight programmes.

When working on this rulemaking task, the group also considered other Agency rulemaking activities that could have an impact on this NPA, such as:

- NPA 2008-20 on 'Flight testing'<sup>8</sup>, and
- Opinion No 02/2012 on Annex VIII (Part-SPO) to the draft Commission Regulation on 'Air Operations — OPS'<sup>9</sup>.

The Agency will ensure that progress of these rulemaking initiatives is considered when developing the next steps for this rulemaking task on maintenance check flights.

Following the Agency's rulemaking process, and after various meetings and written communication exchanges, the rulemaking group reached consensus on a proposal which was provided to the Agency as a draft regulatory text for maintenance check flights. This text, after further review by the Agency, is provided in Section B of this NPA.

#### 15. Description of proposals

The proposed regulatory text is affecting the documents listed below as follows:

- (a) Draft Commission Regulation on 'Air Operations — OPS' (as proposed in Opinions No 04/2011, 01/2012 and 02/2012) as follows:
  - an amendment to the cover regulation to consider maintenance check flights as a Specialised Operation;
  - an amendment to Annex I (Definitions) to provide a definition for maintenance check flights;

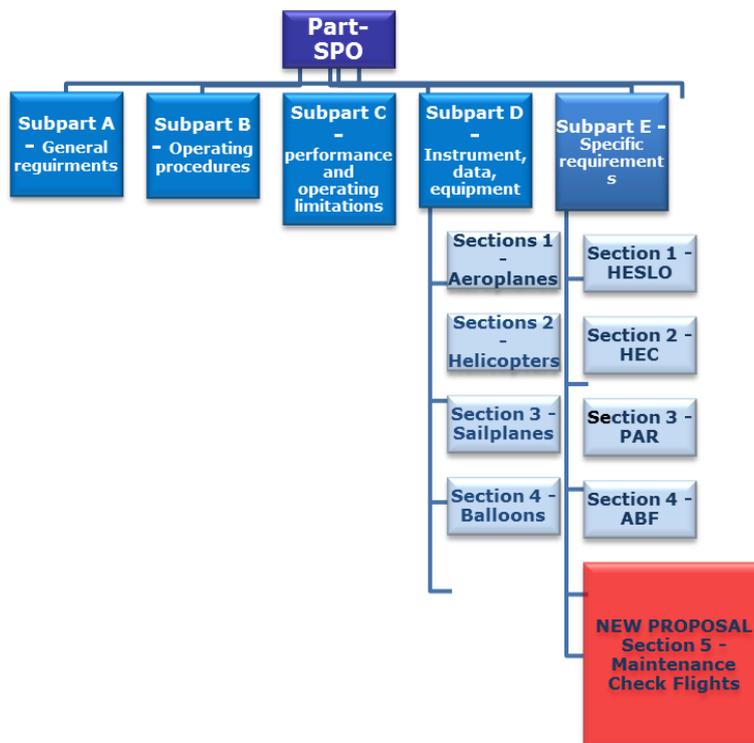
<sup>7</sup> CAA-UK, Check Flight Handbook, issue 2.2 of 22 April 2009.

<sup>8</sup> NPA 2008-20 'Flight testing' of 29 August 2008.

<sup>9</sup> Opinion No 02/2012 of 16 April 2012 on Air Operations — OPS (Part-SPO).

- an amendment to Annex III (Part-Organisation requirements for air operations) to exclude maintenance check flights from the requirements established by ORO.AOC.125 for non-commercial operations, since maintenance check flights' particular requirements are, as mentioned above, covered by amending Part-SPO;
  - an amendment to Part-SPO (Specialised Operations) to introduce a new 'Section 5 — Maintenance check flights (MCF)' in Subpart E. This new section contains paragraphs covering:
    - applicability and definition of two category levels (level A and level B) for these flights depending on whether flights are performed following standard operating procedures for routine flights or not, for which different applicable requirements apply;
    - the need for an organisation manual for level B maintenance check flights with complex motor-powered aircraft;
    - flight crew requirements and training course for level B flights;
    - persons on board;
    - flight time limitation requirements;
    - considerations to fly with potentially unreliable systems.
- (b) Draft Decision on AMC and GM to draft Commission Regulation on 'Air Operations — OPS' (Decision 2012/.../R of the Executive Director on Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Part-SPO as proposed in CRD 2009-02b). This Decision is proposed to be amended mainly by the introduction of:
- AMC with the contents of the Manual required by the proposed rule as mentioned above;
  - AMC to regain recency for the pilots;
  - AMC with aspects of the training course and GM with its syllabus.
- (c) Decision 2003/19/RM, as follows:
- GM M.A.301(8) is created. It contains three paragraphs covering:
    - operational rules for the definition of maintenance check flight and stressing the need for agreed procedures between the operator and the maintenance organisation for the hand over of the aircraft;
    - in relation with the different situations that could arise, guidance on the airworthiness status of the aircraft after maintenance and before the flight and validity of a maintenance release or need for a permit to fly;
    - the possibility for maintenance organisations to use determinations made by the flight crew after the maintenance check flight as basis to release the aircraft;
  - AMC M.A.801(g) and AMC 145.A.50(e) are modified to complete the cases where maintenance ordered to the maintenance organisation or person cannot be completed but a maintenance release is possible within the aircraft limitations.
16. The rules that are envisaged to be amended as a result of this rulemaking task have not yet entered into force. Therefore, the draft regulatory text presented in Section B of this NPA does not propose entry into force provisions. The Agency believes that they may be introduced by means of an opt-out provision, as it may be also the case with the other subparts of Part-SPO.

Note: Annex VIII Part-SPO to draft Commission Regulation on 'Air Operations – OPS' (as proposed in Opinion No 04/2011, 01/2012 and 02/2012) contains the technical requirements for commercial and non-commercial Specialised Operations with the following rule structure.



## V. Regulatory Impact Assessment

### 1. Process and consultation

The proposed rule has been developed by the rulemaking group of this task under the assumption that there is a need for regulatory action, but also considering existing practices by the industry and trying to minimise the impact of introducing new requirements.

The following paragraphs contain a qualitative impact assessment of the introduction of the proposed rule.

### 2. Issue analysis and risk assessment

As described in the task's ToR, this NPA proposes a new regulatory requirement for maintenance check flights.

#### 2.1. What is the issue and the current regulatory framework?

During the performance of a maintenance check flight and in order to fulfil its objective, there is often the need to operate the aircraft differently from what it is the normal aircraft operation (e.g. trying to reproduce in flight a fault discovered on ground for troubleshooting). Performing this flight without additional precautions may not be safe.

Today's requirements contained in Regulation (EC) No 859/2008 on EU-OPS do not contain specific procedures or limitations for non-revenue flights in general or for maintenance check flights in particular. There is some guidance material developed by aviation authorities, but it is not systematically used nor is it applied across all EU Member States.

As a result, the assumed ratio for accidents or serious incidents associated with these flights is higher than for regular operations.

The safety recommendations derived from the investigations of these accidents or serious incidents and addressed to the Agency have led to this rulemaking action, which aims to provide a regulatory framework and clear responsibilities for such flights, thus reducing the probability of incidents/accidents.

#### *2.2. Who is affected?*

Operators of any aircraft having the need to perform these flights, crew operating on such flights and maintenance organisations are affected by the proposed resulting text, as it is further explained in the analysis of impacts.

#### *2.3. What are the safety risks?*

If no regulatory action is taken the situation of having no clear harmonised standards will remain, thus it is unlikely that the high frequency of these events will be reduced. Past events and safety recommendations unambiguously showed that the setting of a regulatory framework is needed.

### 3. Objectives

The overall objectives of the Agency are defined in Article 2 of Regulation (EC) No 216/2008 (the Basic Regulation). This proposal will contribute to the overall objectives by addressing the safety risks outlined in Section 2. The specific objectives of this proposal are discussed in paragraph 13 above.

#### *3.1. Options identified*

Option 0: No change in rules and continuation of the status quo; maintenance check flights will continue to be conducted in a grey area without specific guidance or varying national guidance. The risks remain as outlined in the issue analysis.

Option 1: Develop regulatory material for maintenance check flights (MCF), resulting in:

- new requirements in operational rules to require specific procedures for these flights and requirements for the crew, tailored to the level of the flight and the complexity of the aircraft and further detailed in AMC/GM;
- new guidance material for Part-M, M.A.301(8);
- changes in AMC for Part M, paragraph M.A.801(g) and AMC for Part 145, paragraph 145.A.50(e).

### 4. Analysis of the impacts

#### *4.1. Safety impacts*

Since there is no regulation covering these flights and only guidance was available for certain countries, the Agency is of the opinion that the proposed rules referred to in option 1, once implemented, will establish a more controlled regulatory framework which will improve the safety level.

#### *4.2. Social impacts*

By imposing new requirements on pilots performing these flights (compared to no specific requirements today) would mean that some pilots performing level B maintenance check flights will need to follow specific training for these flights. This impact can be minimised by allowing delayed application of the rules once they enter into force. This is to be proposed at a later stage of the rulemaking process.

In any case the community of pilots affected is believed to be small.

#### *4.3. Economic impacts*

This regulatory proposal does not introduce new requirements when a maintenance check flight should be performed. Therefore, there is no additional economic impact caused by an increase in maintenance check flights as a result of this proposal.

This regulatory proposal includes new procedures and limitations which will have to be documented when conducting maintenance check flights. This may be something new for smaller operators, but it is assumed that larger operators have already procedures in place similar to the ones proposed in this NPA.

There will also be an additional economic impact, mainly due to new crew training and qualification requirements, as well as due to inclusion of MCF into the operator's FTL scheme, but only for those operators who fall under the remit of Subpart FTL of Annex III to Part-ORO.

This NPA has an overall low negative economic impact since the proposal affects a minority of operators and since most larger operators already follow similar considerations and have similar procedures in place.

#### *4.4. Environmental impacts*

None.

#### *4.5. Proportionality issues*

In order to minimise the regulatory impact, the resulting text proposes different requirements depending on the maintenance check flight level (see resulting text) and complexity of the aircraft.

#### *4.6. Impact on regulatory coordination and harmonisation*

This proposal does not conflict with other EU legislation or existing national legislation. Since these flights are not addressed at ICAO level, there is also no conflict with ICAO Standard and Recommended Practices.

### 5. Conclusion and preferred option

Considering the qualitative assessment discussed in the previous paragraphs, option 1 is preferred to option 0.

**B. Draft Opinion(s) and Decision(s)**

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

- (a) deleted or amended text is shown with a strike through: ~~deleted~~
- (b) new or amended text is highlighted with grey shading: **new**
- (c) ... indicates that remaining text is unchanged in front of or following the reflected amendment.

**I. Draft Opinion – Regulation on Air Operations****1. Amendment of the cover regulation**

In article 2(5), the definition is amended as follows:

5. 'Specialised Operation' means any commercial operation other than commercial air transport and any non-commercial operation where:

- (a) the aircraft is flown close to the surface to fulfil the mission;
- (b) aerobatic manoeuvres are performed;
- (c) special equipment is necessary to fulfil the mission;
- (d) task specialists are required;
- (e) substances are released from the aircraft during the flight;
- (f) external loads or goods are lifted or towed;
- (g) persons enter or leave the aircraft during flight; ~~or~~
- (h) the purpose of the mission is to display an aircraft, to advertise or to participate in a competition; **or**
- (i) **a maintenance check flight is performed.**

**2. Amendment of Annex I (Definitions)**

In paragraph 1 of Annex I the following definition is inserted:

'Maintenance check flight' means a flight carried out to provide reassurance of the aircraft's performance or to establish the correct functioning of a system that cannot be fully established during ground checks:

- (a) as required by the aircraft maintenance manual (AMM) or any other maintenance data issued by the design approval holder for the continuing airworthiness of the aircraft; or
- (b) after maintenance, as required by the operator; or
- (c) as required by the maintenance organisation for verification of a successful defect rectification; or
- (d) to assist with fault isolation or troubleshooting.

### 3. Amendment of Annex III (Organisation requirements – Part-ORO)

Paragraph ORO.AOC.125 is replaced as follows:

#### **ORO.AOC.125 Non-commercial operations of aircraft listed in the operations specifications by the holder of an AOC**

The holder of an AOC may conduct non-commercial operations with an aircraft otherwise used for commercial operations that is listed in the operations specifications of its AOC without being required to submit a declaration in accordance with this Part, provided that the operator:

- (a) for maintenance check flights complies with Annex VIII (Part-SPO);
- (ab) for all other flights, describes such operations in detail in the operations manual, including:
  - (1) identification of the applicable requirements;
  - (2) a clear identification of any differences between operating procedures used when conducting commercial and non-commercial operations; and
  - (3) a means of ensuring that all personnel involved in the operation are fully familiar with the associated procedures;
- (bc) submits the identified differences between the operating procedures referred to in (ab)(2) to the competent authority for prior approval.

#### **4. Amendment of Annex VIII to Part-SPO (Specialised Operations)**

4.1. Paragraph 'SPO.GEN.005 Scope' is amended as follows:

##### **SPO.GEN.005 Scope**

- (a) Specialised Operations include the following activities:
- (1) helicopter external loads operations;
  - (2) helicopter survey operations;
  - (3) human external cargo operations;
  - (4) parachute operations and skydiving;
  - (5) agricultural flights;
  - (6) aerial photography flights;
  - (7) glider towing;
  - (8) aerial advertising flights;
  - (9) calibration flights;
  - (10) construction work flights, including stringing power line operations, clearing saw operations;
  - (11) oil spill work;
  - (12) avalanche mining operations;
  - (13) survey operations, including aerial mapping operations, pollution control activity;
  - (14) news media flights, television and movie flights;
  - (15) special events flights, including such as flying display, competition flights;
  - (16) animal herding and rescue flights and veterinary dropping flights;
  - (17) maritime funeral operations;
  - (18) scientific research flights (other than those under Annex II of Regulation 216/2008);
  - (19) cloud seeding-;
  - (20) maintenance check flights.

(b) Any other activity falling under the definition of 'Specialised Operations' shall be regulated by this Part.

4.2. A new 'Section 5 — Maintenance Check Flights (MCF)' in Subpart E is inserted:

##### **Subpart E — Specific requirements**

##### **Section 5 — Maintenance check flights (MCF)**

##### **SPO.SPEC.MCF.100 Applicability**

- (a) This section shall apply whenever maintenance check flights are intended to be conducted.
- (b) Before conducting maintenance check flights, the operator shall determine the applicable level of the maintenance check flight, as follows:

- (1) Level A maintenance check flights are flights intended to be performed using the standard operating procedure for routine flights.
- (2) Level B maintenance check flights are maintenance check flights other than level A.

(c) Paragraph SPO.OP.230 is not applicable to maintenance check flights.

#### **SPO.SPEC.MCF.105 Flight programme**

Before conducting a level B maintenance check flight with a complex motor-powered aircraft, the operator shall develop a written flight programme.

#### **SPO.SPEC.MCF.110 Maintenance check flight manual**

- (a) Operators intending to conduct level B maintenance check flights with complex motor-powered aircraft shall describe these operations and associated procedures in the operations manual referred to in ORO.MLR.100 or in a dedicated maintenance check flight manual.
- (b) The manual shall be updated when necessary.
- (c) All affected personnel shall be made aware of the manual and its changes that are relevant to their duties.
- (d) Commercial operators shall submit the manual and its updates to the competent authority.

#### **SPO.SPEC.MCF.115 Flight crew requirements**

- (a) The operator shall select the flight crew members for level B maintenance check flights as follows:
  - (1) For flights with complex motor-powered aircraft, the pilot-in-command shall:
    - (i) hold a valid type rating, have completed a minimum of 1 000 flight hours as pilot-in-command on aircraft with similar characteristics, and have followed a training course in accordance with SPO.SPEC.MCF.120; or
    - (ii) hold a valid test pilot rating.
  - (2) For flights with other-than-complex motor-powered aircraft, the pilot-in-command shall:
    - (i) have completed a minimum of 1 000 flight hours flown as pilot-in-command in the appropriate aircraft category or, in the case of single piston-engine aircraft, sailplane or balloon, have completed a minimum of 300 flight hours flown as pilot-in-command in the appropriate aircraft category, and  
 hold a valid type or class rating with a minimum of 50 hours on type or class as pilot-in-command; or
    - (ii) hold a valid test pilot rating; or
    - (iii) hold a valid type or class rating and a minimum total experience of 500 flight hours as pilot-in-command and shall have followed a training course in accordance with SPO.SPEC.MCF.120.
- (b) The pilot-in-command shall not perform a level B maintenance check flight unless he/she has carried out a maintenance check flight within the preceding 24 months. Recency as pilot-in-command on a level B maintenance check flight is regained

after performing a level B flight as observer or pilot monitoring or after acting as pilot-in-command in a full flight simulator level B maintenance check flight.

#### **SPO.SPEC.MCF.120 Flight crew training course**

- (a) Level B maintenance check flights training courses shall be conducted in accordance with a detailed syllabus. The operators of complex motor-powered aircraft shall describe this training in the manual referred to in SPO.SPEC.MCF.110.
- (b) The training course shall be conducted as follows:
  - (1) in a full flight simulator followed by at least one maintenance check flight as co-pilot or observer before acting as pilot-in-command on a maintenance check flight; or
  - (2) during a flight in an aircraft demonstrating maintenance check flight techniques.
- (c) The training course referred to in (a) followed on one aircraft category is considered valid for all aircraft types in that category.
- (d) Considering the aircraft used for the training and the aircraft to be flown during the maintenance check flight, the operator shall specify if differences or familiarisation training is required and the contents of such training.

#### **SPO.SPEC.MCF.125 Crew composition and persons on board**

- (a) The minimum flight crew shall be two pilots, whenever the aircraft has at least two pilot stations.
- (b) For level B maintenance check flights on complex motor-powered aircraft, a task specialist is required in the flight crew compartment assist the flight crew to conduct the maintenance check flight if permitted by the aircraft configuration.
- (c) Notwithstanding (b) and considering the workload of the flight crew based on the flight programme, when the operator can justify as part of its risk analysis that the flight crew would not require additional assistance, the operator may fly without a task specialist in the flight crew compartment.
- (d) For level B maintenance check flights on aircraft certified for single pilot only, a task specialist is required to assist the pilot to conduct the maintenance check flight, if permitted by the aircraft configuration.
- (e) The operator shall identify the need for additional task specialists as required for the intended flight.
- (f) The operator shall define in its manual the policy for other persons on board. As a general principle, only personnel essential to complete the flight (crew and task specialists) should be on board.

#### **SPO.SPEC.MCF.130 Simulated abnormal situations in flight**

The requirement laid down in SPO.OP.185 is not applicable for maintenance check flights when the simulation of abnormal situations in flight is required to meet the intention of the flight and is identified in the flight programme.

#### **SPO.SPEC.MCF.135 Flight limitations and rest requirements**

Operators subject to Subpart FTL of Annex III (Part-ORO) shall apply this subpart when assigning crew members to maintenance check flights.

**SPO.SPEC.MCF.140 Systems and equipment**

When a maintenance check flight is intended to check the proper functioning of a system or equipment, this shall be identified as potentially unreliable, and appropriate mitigation means shall be agreed prior to the flight in order to minimise risks to flight safety.

**SPO.SPEC.MCF.145 Cockpit voice recorder**

Notwithstanding SPO.IDE.A/H.140, the aircraft shall be equipped with a cockpit voice recorder in accordance with the applicable requirements for the aircraft's normal operation NCC.IDE.A.160 or CAT.IDE.A.185.

**SPO.SPEC.MCF.150 Flight data recorder**

Notwithstanding SPO.IDE.A/H.145, the aircraft shall be equipped with a flight data recorder in accordance with the applicable requirements for the aircraft's normal operation NCC.IDE.A.165 or CAT.IDE.A.190.

**SPO.SPEC.MCF.155 Data link recording**

Notwithstanding SPO.IDE.A/H.150, the aircraft shall be equipped with a data link recording in accordance with the applicable requirements for the aircraft's normal operation NCC.IDE.A.170 or CAT.IDE.A.195.

## II. Draft Decision – AMC/GM to Regulation on Air Operations: Annex VIII (Specialised Operations – Part-SPO)

### 5. Amendment to Subpart E – Specific requirements

A new 'Section III – Maintenance check flights (MCF)' in Subpart E is inserted:

#### Section III – Maintenance check flights (MCF)

##### AMC1 SPO.SPEC.MCF.110 Maintenance check flight manual

###### CONTENTS

The items to be covered in the manual should be as follows:

- (a) General considerations
  - (1) Conditions requiring a maintenance check flight (e.g. heavy maintenance);
  - (2) Appropriate maintenance release before the maintenance check flight;
  - (3) Flight authorisation;
  - (4) Process to develop a flight programme and procedures.
- (b) Aircraft status
  - (1) Requirements about the status of the aircraft prior to departure (e.g. MEL, CDL) for the maintenance check flight;
  - (2) Fuel loading, if applicable;
  - (3) Weight and balance, if applicable;
  - (4) Specific test and safety equipment.
- (c) Crew selection and other persons on board
  - (1) Qualifications;
  - (2) Experience and recency;

- (3) Training;
- (4) Persons on board;
- (d) Briefings
  - (1) Briefing participants;
  - (2) Specific pre-flight briefing topics:
    - (i) Aircraft status,
    - (ii) Summary of maintenance,
    - (iii) Flight programme, specific procedures and limitations,
    - (iv) Crew members' responsibilities and coordination,
    - (v) Documents on board;
  - (3) Information to ATC;
  - (4) Post-flight briefing.
- (e) Contents of the flight programme and procedures
 

The procedure containing the checks to be performed in flight should be thoroughly developed by the operator using applicable current data would be available as read-and-do checklist, including:

  - (1) In-flight briefings;
  - (2) Limits (not to be exceeded);
  - (3) Specific-entry-conditions;
  - (4) Task sharing and call-outs;
  - (5) Contingency plans;
  - (6) Information to additional crew and ATC.
- (f) External conditions
  - (1) Weather and light conditions;
  - (2) Terrain;
  - (3) ATC, airspace;
  - (4) Airport (runway, equipment)/operating site.
- (g) Documentation
  - (1) Specific documentation on board;
  - (2) In-flight recordings;
  - (3) Result of the maintenance check flight and related data;
  - (4) Accurate recording of required maintenance actions after the flight.

### **GM1 SPO.SPEC.MCF.115 Flight crew requirements**

#### **AIRCRAFT WITH SIMILAR CHARACTERISTICS**

For the purpose of SPO.SPEC.MCF.115, aircraft with similar characteristics means aircraft with similar architecture, same number and similar type of engines and with similar weights.

### **GM2 SPO.SPEC.MCF.115 Flight crew requirements**

#### **MEANING OF CLASS RATING FOR GLIDERS IN SPO.SPEC.MCF.115**

In the case of gliders, when paragraph (a)(2)(i) of SPO.SPEC.MCF.115 refers to a minimum of 50 hours on class as pilot-in-command, it should be understood as obtained in the corresponding glider class:

- sailplanes and powered sailplanes (excluding TMG), or
- TMG.

**AMC1 SPO.SPEC.MCF.120 Flight crew training course**

## COURSE CONSIDERATIONS

- (a) The training course stipulated in SPO.SPEC.MCF.120(a) should comprise ground training followed by a demonstration of techniques for the checks in flight and failure conditions in a full flight simulator (FFS) or aircraft. In a demonstration performed in an aircraft, the trainer should not simulate a failure condition that could induce a safety risk, e.g., unexpected engine failure.
- (b) The ground training should cover the specified training syllabus (see AMC2 SPO.SPEC.MCF.120).
- (c) The flight demonstration should include the techniques for the most significant checks covered in the ground training. As part of this demonstration, the pilots under training should be given the opportunity to conduct checks themselves under supervision.
- (d) The ground training and flight demonstration should be provided by experienced flight crew with test or maintenance check flight experience. Flight demonstrations should be instructed by any of the following persons:
  - (1) a qualified test pilot; or
  - (2) an aircraft manufacturer's pilot experienced in conducting pre-delivery check flights; or
  - (3) a type rated pilot, currently authorised by the operator, to conduct maintenance check flights.
- (e) Upon successful completion of the training a record should be kept.

**AMC2 SPO.SPEC.MCF.120 Flight crew training course**

## COURSE SYLLABUS

In the case of aeroplanes and helicopters, the training course syllabus includes the following subjects:

- (a) Legal aspects: regulations concerning maintenance check flights.
- (b) Organisation of maintenance check flights: crew composition, persons on board, definition of tasks and responsibilities, briefing requirements for all participants, decision-making, ATC, development of a flight programme.
- (c) Environmental conditions: weather and light requirements for all flight phases.
- (d) Flight preparation: aircraft status, weight and balance, flight profile, airfield limitations, list of checks.
- (e) Equipment and instrumentation: on board access to various parameters.
- (f) Organisation on board: CRM, crew coordination and response to emergency situations.
- (g) Ground checks and engine runs: review of checks and associated techniques.
- (h) Taxi and rejected take-off: specificities and techniques.
- (i) Techniques for checks of various systems:

**Aeroplanes:** flight controls, high speed and low speed checks, autopilot and autothrottle, depressurisation, hydraulic, electricity, air conditioning, APU, fuel, anti-ice, navigation, landing gear, engine parameters and relight, anemometry.

**Helicopters:** engine power topping, track and balance, high wind start, autopilot, performance measurement, hydraulic, electricity, air conditioning, APU, fuel, anti-ice, navigation, landing gear, engine checks and relight, autorotation, anemometry.

- (j) Review of failure cases specific to these checks.
- (k) Post-flight analysis.

### **GM1 SPO.SPEC.MCF.125 Crew composition and persons on board**

#### **TASK SPECIALIST'S ASSIGNED DUTIES**

A task specialist is trained and briefed as necessary to perform his/her intended functions. Based on this, the operator is able to determine if a task specialist is suitable to assist the flight crew in the cockpit performing functions, such as:

- (a) assistance on ground for flight preparation;
- (b) assistance in navigation;
- (c) assistance in radio communication/radio navigation means selection;
- (d) reading of checklists; and
- (e) monitoring of parameters.

If a task specialist's assigned duties are not directly related to the flight operation but related to the maintenance check (e.g. reporting from the cabin on a certain vibration or noise), the required training and briefing should be adequate to this function.

### III. Draft amendment to Decision 2003/19/RM

#### 6. Amendment to Annex I – Acceptable Means of Compliance to Part-M

In AMC M.A.801(g), paragraph 1 is modified as follows:

... or by virtue of the condition of the aircraft requiring additional maintenance downtime or because the maintenance data require to perform a flight as part of the maintenance, as described in paragraph 4.'

In AMC M.A.801(g), a new paragraph, paragraph 4, is added:

- (4) Certain maintenance data issued by the design approval holder (e.g. aircraft maintenance manual (AMM)) require that a maintenance task is performed in flight as a necessary condition to complete the maintenance ordered. Within the aircraft limitations, the person authorised to certify the maintenance per M.A.801 should release the incomplete maintenance before this flight. GM to M.A.301(8) describes the relations with the aircraft operator, who retains responsibility for the maintenance check flight. After performing the flight and any additional maintenance necessary to complete the maintenance ordered, a certificate of release to service should be issued in accordance with M.A.801.

#### 7. Amendment to Annex II – Acceptable Means of Compliance to Part-145

In AMC 145.A.50(e), paragraph 1 is modified as follows:

... or by virtue of the condition of the aircraft requiring additional maintenance downtime or because the maintenance data require to perform a flight as part of the maintenance, as described in paragraph 4.'

In AMC 145.A.50(e), a new paragraph, paragraph 4, is added:

- (4) Certain maintenance data issued by the design approval holder (e.g. aircraft maintenance manual (AMM)) require that a maintenance task is performed in flight as a necessary condition to complete the maintenance ordered. Within the aircraft limitations, an appropriately authorised certifying staff should release the incomplete maintenance before this flight on behalf of the maintenance organisation. GM to M.A.301(8) describes the relations with the aircraft operator, who retains responsibility for the maintenance check flight. After performing the flight and any additional maintenance necessary to complete the maintenance ordered, a certificate of release to service should be issued in accordance with 145.A.50(a).

#### 8. Amendment to Annex VIII – Guidance Material to Part-M

A new GM M.A.301(8) is added:

##### **GM M.A.301(8) Maintenance check flights**

- (a) Maintenance check flights, as defined in the Regulation on Air Operations, are carried out under the control and responsibility of the aircraft operator. During the flight preparation, the flight and the post-flight activities and for the aircraft hand over, the processes requiring the involvement of the maintenance organisations or their personnel should be agreed in advance with the operator.
- (b) Depending on the aircraft defect and the status of the maintenance activity performed before the flight, different scenarios are possible and are described below:

- (1) The aircraft maintenance manual (AMM), or any other maintenance data issued by the design approval holder, requires that a maintenance check flight is performed before completion of the maintenance ordered. In this scenario, a certificate of release to service after incomplete maintenance when in compliance with M.A.801(g) or 145.A.50(e) should be issued by the maintenance organisation and the aircraft can be flown for this purpose under its airworthiness certificate.

Due to incomplete maintenance, for aircraft used in commercial air transport, it is advisable to open a new entry on the aircraft technical log to identify the need for a maintenance check flight. This new entry should contain or refer, as necessary, to data relevant to perform the maintenance check flight, such as: aircraft limitations due to incomplete maintenance, maintenance data reference and maintenance actions to be performed after the flight.

After a successful maintenance check flight, the maintenance records should be completed, the remaining maintenance actions finalised and the aircraft released to service in accordance with the maintenance organisation approved procedures.

- (2) Based on its own experience and for safety considerations and/or quality assurance, an operator may wish to perform a maintenance check flight after the aircraft has undergone certain maintenance while maintenance data does not call for such flight. Therefore, after the maintenance has been properly carried out, a certificate of release to service is issued and the aircraft airworthiness certificate remains valid for this flight.
- (3) After troubleshooting of a system on ground, a maintenance check flight is proposed by the maintenance organisation as confirmation that the solution applied has restored the airworthiness of the aircraft. During the maintenance performed the maintenance instructions were followed for the complete restoration of the system and therefore a certificate of release to service is issued before the flight. The airworthiness certificate is valid for the flight. An open entry requesting this flight may be recorded in the aircraft technical log.
- (4) An aircraft system has been found to fail, the dispatch of the aircraft is not possible in accordance with maintenance data and the satisfactory diagnosis of the cause of the fault can only be performed in flight. The process for this troubleshooting is not described in the maintenance data and therefore scenario (1) does not apply. Since the aircraft cannot fly under its airworthiness certificate because it has not been released to service after maintenance, a permit to fly issued in accordance with Regulation (EC) No 1702/2003 is required.

After the flight and the corresponding maintenance work, the aircraft can be released to service and continue to operate under its original certificate of airworthiness.

For certain maintenance check flights, the data obtained or verified in flight will be necessary for assessment or consideration after the flight by the maintenance organisation prior to issuing the maintenance release. For this purpose, when the personnel of the maintenance organisation cannot perform these functions in flight, the maintenance organisation may rely on the crew performing the flight to complete these data or to make statements about in-flight verifications. In this case the maintenance organisation should appoint the crew personnel playing such a role and brief them on their functions before the flight.