European Aviation Safety Agency

Opinion No 01/2017

Maintenance check flights

RELATED NPA/CRD: 2012-08 — RMT.0393 & RMT.0394 (MDM.097(a)&(b))

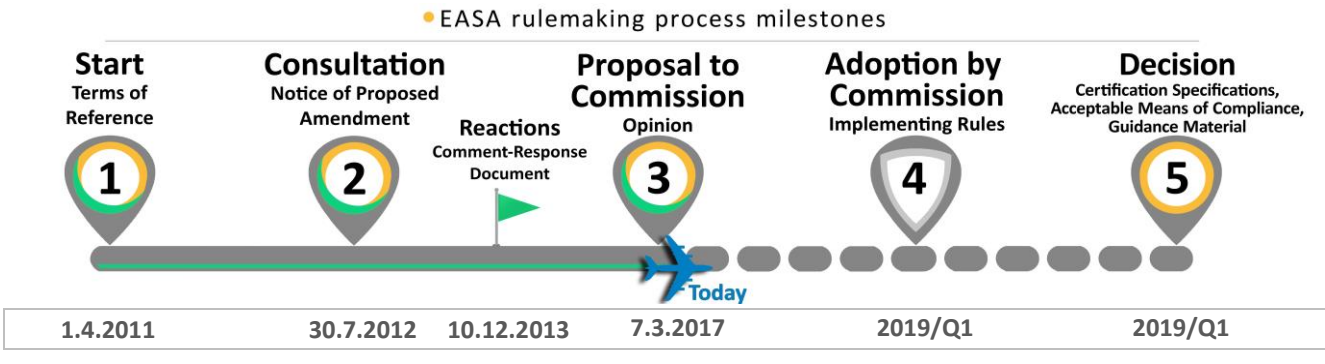
EXECUTIVE SUMMARY

The objective of this Opinion is to mitigate the risks linked to maintenance check flights (MCFs). In MCFs, the pilots check the adequate functioning of aircraft systems that cannot be fully tested on the ground.

This Opinion proposes to establish safety requirements to adequately select pilots and apply procedures for MCFs while distinguishing between MCFs with complex aircraft and MCFs with non-complex aircraft.

The proposed changes are expected to increase safety of MCFs. Operators conducting the higher risk category of these MCFs with complex aircraft will have to develop their own procedures and ensure coordination between the operation, the continuing airworthiness management organisation (CAMO) and the involved maintenance organisation.

Action area:	Design and maintenance improvements		
Affected rules:	Commission Regulation (EU) No 965/2012; Commission Regulation (EU) No 748/2012; Decision 2012/017/R; Decision 2015/029/R		
Affected stakeholders:	Operators; maintenance organisations; CAMOs; national aviation authorities (NAAs)		
Driver:	Safety	**Rulemaking group:**	Yes
Impact assessment:	Light	**Rulemaking Procedure:**	Standard



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1. About this Opinion

1.1. How was this Opinion developed

The European Aviation Safety Agency (EASA) developed this Opinion in line with Regulation (EC) No 216/2008[1] and the Rulemaking Procedure[2].

This rulemaking activity is included in the EASA's Rulemaking and Safety Promotion Programme for 2017-2020[3] under RMT.0393 & RMT.0394 (former task number MDM.097(a)&(b)). The scope and timescales of the task were defined in the related ToR[4].

The *draft* text of this Opinion has been developed by EASA based on the input of Rulemaking Group (RMG) RMT.0393 & RMT.0394 (MDM.097(a)&(b))[5]. All interested parties were consulted through Notice of Proposed Amendment (NPA) 2012-08[6,7]. 362 comments were received from interested parties including industry, NAAs and social partners.

EASA addressed and responded to the comments received on the NPA based on the input of RMG RMT.0393 & RMT.0394 (MDM.097(a)&(b)). The comments received, and the EASA responses thereto, are presented in Comment-Response Document (CRD) 2012-08[8].

The *final* text of this Opinion as well as the draft implementing rule (IR) have been developed by EASA after taking the reactions to the CRD into consideration and conducting a focused consultation. The draft rule text proposed by EASA is published on its website[9].

The major milestones of this rulemaking activity are presented on the title page.

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

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

3 https://www.easa.europa.eu/document-library/rulemaking-programmes/rulemaking-and-safety-promotion-programme-2017-2021

4 https://www.easa.europa.eu/system/files/dfu/EASA-ToR-MDM.097%28a%29_MDM.097%28b%29-00-04042011.pdf

5 https://www.easa.europa.eu/system/files/dfu/EASA-GC-MDM.097%28a%29_MDM.097%28b%29-00-04042011.pdf

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

7 https://www.easa.europa.eu/system/files/dfu/NPA%202012-08.pdf

8 https://www.easa.europa.eu/document-library/comment-response-documents/crd-2012-08

9 http://easa.europa.eu/document-library/opinions

1.2. The next steps

This Opinion contains the proposed amendments to Regulations (EU) No 748/2012[10] and (EU) No 965/2012[11], and the rationale behind. It is submitted to the European Commission to be used as a technical basis in order to prepare a European Union (EU) regulation.

For information, EASA also publishes with this Opinion the draft text of the related EASA decision containing the draft acceptable means of compliance (AMC)/guidance material (GM). The final decision will be published by EASA once the European Commission adopts the related EU regulation.

The draft amendments to the IRs and to the AMC/GM proposed with this Opinion refer to text currently in force. Adequate coordination with other related, ongoing rulemaking tasks shall be ensured at the time of adoption of the final text. This is of particular relevance with respect to the upcoming draft opinion on 'Non-commercial operations of aircraft listed in the operations specifications (OpSpecs) by an AOC holder' (RMT.0352), whose point ORO.AOC.125 'Non-commercial operations of aircraft listed in the operations specifications by the holder of an AOC' will also be proposed for amendment.

[10] Commission Regulation (EU) No 748/2012 of 3 August 2012 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 (OJ L 224, 21.8.2012, p. 1) (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0748&rid=1).

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

2. In summary — why and what

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

The scope of this rulemaking activity is outlined in ToR RMT.0393 & RMT.0394 (MDM.097(a) & (b)) Issue 1.

A number of air accidents/incidents have happened in relation to flights conducted with aircraft that had just undergone incomplete/inadequate maintenance or to flights conducted to verify adequate maintenance of aircraft.

Following the Perpignan accident[12], EASA reviewed the 'air operations requirements' and found that the issue of MCFs was not sufficiently addressed by the EU regulations. Therefore, EASA launched this rulemaking activity in consultation with its advisory bodies (ABs).

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 2 of Regulation (EC) No 216/2008. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2.

The specific objective of this proposal is to establish the minimum requirements to be met when conducting MCFs and, therefore, address the safety gap that was identified in the accidents/incident referred to in the ToR.

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

The safety recommendations (SRs) addressed to EASA after the Perpignan accident, as well as SR 2010-073 and 2010-075 recorded in the AAIB Bulletin 09/2010, were considered as input for the amendment of the affected rules with respect to MCFs, as follows:

First Safety Recommendation from the BEA report	Safety Recommendation: 'That EASA detail in the EU-OPS the various types of non-revenue flights that an operator from a EU state is authorised to perform.'
	Reference: BEA report on the accident on 27 November 2008 off the coast of Canet-Plage (66) to the Airbus A320-232 registered D-AXLA operated by XL Airways Germany (https://www.bea.aero/docspa/2008/d-la081127.en/pdf/d-la081127.en.pdf).
	Outcome: The proposed amendments to the Air Operations Regulation introduce maintenance check flights as flight types that an operator may conduct under different applicable requirements compared to those applicable for 'regular' flights (refer to new Section 5 'Maintenance check flights (MCFs)' of Subpart E of Annex VIII. Other non-revenue flights are

[12] BEA report on the accident on 27 November 2008 off the coast of Canet-Plage (66) to the Airbus A320-232 registered D-AXLA operated by XL Airways Germany (https://www.bea.aero/docspa/2008/d-la081127.en/pdf/d-la081127.en.pdf).

	being considered under RMT.0352.

Second Safety Recommendation from the BEA report	Safety Recommendation: '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.'
	Reference: BEA report on the accident on 27 November 2008 off the coast of Canet-Plage (66) to the Airbus A320-232 registered D-AXLA operated by XL Airways Germany (https://www.bea.aero/docspa/2008/d-la081127.en/pdf/d-la081127.en.pdf).
	Outcome: The proposed amendments to the Air Operations Regulation will require operators conducting Level A maintenance check flights (as defined in SPO.SPEC.MCF.100) with a dedicated manual and dedicated flight check programmes (refer to SPO.MCF.110 and 115) and adequate coordination with the organisation in charge of the continuing airworthiness of the aircraft and the maintenance organisation (GM M.A.301(8) and AMC 145.A.50(e)). Also, SPO.SPEC.MCF.115 will require operators conducting Level A maintenance check flights to choose adequate crew, having the pilot-in-command minimum flying experience (flown hours) and having followed maintenance check flight training.

Third Safety Recommendation 2010-073 of AAIB Bulletin 09/2010	Safety Recommendation 2010-073: '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.'
	Reference: Serious incident EW/C2009/01/02 (AAIB Bulletin: 09/2010) (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384837/Bulletin_9-2010.pdf).
	Outcome: The proposed amendments to the Air Operations Regulation will require operators conducting Level A maintenance check flights (as defined in SPO.SPEC.MCF.100) with a dedicated manual and dedicated flight check programmes (refer to SPO.MCF.110 and 115) and adequate coordination with the organisation in charge of the continuing airworthiness of the aircraft and the maintenance organisation (GM M.A.301(8) and AMC 145.A.50(e)).

Fourth Safety Recommendation 2010-075 of AAIB Bulletin 09/2010	Safety Recommendation 2010-075: '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.'
	Reference: Serious incident EW/C2009/01/02 (AAIB Bulletin: 09/2010) (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384837/Bulletin_9-2010.pdf).
	Outcome: The proposed amendments to point SPO.SPEC.MCF.115 of the Air Operations Regulation will require operators conducting Level A maintenance check flights to choose adequate crew, having the pilot-in-command minimum flying experience (flown hours) and having followed maintenance check flight training.

For the sake of consistency, some amendments are also proposed to Regulation (EU) No 748/2012 and to related AMC/GM.

EASA will publish a decision amending the related AMC/GM once the proposed IR is adopted by the European Commission. The text of the decision will be based on the related proposed text of the CRD, with some adjustments due to the reactions received to the CRD (explained below), or as required for consistency with the final text of the IR. A draft decision, based on the related proposed text of this Opinion, is available for information only in the Appendix on p. 9.

2.4. What are the stakeholders' views — outcome of the consultation

Some stakeholders have reacted to the EASA proposal presented in the CRD. A description of their concerns and EASA's resolutions follow below:

— Some stakeholders commented that the applicability of the MCF rules was not adequately defined and that EASA should be careful not to unintentionally impose a 'declaration' for the operation of MCFs per ORO.DEC.100. EASA has reviewed any potential implications of placing MCF requirements in Part-SPO and amended the relevant IRs (both cover Regulations and Parts) to prevent any undesired implications on all types of operators.

— In this context, the proposed requirements applicable to MCFs as non-commercial activity with other than complex motor-powered aircraft have been placed in Part-NCO, with alleviated requirements compared to those of Part-SPO. This has been done at the Opinion stage, and not at the time of the NPA or CRD, since commercial and non-commercial specialised operations have been placed in Part-SPO and Part-NCO respectively only after the publication of NPA and CRD 2012-08.

— Aircraft other than complex motor-powered aircraft flown for a MCF as a commercial activity will be subject to Part-SPO, as it is the case for other commercial specialised operations.

— Some stakeholders requested that the definition of 'MCF' be revised or that at least the same rules should apply to other flights, such as lease transfer flights. EASA preferred to not expand the list of flights covered under this rulemaking task, as already stated in the CRD, and considered this comment in the frame of RMT.0352 (OPS.075(a)) & RMT.0353 (OPS.075(b)) 'Non-commercial operations of aircraft listed in the operations specifications by an AOC holder'[13]. Similarly, other flights not falling under the definition of MCF and conducted under the responsibility of a design organisation approval (DOA) or production organisation approval (POA) are also not covered by the rules for MCFs and would be the subject of a different rulemaking activity.

— Some stakeholders insisted that the proposed experience requirements for the pilot-in-command (PIC) on complex motor-powered aircraft (CMPA) flying Level A MCFs (those with higher risks) might be, in certain cases, difficult to achieve and that additional experience gained through regular flying (hours flown) would not necessarily qualify as relevant experience to conduct MCFs.

In particular, these stakeholders were referring to the 400-flight-hour experience requirement in the same aircraft type, as it was proposed in the draft text of the CRD. EASA has reconsidered its proposal and reduced the number of hours flown in the aircraft type. Still the possibility remains for the operator to designate, in accordance with internal procedures, a pilot not fulfilling the amount of hours required on a given aircraft type when that aircraft type is new for the operator.

— For the benefit of the general aviation community, the draft IR proposed with this Opinion is not prescriptive by establishing the requirements to be satisfied by the flight crews conducting Level A MCFs with other than complex motor-powered aircraft neither under NCO (non-commercial) nor under SPO (commercial) rules. EASA intends to create an AMC to state that a flight instructor is an adequate PIC to conduct such flights.

— With the proposed draft text presented in the CRD, ELA1/2 had been proposed for exclusion from the applicability of the MCF rules. Considering that this Opinion eliminates prescriptive requirements for flight crews flying other than complex motor-powered aircraft, and more importantly, that some alleviations from Part-NCO requirements (refer to the proposed NCO.SPEC.MCF.105) are required and have been introduced in this Opinion in order to conduct MCFs, this Opinion does not exclude any aircraft from the MCF rules.

— One commenter suggested that the operators should only be required to submit to their NAA the MCF manual changes when they are substantial. The proposal from EASA does not require any response from the NAAs when receiving the MCF manual or subsequent updates thereof, and consequently EASA considers that this is no significant administrative burden for the operators. Therefore, no change has been made in this regard compared to the CRD. Operators conducting MCFs under Part-SPO are exempted from submitting a 'declaration'.

[13] https://www.easa.europa.eu/system/files/dfu/ToR%20RMT%200352-0353.pdf

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

The comments received on the NPA and the reactions to the CRD have been duly considered by EASA in the preparation of this Opinion. In this respect, EASA proposes with this Opinion less stringent requirements for conducting MCFs with aircraft other than CMPA and alleviations as regards pilot flight experience (hours flown) before conducting MCFs with CMPA.

EASA considers that this Opinion is a balanced proposal with requirements proportionate to the complexity of the aircraft and the intended MCF, establishing minimum prescriptive requirements for the more demanding MCFs and reducing the burden for the less demanding MCFs with other than CMPA, without compromising safety.

Cologne, 7 March 2017

Patrick KY
Executive Director

3. References

3.1. Affected regulations

— Commission Regulation (EU) No 748/2012 of 3 August 2012 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 (OJ L 224, 21.8.2012, p. 1), as last amended

— Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1), as last amended

3.2. Affected decisions

— Decision N° 2012/020/R of the Executive Director of the Agency of 30th October 2012 on acceptable means of compliance and guidance material 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 ('AMC AND GM TO PART 21') repealing Decision N° 2003/01/RM of the Executive Director of the Agency of 17 October 2003, as last amended

— Decision 2015/029/R of 17 December 2015 issuing acceptable means of compliance and guidance material to Part-M, Part-145, Part-66, and Part-147 of Regulation (EU) No 1321/2014 and repealing Decision 2003/19/RM of the Executive Director of the Agency of 28 November 2003, 'AMC and GM to the Annexes to Regulation (EU) No 1321/2014 — Issue 2', as last amended

— Decision 2014/018/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-SPO of Regulation (EU) No 965/2012 'AMC and GM to Part-SPO', as last amended.

3.3. Other reference documents

— Safety Recommendations (see ToR)

— BEA report on the accident on 27 November 2008 off the coast of Canet-Plage (66) to the Airbus A320-232 registered D-AXLA operated by XL Airways Germany (https://www.bea.aero/docspa/2008/d-la081127.en/pdf/d-la081127.en.pdf).

— AAIB Investigation report of the serious incident EW/C2009/01/02 (AAIB Bulletin: 09/2010) (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384837/Bulletin_9-2010.pdf)

4. Appendices

4.1. Appendix: Draft EASA Decision — For information only

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

(a) deleted text is ~~struck through~~;

(b) new or amended text is highlighted in grey;

(c) an ellipsis '[…]' indicates that the remaining text is unchanged.

Draft amendments to the AMC/GM to Annex VII (Part-NCO)

1) In AMC1 NCO.SPEC.100, a new subparagraph (g) is added as follows:

(g) the flight falls under the definition of 'maintenance check flight'.

2) In GM1 NCO.SPEC.100, a new subparagraph (21) is added, after subparagraph (20) of paragraph (a), as follows:

(21) maintenance check flights.

3) In Subpart E, a new Section 6 is added as follows:

Section 6 — Maintenance check flights (MCFs)

GM1 NCO.SPEC.MCF.110 Checklist and safety briefing

Specific preparation for the MCF is essential. In addition to the standard considerations before a typical flight (weather, aircraft weight and balance, pre-flight inspection and checklists, etc.), the pilot should inform ATC of the particular MCF, and if needed agree on the appropriate airspace, understand the airworthiness status of the aircraft and assess the complexity of the flight, and develop appropriate strategies to mitigate potential risks.

The operator planning to conduct an MCF should develop checklists for the in-flight assessment of the unreliable systems, considering relevant abnormal and emergency procedures. When developing the checklist, the operator should consider the applicable documentation available from the type certificate holder or other valid documentation.

The pilot-in-command should only allow on board the persons needed for the purpose of the flight and brief the crew and task specialist on abnormal and emergency procedures relevant for the MCF.

AMC1 NCO.SPEC.MCF.120 Flight crew requirements

The operator may select a flight instructor to act as pilot-in-command for a Level A MCF on other than complex motor-powered aircraft.

GM1 NCO.SPEC.MCF.125 Crew composition and persons on board

The task specialist should be trained as necessary in crew coordination procedures as well as emergency procedures and be appropriately equipped.

Draft amendments to the AMC/GM to Annex VIII (Part-SPO)

4) In Subpart E, a new Section 3 is added as follows:

Section 3 — Maintenance check flights (MCFs)

GM1 SPO.SPEC.MCF.105 Flight programme

DOCUMENTATION WHEN DEVELOPING A FLIGHT PROGRAMME

When developing a flight programme, the operator should consider the applicable documentation available from the type certificate holder or other valid documentation such as the Flight Safety Foundation Functional Check Flight Compendium.

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

CONTENTS OF THE MAINTENANCE CHECK FLIGHT MANUAL

The items to be covered in the manual for Level A MCFs with complex motor-powered aircraft should be as follows:

(a) General considerations:

(1) conditions requiring a MCF (e.g. heavy maintenance);

(2) appropriate maintenance release before the MCF;

(3) flight authorisation by the operator;

(4) process to develop a flight programme and procedures;

(5) relevant procedures to document MCFs in the aircraft records; and

(6) policy for the determination of 'Level A' or 'Level B' MCFs.

(b) Aircraft status:

(1) requirements for the status of the aircraft prior to departure (e.g. MEL, CDL and multiple defects) for the purpose of conducting an MCF;

(2) fuel loading, if applicable;

(3) mass and balance, if applicable; and

(4) specific test and safety equipment.

(c) Crew selection and other persons on board:

(1) qualifications;

(2) experience and recency;

(3) training; and

(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, and

(v) documents on board;

(3) information to ATC; and

(4) post-flight briefing.

(e) Contents of the flight programme and procedures: the flight programme should be thoroughly developed by the operator using applicable current data. It should contain the checks to be performed in flight and may include 'read and do' checklists where practicable. The following items should be included in the overall procedure:

(1) in-flight briefings;

(2) limits (not to be exceeded);

(3) specific entry conditions;

(4) task-sharing and call-outs;

(5) potential risks and contingency plans;

(6) information to additional crew; and

(7) adequate available airspace and coordination with ATC.

(f) External conditions:

(1) weather and light conditions;

(2) terrain;

(3) ATC, airspace; and

(4) airport (runway, equipment)/operating site.

(g) Documentation:

(1) specific documentation on board;

(2) in-flight recordings;

(3) results of the MCF and related data; and

(4) accurate recording of the required maintenance actions after the flight.

GM1 SPO.SPEC.MCF.115 and SPO.SPEC.MCF.120 Aircraft category

DEFINITION OF AIRCRAFT CATEGORY

In respect of the term 'aircraft category' used in the context of MCFs, it should be understood as 'category of aircraft' as defined in Commission Regulation (EU) No 1178/2011 (the Aircrew Regulation).

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 in a simulator or aircraft of the techniques for the checks in flight and failure conditions. In a demonstration performed in an aircraft, the trainer should not simulate a failure condition that could induce a safety risk.

(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 MCF experience. Flight demonstrations should be instructed by any of the following persons:

(1) a type rating instructor currently authorised by the operator to conduct MCFs; or

(2) a pilot assigned by an aircraft manufacturer and is experienced in conducting pre-delivery check flights; or

(3) a pilot holding a flight test rating.

(e) Upon successful completion of the training, a record should be kept and a training certificate issued to the trainee.

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

COURSE SYLLABUS

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

(a) Legal aspects: regulations concerning MCFs.

(b) Organisation of MCFs: 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: specifications and techniques.

(i) Techniques for checks of various systems:

(1) **aeroplanes:** flight controls, high-speed and low-speed checks, autopilot and autothrottle, depressurisation, hydraulic, electricity, air conditioning, APU, fuel, anti-icing, navigation, landing gear, engine parameters and relight, air data systems.

(2) **helicopters:** flight controls, engine power topping, track and balance, high-wind start, autopilot, performance measurement, hydraulic, electricity, air conditioning, APU, fuel, anti-icing, navigation, landing gear, engine checks and relight, autorotation, air data systems.

(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, EQUIPMENT AND TRAINING

(a) The operator should ensure that the task specialist is trained and briefed as necessary to assist the flight crew, including performing functions such as but not limited to:

(1) assistance on ground for flight preparation;

(2) reading of MCF checklists; and

(3) monitoring and recording of relevant aircraft or systems' parameters.

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

(c) The task specialist should be trained as necessary in crew coordination procedures and emergency procedures and be appropriately equipped.

(d) Only personnel (crew and task specialists) essential for the completion of the flight should be on board.

Draft amendments to the AMC/GM to Part-21

5) In GM 21.A.701(a), a new subparagraph (16) is added, after subparagraph (15) and before the 'Note', as follows:

(16) Flying an aircraft for troubleshooting purposes or to check the functioning of one or more systems, parts or appliances after maintenance.

— After maintenance, when the diagnosis of the functioning of an aircraft system needs to be made in flight and the design approval holder has not issued instructions to perform this diagnosis within the approved aircraft limitations, the flight should be conducted under a permit to fly. Further guidance is available in subparagraph (b) of GM M.A.301(8) of the AMC/GM to Part-M.

Draft amendments to the AMC/GM to Annex I (Part-M)

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

GM M.A.301(8) Maintenance check flights (MCFs)

(a) The definition of and operational requirements for MCFs are laid down in the Air Operations Regulation and are carried out under the control and responsibility of the aircraft operator. During the flight preparation, the flight and the post-flight activities as well as for the aircraft handover, the processes requiring the involvement of the maintenance organisations or their personnel should be agreed in advance with the operator. The operator should consult as necessary with the CAMO in charge of the airworthiness of the aircraft.

(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 an MCF be performed before completion of the maintenance ordered. In this scenario, a certificate 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 system to identify the need for an MCF. This new entry should contain or refer, as necessary, to data relevant to perform the MCF, such as: aircraft limitations and any potential effect on operational and emergency equipment due to incomplete maintenance, maintenance data reference and maintenance actions to be performed after the flight.

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

(2) Based on its own experience and for reliability considerations and/or quality assurance, an operator or CAMO may wish to perform an MCF 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, an MCF is proposed by the maintenance organisation as confirmation that the solution applied has restored the normal system operation. During the maintenance performed, the maintenance instructions are 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 the maintenance data, and the satisfactory diagnosis of the cause of the fault can only be made 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 (EU) No 748/2012 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 MCFs 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 this data or to make statements about in-flight verifications. In this case, the maintenance organisation should appoint the crew personnel playing such a role on its behalf and, before the flight, brief them on their scope, functions and the detailed process to be followed.

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

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

8) In AMC M.A.801(g), subparagraph (4) is added as follows:

(4) Certain maintenance data issued by the design approval holder (e.g. aircraft maintenance manual (AMM)) require that a maintenance task be 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, which retains the responsibility for the MCF. 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.

9) Paragraph 2.16 of Appendix II to AMC M.A.711(a)(3) is replaced by the following:

2.16 Maintenance check flight (MCF) procedures

MCFs are performed under the control of the operator in coordination with the CAMO. MCF requirements from the subcontracted organisation or contracted Part-145 maintenance organisation should be agreed by the operator/CAMO.

10) Part D of Chapter 2 of Appendix IV to AMC M.A.604 is amended as follows:

— Release to service – Certificate of release to service
  - Procedure for signing the CRS (including preliminary actions)
  - Certificate of release to service wording and standardised form
  - Completion of the aircraft continuing airworthiness record system
  - Completion of EASA Form 1
  - Incomplete maintenance
  - Maintenance c~~C~~heck flight authorisation
  - Copy of CRS and EASA Form 1

[…]

11) The table of contents of Appendix V to AMC M.A.704 is modified as follows:

[…]

1.13 Maintenance c~~C~~heck flight procedures.

[…]

12) Paragraph 1.13 of Appendix V to AMC M.A.704 is replaced by the following:

1.13 Maintenance check flight (MCF) procedures

(The criteria for performing an MCF are normally included in the aircraft maintenance programme or derived by the scenarios described in GM M.A.301(8). This paragraph should explain how the MCF procedure is established in order to meet its intended purpose (for instance, after a heavy maintenance check, after engine or flight control removal installation, etc.), and the release procedures to authorise such an MCF.)

13) Paragraph 1.13 of PART 3 of Appendix VII to AMC M.B.702(f) (EASA FORM 13) is amended as follows:
[…]

1.13 Maintenance cCheck flight procedures
[…]

Draft amendments to the AMC/GM to Annex II (Part-145)

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

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

15) In AMC 145.A.50(e), paragraph 4 is added as follows:

(4) Certain maintenance data issued by the design approval holder (e.g. aircraft maintenance manual (AMM)) require that a maintenance task be 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 the flight on behalf of the maintenance organisation. GM to M.A.301(8) describes the relations with the aircraft operator, which retains the responsibility for the MCF. 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).