



Notice of Proposed Amendment 2016-06 (B)

Fuel planning and management

sub-NPA 2016-06 (B) ‘Helicopters — Annex I (Definitions), Part-CAT, Part-SPA, Part-NCC, Part-NCO & Part-SPO’

RMT.0573 — 15.7.2016

EXECUTIVE SUMMARY

This sub-Notice of Proposed Amendment (sub-NPA) addresses a level playing field issue related to fuel planning and management with regard to helicopter fuel requirements. Safety issues are addressed in the domain of refuelling and in-flight fuel management, while simplification, clarification and consistency issues are addressed in the domain of fuel planning.

The specific objective of this sub-NPA is to:

- regulate helicopter refuelling with rotors turning in alignment with the current industry best practices;
- pursue International Civil Aviation Organization (ICAO) developments, included in the ICAO State Letter AN 11/32.3.11-14/11 of 7 April 2014, subject to the adoption of Amendment 19 to ICAO Annex 6, Part III;
- align European Union (EU) rules for in-flight fuel management with current ICAO standards; and
- clarify and simplify the rules for helicopter fuel planning.

The proposed changes are expected to ensure harmonisation with ICAO and alignment with industry best practices.

This sub-NPA is part of a set of three sub-NPAs as follows:

Sub-NPA 2016-06 (A): Aeroplanes — Annex I (Definitions), Part-ARO, Part-CAT

Sub-NPA 2016-06 (B): Helicopters — Annex I (Definitions), Part-CAT, Part-SPA, Part-NCC, Part-NCO & Part-SPO

Sub-NPA 2016-06 (C): Aeroplanes/helicopters — Part-NCC, Part-NCO & Part-SPO

Applicability		Process map											
Affected regulations and decisions:	<ul style="list-style-type: none"> — Annex I (Definitions) — Annex IV (Part-CAT); — Annex V (Part-SPA); — Annex VI (Part-NCC); — Annex VII (Part-NCO); — Annex VIII (Part-SPO) to Regulation (EU) No 965/2012; <ul style="list-style-type: none"> — ED Decision 2012/015/R; — ED Decision 2014/017/R; — ED Decision 2014/015/R; — ED Decision 2012/019/R; — ED Decision 2013/021/R — ED Decision 2014/016/R; — ED Decision 2014/018/R 	Terms of reference (ToR), Issue 1: <table border="0"> <tr><td>27.4.2015</td></tr> </table> Concept paper (CP): <table border="0"> <tr><td>No</td></tr> </table> Rulemaking group (RMG): <table border="0"> <tr><td>Yes</td></tr> </table> Regulatory impact assessemnt (RIA) type: <table border="0"> <tr><td>Light</td></tr> </table> Technical consultation during NPA drafting <table border="0"> <tr><td>Yes</td></tr> </table> NPA consultation duration: <table border="0"> <tr><td>4 months</td></tr> </table> Review group (RG): <table border="0"> <tr><td>Yes</td></tr> </table> Focused consultation: <table border="0"> <tr><td>Yes</td></tr> </table> Opinion expected publication in: <table border="0"> <tr><td>2017/Q3</td></tr> </table> Decision expected publication in: <table border="0"> <tr><td>2018/Q4</td></tr> </table>	27.4.2015	No	Yes	Light	Yes	4 months	Yes	Yes	2017/Q3	2018/Q4	
27.4.2015													
No													
Yes													
Light													
Yes													
4 months													
Yes													
Yes													
2017/Q3													
2018/Q4													
Affected stakeholders:	Flight crew; air operators; and national aviation authorities (NAAs)												
Driver/origin:	Level playing field												
Reference:	Safety Recommendation FRAN-2012-026 (BEA)												



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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this sub-NPA in line with Regulation (EC) No 216/2008¹ (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure².

This rulemaking activity is included in the Agency's [5-year Rulemaking Programme](#) under RMT.0573.

The text of this sub-NPA has been developed by the Agency based on the outcome of a focused consultation³ with representatives of NAAs and industry. It is hereby submitted for consultation of all interested parties⁴.

The process map on the title page contains the major milestones of this rulemaking activity to date and provides an outlook of the timescales of the next steps.

1.2. The structure of this sub-NPA and related documents

Chapter 1 of this sub-NPA contains the procedural information related to this task. Chapter 2 (Explanatory Note) explains the core technical content. Chapter 3 contains the proposed text for the new requirements. Chapter 4 contains the RIA showing which options were considered and what impacts were identified, thereby providing the detailed justification for this sub-NPA.

1.3. How to comment on this sub-NPA

Please submit your comments using the automated **comment-response tool (CRT)** available at <http://hub.easa.europa.eu/crt/>⁵.

The deadline for submission of comments is **15 November 2016**.

1.4. The next steps in the procedure

Following the closing of the sub-NPA public consultation period, the Agency will review all comments. The outcome of the sub-NPA public consultation will be reflected in a comment-response document (CRD).

The Agency will publish the CRD concurrently with the Opinion.

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).

² The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's 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 the Agency for the issuing of opinions, certification specifications and guidance material.

³ The focussed consultation was held in March 2016 in Cologne with representatives of Luftfahrtstilsynet (the Civil Aviation Authority (CAA) of Norway), Agencia Estatal de Seguridad Aérea (AESA) of Spain, Asociación Española de Compañías Aéreas (AECA) of Spain, European Helicopter Association (EHA), and the Agency.

⁴ In accordance with Article 52 of the Basic Regulation and Articles 6(3) and 7 of the Rulemaking Procedure.

⁵ In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).



Based on the outcome of the sub-NPA public consultation, the Opinion will contain the proposed amendments to Regulation (EU) No 965/2012⁶ (hereinafter referred to as the 'Air OPS Regulation'), and will be submitted to the European Commission to be used as a technical basis in order to prepare an EU Regulation.

Following the adoption of the Regulation, the Agency will issue a Decision containing the related acceptable means of compliance (AMC)/guidance material (GM).

⁶ 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).



2. Explanatory Note

This sub-NPA proposes a set of rules for the refuelling of a helicopter while its engines are running (hot refuelling), as well as for updating the Air OPS Regulation with regard to fuel-related issues, following Amendment 19 of ICAO Annex 6, Part III.

2.1. Overview of the issues to be addressed

The objectives of this sub-NPA are the following:

- improve the clarity of the existing rules;
- make the implementing rules (IRs) leaner with regard to the existing requirements;
- add specific requirements for the most safety-sensitive issue of refuelling helicopters with rotors turning, which is currently being addressed by ICAO;
- align the rules with Amendment 19 of ICAO Annex 6, Part III; and
- simplify and achieve consistency among AMC to Part-ORO, Part-CAT, Part-NCC, Part-NCO, Part-SPA and Part-SPO, thus benefiting operators and pilots involved in various kinds of operations.

2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2 of this sub-NPA.

The specific objective of this proposal is to provide proportionate and harmonised rules for helicopter hot refuelling as well as for helicopter fuel planning and management.

2.3. Summary of the RIA

The RIA considers the impact analysis of the below options:

- Option 0 — Baseline option with no changes to the rules;
- Option 1 — Amend the current Regulation with regard to fuel policy (including in-flight fuel management) in accordance with Amendment 19 of ICAO Annex 6, Part III;
- Option 2 — Regulate helicopter refuelling with rotors turning (hot refuelling); and
- Option 3 — Propose a regulatory package that combines Option 1 with Option 2.

2.4. Overview of the proposed amendments

This sub-NPA proposes amendments to:

- the Air OPS Regulation; and
- AMC and GM to Annex 1 (Definitions for terms used in Annexes II to V), Part-CAT — Commercial air transport operations, Part-SPA — Specific approvals, Part-NCC — Non-commercial air operations with complex motor-powered aircraft, Part-NCO — non-commercial air operations with other-than complex motor-powered aircraft, and Part-SPO — Specialised operations.

An overview of those amendments is provided in the following Sections:



2.4.1. In-flight fuel management

Modify CAT.OP.MPA.281, NCC.OP.205, SPO.OP.190 and related AMC/GM in order to:

- achieve alignment with ICAO regarding the MINIMUM FUEL and MAYDAY FUEL broadcasts; and
- describe how the final reserve fuel should be protected.

2.4.2. Fuel policy

- Introduce the acronym LHO into Annex I (Definitions) to ensure that the term ‘local helicopter operation’ is not to be understood as plain English, and make clear that it refers to a definition. Since the aforementioned term is used in CAT.OP.MPA.100 and in the fuel policy, the related acronym has also been introduced into CAT.OP.MPA.100.
- Modify CAT.OP.MPA 151 in order to:
 - clarify what the fuel policy alleviation is;
 - clarify the alleviation’s applicability criteria and finalise the transposition of JAR-PS3.005(g); and
 - consistently use best-range speed for the visual flight rules (VFR) final reserve fuel (FRF).
- Modify SPA.HEMS.150 in order to:
 - clarify that SPA.HEMS.150 can be used as an alternative to the basic fuel policy that would otherwise still apply;
 - clarify that the reduced FRF can only be used when suitable precautionary landing sites can be safely reached, therefore, not at night; and
 - consistently use best-range speed for the VFR FRF.
- Modify SPO.OP.131 for consistency with Part-CAT, Part-NCC and Part-NCO in the use of holding speed for the calculation of the instrument flight rules (IFR) FRF.
- Amend CAT.OP.MPA.150 and the related AMC3 CAT.OP.MPA.150(b) in order to:
 - consistently use best-range speed for the VFR FRF;
 - achieve consistency with Part-SPO, Part-NCC and Part-NCO regarding the use of destination alternate (or destination if there is no alternate) for the calculation of the IFR FRF; and
 - maintain consistency with aeroplanes by moving the FRF values from AMC3 CAT.OP.MPA.150 to CAT.OP.MPA.150.

2.4.3. Refuelling

- Amend AMC3 ORO.MLR.100 for clarification.
- Create CAT.OP.MPA.197, NCC.OP.157, SPO.OP.157, NCO.OP.147, and related AMC/GM to regulate helicopter refuelling with rotors turning in such a way that:
 - alignment with the ICAO working group is achieved;
 - industry best practices are transposed;



- current operations can be carried on with, provided that the appropriate safety measures remain in place; and
 - a prior approval is required for refuelling with rotors turning, unless already covered by a specific approval.
- Delete the helicopter part of the current AMC1 CAT.OP.MPA.195 — Refuelling/defuelling with passengers embarking, on board or disembarking; and add helicopter specifics into new AMC2 CAT.OP.MPA.195.
- Modify SPA.HEMS.155 for consistency, given that all refuelling with passengers on board will already be covered by Part-CAT.
- Add AMC SPA.HOFO.110(a)(4) to acknowledge the fact that refuelling with rotors turning is a component of offshore operations.

2.4.4. Editorial issues

- Change the wording of CAT.OP.MPA.181 and CAT.OP.MPA.186, considering the proposed introduction of Subpart HOFO into Part-SPA (see [Opinion No 04-2015 — Helicopter Offshore Operations](#)). These changes would be applicable as of 1 July 2018, expected date of adoption of the new Regulation amending the Air OPS Regulation.
- Renumber requirements/AMC/GM, where necessary.



3. Proposed amendments

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

- (a) deleted text is marked with ~~strike through~~;
- (b) new or amended text is highlighted in grey;
- (c) an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

3.1. Draft regulation (draft opinion) — Annex I (Definitions)

1. Annex I (Definitions) is amended as follows:

Definitions for terms used in Annexes II to VIII

(...)

- (73) 'local helicopter operation (LHO)' means a commercial air transport operation of helicopters with a maximum certified take-off mass (MCTOM) over 3 175 kg and a maximum operational passenger seating configuration (MOPSC) of nine or less, by day, over routes navigated by reference to visual landmarks, conducted within a local and defined geographical area specified in the operations manual;

(...)

3.2. Draft AMC and GM (draft decision) — Annex I (Definitions)

1. GM2 Annex I Definitions is amended as follows:

GM2 Annex I Definitions

ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in the Annexes to this Regulation:

(...)

LHO local helicopter operation

(...)

3.3. Draft AMC and GM (draft decision) — Part-ORO

1. AMC3 ORO.MLR 100 is amended as follows:

AMC3 ORO.MLR.100 Operations manual — general

CONTENTS — CAT OPERATIONS

- (a) The OM should contain at least the following information, where applicable, as relevant for the area and type of operation:



A GENERAL/BASIC

0 ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

0.1 Introduction:

(...)

8.2 Ground handling instructions. As applicable to the operation:

8.2.1 Fuelling procedures. A description of fuelling procedures, including:

- (a) safety precautions during refuelling and defuelling including when an auxiliary power unit is in operation or when rotors are running or when an engine is or engines are running and, for aeroplanes, the prop-brakes are on;

(...)

3.4. Draft regulation (draft opinion) — Part-CAT1. CAT.OP.MPA.100 is amended as follows:**CAT.OP.MPA.100 Use of air traffic services**

(...)

- (b) Notwithstanding (a), the use of ATS is not required unless mandated by air space requirements for:

- (1) operations under VFR by day of other-than complex motor-powered aeroplanes;
- (2) helicopters with an MCTOM of 3 175 kg or less operated by day and over routes navigated by reference to visual landmarks; or
- (3) local helicopter operations (LHOs),

provided that search and rescue service arrangements can be maintained.

2. CAT.OP.MPA.150 and CAT.OP.MPA.151 are amended as follows:**CAT.OP.MPA.150 Fuel policy — helicopters**

(...)

- (c) The operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

- (1) taxi fuel, which should not be less than the amount expected to be used prior to take-off;
- (2) trip fuel;
- (3) reserve fuel consisting of:
 - (i) contingency fuel, which should be the amount of fuel required to compensate for unforeseen factors;



- (ii) alternate fuel, if a destination alternate aerodrome is required;
 - (iii) final reserve fuel, which should be:
 - (A) for visual flight rules (VFR) flights navigating by day with reference to visual landmarks, 20-min fuel at best-range speed; or
 - (B) when flying VFR and navigating by means other than by reference to visual landmarks or at night, 30-min fuel at best-range speed; or
 - (C) for instrument flight rules (IFR) flights, 30-min fuel at holding speed at 1 500 ft (450 m) above the aerodrome elevation in standard conditions calculated according to the estimated mass on arrival above the destination alternate or the destination when no destination alternate is required; and
 - (iv) additional fuel, if required by the type of operation;
- and
- (4) extra fuel if required by the commander.
- (d) The operator shall ensure that in-flight replanning procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination aerodrome other than originally planned includes:
- (...)

CAT.OP.MPA.151 — Fuel policy — alleviations

- ~~(a) Notwithstanding CAT.OP.MPA.150(b) to (d), for operations of performance class B aeroplanes the operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:~~
- ~~(i) taxi fuel, if significant;~~
 - ~~(ii) trip fuel;~~
 - ~~(iii) reserve fuel, consisting of:

 - ~~(A) contingency fuel that is not less than 5 % of the planned trip fuel or, in the event of in-flight replanning, 5 % of the trip fuel for the remainder of the flight; and~~
 - ~~(B) final reserve fuel to fly for an additional period of 45 minutes for reciprocating engines or 30 minutes for turbine engines;~~~~
 - ~~(iv) alternate fuel to reach the destination alternate aerodrome via the destination, if a destination alternate aerodrome is required; and~~
 - ~~(v) extra fuel, if specified by the commander.~~
- ~~(a1) Notwithstanding CAT.OP.MPA.150(b) to (d), for operations taking off and landing at the same aerodrome or operating site with ELA2 aeroplanes under VFR by day the operator shall specify the minimum final reserve fuel in the OM. This minimum final reserve fuel shall not be less than the amount needed to fly for a period of 45 minutes.~~
- (b)(e) Notwithstanding As an alternative to CAT.OP.MPA.150 paragraphs (b) to (d) above, for helicopters with an MCTOM of 3 175 kg or less, by day and over routes navigated by reference to**



visual landmarks, or for local helicopter operations (LHOs), the fuel policy shall ensure that, on completion of the flight, or series of flights, the final reserve fuel is ~~not less than an amount~~ sufficient for:

- (1) 30 minutes of flying time at ~~normal cruising~~ best-range speed; or
- (2) 20 minutes of flying time at ~~normal cruising~~ best-range speed when operating within an area providing continuous and suitable precautionary landing sites.

3. CAT.OP.MPA.181⁷ is renumbered and amended as follows:

CAT.OP.MPA.181~~181~~151 Selection of aerodromes and operating sites — helicopters

- (a) For flights under instrument meteorological conditions (IMC), the commander shall select a take-off alternate aerodrome within one hour flying time at normal cruising speed if it would not be possible to return to the site of departure due to meteorological reasons.
- (b) For IFR flights or when flying under VFR and navigating by means other than by reference to visual landmarks, the commander shall specify at least one destination alternate aerodrome in the operational flight plan unless:
 - (1) ~~the destination is a coastal aerodrome and the helicopter is routing from offshore;~~
 - (2) for a flight to any other land destination, the duration of the flight and the meteorological conditions prevailing are such that, at the estimated time of arrival at the site of intended landing, an approach and landing is possible under visual meteorological conditions (VMC); or
 - (3)(2) the site of intended landing is isolated and no alternate is available; in this case, a point of no return (PNR) shall be determined.
- (c) The operator shall select two destination alternate aerodromes when:
 - (1) the appropriate weather reports and/or forecasts for the destination aerodrome indicate that during a period commencing one hour before and ending one hour after the estimated time of arrival, the weather conditions will be below the applicable planning minima; or
 - (2) no meteorological information is available for the destination aerodrome.
- (d) ~~The operator may select off-shore destination alternate aerodromes when the following criteria are applied:~~
 - (1) ~~an off-shore destination alternate aerodrome shall be used only after a PNR. Prior to the PNR, on-shore alternate aerodromes shall be used;~~
 - (2) ~~OEI landing capability shall be attainable at the alternate aerodrome;~~
 - (3) ~~to the extent possible, deck availability shall be guaranteed. The dimensions, configuration and obstacle clearance of individual helidecks or other sites shall be assessed in order to~~

⁷ This amendment to CAT.OP.MPA.181 has already been proposed by [Opinion No 2015/04](#). Additionally, this sub-NPA proposes the renumbering of this requirement to CAT.OP.MPA.151.



~~establish operational suitability for use as an alternate aerodrome by each helicopter type proposed to be used;~~

~~(4) weather minima shall be established taking accuracy and reliability of meteorological information into account;~~

~~(5) the MEL shall contain specific provisions for this type of operation; and~~

~~(6) an off-shore alternate aerodrome shall only be selected if the operator has established a procedure in the operations manual.~~

~~(e) The operator shall specify any required alternate aerodrome(s) in the operational flight plan.~~

4. CAT.OP.MPA.186 is renumbered and amended as follows:

CAT.OP.MPA.186-152 Planning minima for IFR flights — helicopters

(a) Planning minima for take-off alternate aerodrome(s)

The operator shall only select an aerodrome or landing site as a take-off alternate aerodrome when the appropriate weather reports and/or forecasts indicate that, during a period commencing one hour before and ending one hour after the estimated time of arrival at the take-off alternate aerodrome, the weather conditions will be at or above the applicable landing minima specified in accordance with CAT.OP.MPA.110. The ceiling shall be taken into account when the only approach operations available are NPA operations. Any limitation related to OEI operations shall be taken into account.

(b) Planning minima for destination aerodrome and destination alternate aerodrome(s)

The operator shall only select the destination and/or destination alternate aerodrome(s) when the appropriate weather reports and/or forecasts indicate that, during a period commencing one hour before and ending one hour after the estimated time of arrival at the aerodrome or operating site, the weather conditions will be at or above the applicable planning minima as follows:

(1) except as provided in ~~CAT.OP.MPA.181(d)~~ **SPA.HOFO.120(b)**⁸, planning minima for a destination aerodrome shall be:

(i) RVR/VIS specified in accordance with CAT.OP.MPA.110; and

(ii) for NPA operations, the ceiling at or above MDH;

(2) planning minima for destination alternate aerodrome(s) are as shown in Table 1.

⁸ This new requirement has been proposed by [Opinion No 2015/04](#).



Table 1

Planning minima destination alternate aerodrome

Type of approach	Planning minima
CAT II and III	CAT I RVR
CAT I	CAT I + 200 ft/400 m visibility
NPA	NPA RVR/VIS + 400 m Ceiling shall be at or above MDH + 200 ft

5. CAT.OP.MPA.281 is renumbered and amended as follows:

CAT.OP.MPA.281-153 In-flight fuel management — helicopters

- (a) The operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are carried out.
- (b) The commander shall ~~ensure that~~ **monitor** the amount of usable fuel ~~remaining in flight to ensure that it is not less than the fuel required to proceed to an aerodrome or operating site where a safe landing can be made, with the planned final reserve fuel remaining.~~
- (c) ~~The commander shall declare an emergency when the actual usable fuel on board is less than final reserve fuel.~~ The pilot-in-command shall advise the air traffic control (ATC) of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at an aerodrome or operating site, the pilot calculates that any change to the existing clearance to that aerodrome or operating site, or other air traffic delays, may result in landing with less than the planned final reserve fuel.
- (d) The commander shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the usable fuel estimated to be available upon landing at the nearest site where a safe landing can be made is less than the final reserve fuel.

6. CAT.OP.MPA.182 is renumbered as follows:

CAT.OP.MPA.182-154 Destination alternate aerodromes — instrument approach procedures relying on GNSS — helicopters

The operator shall only select an aerodrome as a destination alternate aerodrome if an instrument approach procedure that does not rely on GNSS is available either at that aerodrome or at the destination aerodrome.’.

7. New CAT.OP.MPA.197 is introduced as follows:

CAT.OP.MPA.197 Refuelling with engine(s) and/or rotors running — helicopters

- (a) Refuelling with engine(s) and/or rotors running shall only be conducted:
 - (1) with no passengers or technical crew members embarking or disembarking;
 - (2) if the aerodrome/operating site operator allows such operations;
 - (3) in accordance with any specific procedures and limitations in the aircraft flight manual (AFM);
 - (4) with JET A or JET A-1 fuel types; and
 - (5) in the presence of the appropriate rescue and fire fighting facilities (RFFF).
- (b) The operator shall assess the risks associated with refuelling with engine(s) and/or rotors running.
- (c) The operator shall establish appropriate procedures to be followed by all involved personnel such as crew members and ground personnel.
- (d) The operator shall train its crew members and ensure that the involved ground personnel is trained appropriately.
- (e) The helicopter refuelling procedure with engine and/or rotors running and any change thereto shall be specified in the operations manual and require prior approval by the competent authority.

3.5. Draft AMC and GM (draft decision) — Part-CAT

1. AMC3 CAT.OP.MPA.150(b) is renumbered and amended as follows:

AMC31 CAT.OP.MPA.150(b) Fuel policy

PLANNING CRITERIA — HELICOPTERS

~~The operator should base the company fuel policy, including calculation of the amount of fuel to be carried, on the following planning criteria:~~

~~(a) — The amount of:~~

The operator should base the defined fuel policy, including calculation of the amount of fuel to be on board for departure, on the following planning criteria:

- (a) The usable fuel to be on board for departure should be the sum of the following:
 - (1) taxi fuel, which should not be less than the amount expected to be used prior to take-off, take into account local conditions at the departure site and APU consumption should be taken into account;
 - (2) trip fuel, which should include fuel:
 - (i) for take-off and climb from aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing;
 - (ii) from top of climb to top of descent, including any step climb/descent;



- (iii) from top of descent to the point where the approach procedure is initiated, taking into account the expected arrival procedure; and
- (iv) for approach and landing at the destination site;
- (3) contingency fuel, which should be:
 - (i) for IFR flights, or for VFR flights in a hostile environment, 10 % of the planned trip fuel; or
 - (ii) for VFR flights in a non-hostile environment, 5 % of the planned trip fuel;
- (4) alternate fuel, which should be:
 - (i) fuel for a missed approach from the applicable MDA/DH at the destination aerodrome to missed approach altitude, taking into account the complete missed approach procedure;
 - (ii) fuel for a climb from missed approach altitude to cruising level/altitude;
 - (iii) fuel for cruising from top of climb to top of descent;
 - (iv) fuel for descent from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure;
 - (v) fuel for executing an approach and landing at the destination alternate selected in accordance with CAT.OP.MPA.181~~151~~; and
 - (vi) for helicopters operating to or from helidecks located in a hostile environment, 10 % of (a)(4)(i) to (v);
- (5) final reserve fuel, ~~which should be:~~
 - ~~(i) for VFR flights navigating by day with reference to visual landmarks, 20 minutes' fuel at best range speed; or~~
 - ~~(ii) for IFR flights or when flying VFR and navigating by means other than by reference to visual landmarks or at night, fuel to fly for 30 minutes at holding speed at 1 500 ft (450 m) above the destination aerodrome in standard conditions calculated with the estimated mass on arrival above the alternate, or the destination, when no alternate is required; and~~
- (6) extra fuel, which should be at the discretion of the commander.

(...)

2. AMC1 CAT.OP.MPA.181(b)(1), GM1 CAT.OP.MPA.181 and AMC1 CAT.OP.MPA.181(d) will be deleted by ED decision on helicopter offshore operations (HOFO) (RMT.0409 (OPS.093(A))) that will be published when the related IR is adopted by the European Commission.
3. GM1 CAT.OP.MPA.186 is renumbered and amended as follows:

GM1 CAT.OP.MPA.186~~152~~ Planning minima for IFR flights — helicopters

PLANNING MINIMA FOR ALTERNATE AERODROMES



Non-precision minima (NPA) in Table 1 of CAT.OP.MPA.186~~152~~ mean the next highest minima that apply in the prevailing wind and serviceability conditions. Localiser only approaches, if published, are considered to be non-precision in this context. It is recommended that operators wishing to publish tables of planning minima choose values that are likely to be appropriate on the majority of occasions (e.g. regardless of wind direction). Unserviceabilities should, however, be fully taken into account.

(...)

4. AMC1 CAT.OP.MPA.281 is renumbered and amended as follows:

AMC1 CAT.OP.MPA.281~~153~~ In-flight fuel management — helicopters

COMPLEX MOTOR-POWERED HELICOPTERS, OTHER THAN LOCAL OPERATIONS

The operator should base in-flight fuel management procedures on the following criteria:

- (a) In-flight fuel checks
 - (1) The commander should ensure that fuel checks are carried out in-flight at regular intervals. The remaining fuel should be recorded and evaluated to:
 - (i) compare actual consumption with planned consumption;
 - (ii) check that the remaining fuel is sufficient to complete the flight; and
 - (iii) determine the expected fuel remaining on arrival at the destination.
 - (2) The relevant fuel data should be recorded.
- (b) In-flight fuel management
 - (1) If, as a result of an in-flight fuel check, the expected fuel remaining on arrival at the destination is less than the required alternate fuel plus final reserve fuel, the commander should:
 - (i) divert; or
 - (ii) replan the flight in accordance with CAT.OP.MPA.181~~SPA.HOFO.120~~⁹ unless he/she considers it safer to continue to the destination.
 - (2) At an onshore destination, when two suitable, separate touchdown and lift-off areas are available and the weather conditions at the destination comply with those specified for planning in CAT.OP.MPA.245 (a)(2), the commander may permit alternate fuel to be used before landing at the destination.
- (c) If, as a result of an in-flight fuel check on a flight to an isolated destination, planned in accordance with (b), the expected fuel remaining at the point of last possible diversion is less than the sum of:
 - (1) fuel to divert to an operating site selected in accordance with CAT.OP.MPA.181~~151~~-(a);
 - (2) contingency fuel; and

⁹ This new requirement has been proposed by [Opinion No 2015/04](#).



(3) final reserve fuel,

the commander should:

(i) divert; or

(ii) proceed to the destination provided that at onshore destinations, two suitable, separate touchdown and lift-off areas are available at the destination and the expected weather conditions at the destination comply with those specified for planning in CAT.OP.MPA.245 (a)(2).

5. New GM1 CAT.OP.MPA.153 is introduced as follows:

GM1 CAT.OP.MPA.153 In-flight fuel management — helicopters

DECLARATION OF MINIMUM FUEL

(a) The declaration of MINIMUM FUEL informs the air traffic control (ATC) that all planned landing site options have been reduced to a specific aerodrome or operating site of intended landing, that no precautionary landing site is available, and that any change to the existing clearance, or air traffic delays, may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur.

(b) A precautionary landing site is a landing site, other than the site of intended landing, where it is expected that a safe landing can be made prior to the consumption of the planned final reserve fuel.

PROTECTION OF FINAL RESERVE FUEL

The protection of the final reserve fuel is intended to ensure a safe landing at any adequate aerodrome or operating site or precautionary landing area, in compliance with the applicable operational procedures and aerodrome operating minima, when unforeseen occurrences may not permit safe completion of an operation as originally planned.

When the final reserve fuel can no longer be protected, then a fuel emergency should be declared and any landing option explored, including deviating from rules, operational procedures and methods in the interest of safety.

The declaration of MAYDAY MAYDAY MAYDAY FUEL informs the air traffic control (ATC) that all available landing options have been reduced to a specific site and that a portion of the final reserve fuel may be consumed prior to landing.

6. AMC1 CAT.OP.MPA.195 is amended as follows:

AMC1 CAT.OP.MPA.195 Refuelling/defuelling with passengers embarking, on board or disembarking

OPERATIONAL PROCEDURES — GENERAL AEROPLANES

(a) When refuelling/defuelling with passengers on board, ground servicing activities and work inside the aircraft, such as catering and cleaning, should be conducted in such a manner that they do



not create a hazard and allow emergency evacuation to take place through those aisles and exits intended for emergency evacuation.

- (b) The deployment of integral aircraft stairs or the opening of emergency exits as a prerequisite to refuelling is not necessarily required.

OPERATIONAL PROCEDURES — AEROPLANES

- (c) Operational procedures should specify that at least the following precautions are taken:
- (1) one qualified person should remain at a specified location during fuelling operations with passengers on board. This qualified person should be capable of handling emergency procedures concerning fire protection and firefighting, handling communications, and initiating and directing an evacuation;
 - (...)

OPERATIONAL PROCEDURES — HELICOPTERS

- ~~(d) Operational procedures should specify that at least the following precautions are taken:~~
- ~~(1) door(s) on the refuelling side of the helicopter remain closed;~~
 - ~~(2) door(s) on the non-refuelling side of the helicopter remain open, weather permitting;~~
 - ~~(3) firefighting facilities of the appropriate scale be positioned so as to be immediately available in the event of a fire;~~
 - ~~(4) sufficient personnel be immediately available to move passengers clear of the helicopter in the event of a fire;~~
 - ~~(5) sufficient qualified personnel be on board and be prepared for an immediate emergency evacuation;~~
 - ~~(6) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling/defuelling, fuelling be stopped immediately;~~
 - ~~(7) the ground area beneath the exits intended for emergency evacuation be kept clear; and~~
 - ~~(8) provision is made for a safe and rapid evacuation.~~

7. New AMC2 CAT.OP.MPA.195 is introduced as follows:

AMC2 CAT.OP.MPA.195 Refuelling with engines and rotors stopped — with passengers on board, embarking, or disembarking — helicopters

OPERATIONAL PROCEDURES

Refuelling should normally be performed with engine(s) and/or rotors stopped and without passengers on board.

When the helicopter rotors are stopped, the efficiency and speed of passengers disembarking and re-embarking on board helicopters is such that refuelling with passengers on board, embarking or disembarking should never be justified, while refuelling with passengers on board should be justified only for helicopter emergency medical service (HEMS) or air ambulance. Should such operations be



needed, the operator should refer to AMC1 CAT.OP.MPA.197 and AMC2 CAT.OP.MPA.197. Operational procedures to be described in the operations manual should specify that at least the relevant precautions are taken, among the ones developed in the above-mentioned AMC.

8. New AMC1 CAT.OP.MPA.197 is introduced as follows:

AMC1 CAT.OP.MPA.197 Refuelling with engine(s) and/or rotors running — no passengers on board — helicopters

OPERATIONAL PROCEDURES

- (a) The requirements of ORO.GEN.205 should be complied with.
- (b) In addition, operational procedures to be described in the operations manual should specify that at least the following precautions are taken:
- (1) all necessary information should be exchanged in advance with the aerodrome operator, operating site operator and refuelling operator;
 - (2) the procedures to be used by crew members should be defined;
 - (3) the procedures to be used by all ground operations personnel of the operator that may be in charge of refuelling or assisting in emergency evacuations should be described;
 - (4) the operator's training programmes for crew members and ground operations personnel of the operator should be described;
 - (5) the minimum distance between the helicopter turning parts and the refuelling vehicle or installations should be defined when the refuelling takes place outside an aerodrome or at an aerodrome where there are no such limitations;
 - (6) besides any rescue and firefighting services (RFFS) required to be available by aerodrome regulations, an additional handheld fire extinguisher with the equivalent of 5 kg of dry powder should be immediately available and ready;
 - (7) a means for a two-way communication between the crew and the person in charge of refuelling should be defined and established;
 - (8) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling/defuelling, fuelling should be stopped immediately;
 - (9) the pilot should stay at the controls, constantly monitor the refuelling, and be ready to shut off the engines and evacuate at all times; and
 - (10) any additional precautions should be taken as determined by the risk assessment.

9. New AMC2 CAT.OP.MPA.197 is introduced as follows:

AMC2 CAT.OP.MPA.197 Refuelling with engine(s) and/or rotors running — with passengers on board — helicopters

OPERATIONAL PROCEDURES



- (a) In addition to AMC1 CAT.OP.MPA.197, for refuelling with passengers on board, operational procedures to be described in the operations manual should specify that at least the following precautions are taken:
- (1) the way the helicopter should be positioned related to the wind and refuelling facilities or vehicles should be defined, whenever practicable, together with the corresponding helicopter evacuation strategy;
 - (2) on a heliport, the ground area beneath the exits intended for emergency evacuation should be kept clear;
 - (3) the passenger briefing and instructions should be defined, and the 'No smoking' signs should be on;
 - (4) interior lighting should be set to enable identification of emergency exits;
 - (5) the use of doors during refuelling should be defined: doors on the refuelling side should remain closed, while doors on the opposite side should remain unlocked or, weather permitting, open unless otherwise specified in the aircraft flight manual (AFM);
 - (6) one qualified person capable of handling emergency procedures concerning fire protection and firefighting, handling communications, and initiating and directing an evacuation should remain at a specified location; this person should not be the qualified pilot at the controls or the person performing the refuelling; and
 - (7) unless passengers are regularly trained in emergency evacuation procedures, an additional crew member or ground crew member should be assigned to assist in the rapid evacuation of the passengers.

10. New GM1 CAT.OP.MPA.197 is introduced as follows:

GM1 CAT.OP.MPA.197 Refuelling with engine(s) and/or rotors running — helicopters

RISK ASSESSMENT

The risk assessment should explain why it is not practical to refuel with engine(s) and/or rotors stopped, identify the additional hazards and describe how the additional risks are controlled. Helicopter emergency medical service (HEMS) and helicopter offshore operations (HOFO) are typical operations where the benefits should outweigh the risks, with mitigations in place.

Guidance on safe refuelling practices is contained in ICAO Doc 9137 — Airport Services Manual, Parts 1 and 8.

The operator's risk assessment may include, but not be limited to, the following hazards and mitigations:

- the assessment of the risk related to refuelling with rotors turning;
- the assessment of the risk related to the shutting down of the engines, including the risk of failures during start-up;
- environmental conditions, such as wind limitations, displacement of exhaust gases and blade sailing, should be considered;



- the assessment of any risks related to human factors (HF) and fatigue management, especially when helicopters are flown single-pilot for long periods of time;
- the mitigation of the risks, such as safety features of the fuel installation, rescue and firefighting capability, number of staff members available, ease of emergency evacuation of the helicopter etc.;
- the use of radio transmitting equipment should be assessed;
- the use of passenger seat belts should be determined;
- the portable electronic device (PED) policy should be reviewed; and
- if passengers are to disembark, their disembarking before rather than after the refuelling should be considered, and if passengers are to embark, their embarking after rather than before the refuelling should be considered.

11. GM1 CAT.POL.H.215(b)(3) is amended as follows:

GM1 CAT.POL.H.215(b)(3) En-route — critical engine inoperative

FUEL JETTISON

The presence of obstacles along the en-route flight path may preclude compliance with CAT.POL.H.215(a)(1) at the planned mass at the critical point along the route. In this case fuel jettison at the most critical point may be planned, provided that the procedures of (c) in AMC13-CAT.OP.MPA.150(b) are complied with.

3.6. Draft regulation (draft opinion) — Part-SPA

1. SPA.HEMS.150 is amended as follows:

SPA.HEMS.150 Fuel supply — alleviation

~~(a)~~ As an alternative to CAT.OP.MPA.150(b) to (d), ~~when the HEMS mission is conducted under VFR within a local and defined geographical area, standard fuel planning can be employed provided the operator establishes final reserve fuel to the fuel policy shall ensure that, on completion of the mission, the fuel remaining is not less than an amount of fuel sufficient for:~~

~~(1)(a)~~ 30 min of flying time at ~~normal cruising conditions~~ best-range speed; or

~~(2)(b)~~ by day, when operating within an area providing continuous and suitable precautionary landing sites, 20 min of flying time at ~~normal cruising speed~~ best-range speed.

2. SPA.HEMS.155 is amended as follows:

SPA.HEMS.155 Refuelling with passengers embarking, on board or disembarking

~~When the commander considers refuelling with passengers on board to be necessary, it can be undertaken with either rotors stopped or rotors turning provided the following requirements are met. A refuelling procedure with either rotors stopped or rotors turning shall be provided in accordance with either CAT.OP.MPA.197(a)–(d) or CAT.OP.MPA.195.~~



- ~~(a) door(s) on the refuelling side of the helicopter shall remain closed;~~
- ~~(b) door(s) on the non-refuelling side of the helicopter shall remain open, weather permitting;~~
- ~~(c) fire fighting facilities of the appropriate scale shall be positioned so as to be immediately available in the event of a fire; and~~
- ~~(d) sufficient personnel shall be immediately available to move patients clear of the helicopter in the event of a fire.~~

3. SPA.HOFO.120 is amended as follows:

SPA.HOFO.120 Selection of aerodromes and operating sites¹⁰

- (a) Onshore destination alternate aerodrome. Notwithstanding CAT.OP.MPA.181-151, NCC.OP.152, and SPO.OP.151, the pilot-in command/commander does not need to specify a destination alternate aerodrome in the operational flight plan when conducting flights from an offshore location to a land aerodrome if either:

(...)

3.7. Draft AMC and GM (draft decision) — Part-SPA

1. New AMC1 SPA.HOFO.110(a)(4) is introduced as follows:

AMC1 SPA.HOFO.110(a)(4) Refuelling procedure

If refuelling with rotors turning is conducted, a procedure should be provided in accordance with CAT.OP.MPA.197(a)–(d).

3.8. Draft regulation (draft opinion) — Part-NCC

1. New NCC.OP.157 is introduced as follows:

NCC.OP.157 Refuelling with engine(s) and/or rotors running — helicopters

- (a) Refuelling with engine(s) and/or rotors running shall only be conducted:
 - (1) with no passengers or technical crew members embarking or disembarking;
 - (2) if the aerodrome/operating site operator allows such operations;
 - (3) in accordance with any specific procedures and limitations in the aircraft flight manual (AFM);
 - (4) with JET A or JET A-1 fuel types; and
 - (5) in the presence of the appropriate rescue and fire fighting facilities (RFFF).
- (b) The operator shall assess the risks associated with refuelling with engine(s) and/or rotors running.

¹⁰ This new requirement has been proposed by [Opinion No 2015/04](#). This sub-NPA proposes an additional amendment thereto.



- (c) The operator shall establish appropriate procedures to be followed by all involved personnel such as crew members and ground personnel.
- (d) The operator shall train its crew members and ensure that the involved ground personnel is trained appropriately.
- (e) The helicopter refuelling procedure with engine and/or rotors running and any change thereto shall be specified in the operations manual and require prior approval by the competent authority.

2. NCC.OP.205 is amended as follows:

NCC.OP.205 In-flight fuel management

- (a) The operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are performed.
- (b) The pilot-in-command shall ~~check at regular intervals that~~ monitor the amount of usable fuel ~~remaining in flight to ensure that it is not less than the fuel required to proceed a weather-permissible aerodrome or operating site and the planned reserve fuel as required by NCC.OP.130 or NCC.OP.131 to a site where a safe landing shall be made with the planned final reserve fuel remaining.~~
- (c) The pilot-in-command shall advise the air traffic control (ATC) of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome or operating site, the pilot calculates that any change to the existing clearance to that aerodrome or operating site, or other air traffic delays, may result in landing with less than the final reserve fuel.
- (d) The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the usable fuel estimated to be available upon landing at the nearest site where a safe landing can be made in accordance with normal operating procedures is less than the planned final reserve fuel.

3.9. Draft AMC and GM (draft decision) — Part-NCC

1. AMC1 NCC.OP.155 is amended as follows:

AMC1 NCC.OP.155 Refuelling with passengers embarking, on board or disembarking

OPERATIONAL PROCEDURES — GENERAL AEROPLANES

- (a) If passengers are on board when refuelling with:
 - (1) other than aviation gasoline (AVGAS); or
 - (2) wide-cut type fuel; or
 - (3) a mixture of these types of fuel,

ground servicing activities and work inside the aeroplane, such as catering and cleaning, should be conducted in such a manner that they do not create a hazard and allow emergency evacuation to take place through those aisles and exits intended for emergency evacuation.



- (b) The deployment of integral aircraft stairs or the opening of emergency exits as a prerequisite to refuelling is not necessarily required.

~~OPERATIONAL PROCEDURES — AEROPLANES~~

- (c) Operational procedures should specify that at least the following precautions are taken:
- (1) one qualified person should remain at a specified location during fuelling operations with passengers on board. This qualified person should be capable of handling emergency procedures concerning fire protection and firefighting, handling communications and initiating and directing an evacuation;
 - (...)

~~OPERATIONAL PROCEDURES — HELICOPTERS~~

- ~~(d) Operational procedures should specify that at least the following precautions are taken:~~
- ~~(1) door(s) on the refuelling side of the helicopter remain closed;~~
 - ~~(2) door(s) on the non-refuelling side of the helicopter remain open, weather permitting;~~
 - ~~(3) firefighting facilities of the appropriate scale be positioned so as to be immediately available in the event of a fire;~~
 - ~~(4) sufficient personnel be immediately available to move passengers clear of the helicopter in the event of a fire;~~
 - ~~(5) sufficient qualified personnel be on board and be prepared for an immediate emergency evacuation;~~
 - ~~(6) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling/defuelling, fuelling be stopped immediately;~~
 - ~~(7) the ground area beneath the exits intended for emergency evacuation be kept clear; and~~
 - ~~(8) provision is made for a safe and rapid evacuation.~~

2. New AMC2 NCC.OP.155 is introduced as follows:

AMC2 NCC.OP.155 Refuelling with engines and rotors stopped — with passengers on board, embarking, or disembarking — helicopters

OPERATIONAL PROCEDURES

Refuelling should normally be performed with engine(s) and/or rotors stopped and without passengers on board.

When the helicopter rotors are stopped, the efficiency and speed of passengers disembarking and re-embarking on board helicopters is such that refuelling with passengers on board, embarking or disembarking should never be justified. However, should such operations be needed, the operator should refer to AMC1 NCC.OP.157 and AMC2 NCC.OP.157. Operational procedures to be described in the operations manual should specify that at least the relevant precautions are taken, among the ones developed in the above-mentioned AMC.



3. New AMC1 NCC.OP.157 is introduced as follows:

AMC1 NCC.OP.157 Refuelling with engine(s) and/or rotors running — no passengers on board — helicopters

OPERATIONAL PROCEDURES

- (a) The requirements of ORO.GEN.205 should be complied with.
- (b) In addition, operational procedures to be described in the operations manual should specify that at least the following precautions are taken:
- (1) all necessary information should be exchanged in advance with the aerodrome operator, operating site operator and refuelling operator;
 - (2) the procedures to be used by crew members should be defined;
 - (3) the procedures to be used by all ground operations personnel of the operator that may be in charge of refuelling or assisting in emergency evacuations should be described;
 - (4) the operator's training programmes for crew members and ground operations personnel of the operator should be described;
 - (5) the minimum distance between the helicopter turning parts and the refuelling vehicle or installations should be defined when the refuelling takes place outside an aerodrome or at an aerodrome where there are no such limitations;
 - (6) besides any rescue and firefighting services (RFFS) required to be available by aerodrome regulations, an additional handheld fire extinguisher with the equivalent of 5 kg of dry powder should be immediately available and ready;
 - (7) a means for a two-way communication between the crew and the person in charge of refuelling should be defined and established;
 - (8) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling/defuelling, fuelling should be stopped immediately;
 - (9) the pilot should stay at the controls, constantly monitor the refuelling, and be ready to shut off the engines and evacuate at all times; and
 - (10) any additional precautions should be taken as determined by the risk assessment.

4. New AMC2 NCC.OP.157 is introduced as follows:

AMC2 NCC.OP.157 Refuelling with engine(s) and/or rotors running — with passengers on board — helicopters

OPERATIONAL PROCEDURES

- (a) In addition to AMC1 NCC.OP.157, for refuelling with passengers on board, operational procedures to be described in the operations manual should specify that at least the following precautions are taken:



- (11) the way the helicopter should be positioned related to the wind and refuelling facilities or vehicles should be defined, whenever practicable, together with the corresponding helicopter evacuation strategy;
- (12) on a heliport, the ground area beneath the exits intended for emergency evacuation should be kept clear;
- (13) the passenger briefing and instructions should be defined, and the 'No smoking' signs should be on;
- (14) interior lighting should be set to enable identification of emergency exits;
- (15) the use of doors during refuelling should be defined: doors on the refuelling side should remain closed, while doors on the opposite side should remain unlocked or, weather permitting, open unless otherwise specified in the aircraft flight manual (AFM);
- (16) one qualified person capable of handling emergency procedures concerning fire protection and firefighting, handling communications, and initiating and directing an evacuation should remain at a specified location; this person should not be the qualified pilot at the controls or the person performing the refuelling; and
- (17) unless passengers are regularly trained in emergency evacuation procedures, an additional crew member or ground crew member should be assigned to assist in the rapid evacuation of the passengers.

5. New GM1 NCC.OP.157 is introduced as follows:

GM1 NCC.OP.157 Refuelling with engine(s) and/or rotors running — helicopters

RISK ASSESSMENT

The risk assessment should explain why it is not practical to refuel with engine(s) and/or rotors stopped, identify the additional hazards and describe how the additional risks are controlled. Helicopter emergency medical service (HEMS) and helicopter offshore operations (HOFO) are typical operations where the benefits should outweigh the risks, with mitigations in place.

Guidance on safe refuelling practices is contained in ICAO Doc 9137 — Airport Services Manual, Parts 1 and 8.

The operator's risk assessment may include, but not be limited to, the following hazards and mitigations:

- the assessment of the risk related to refuelling with rotors turning;
- the assessment of the risk related to the shutting down of the engines, including the risk of failures during start-up;
- environmental conditions, such as wind limitations, displacement of exhaust gases and blade sailing, should be considered;
- the assessment of any risks related to human factors (HF) and fatigue management, especially when helicopters are flown single-pilot for long periods of time;



- the mitigation of the risks, such as safety features of the fuel installation, rescue and firefighting capability, number of staff members available, ease of emergency evacuation of the helicopter etc.;
- the use of radio transmitting equipment should be assessed;
- the use of passenger seat belts should be determined;
- the portable electronic device (PED) policy should be reviewed; and
- if passengers are to disembark, their disembarking before rather than after the refuelling should be considered, and if passengers are to embark, their embarking after rather than before the refuelling should be considered.

6. New GM1 NCC.OP.205(b)&(d) is introduced as follows:

GM1 NCC.OP.205(b)&(d) In-flight fuel management

PROTECTION OF FINAL RESERVE FUEL

The protection of the final reserve fuel is intended to ensure a safe landing at any aerodrome or operating site or, for helicopters, precautionary landing site, when unforeseen occurrences may not permit the flight to proceed as originally planned.

When the final reserve fuel can no longer be protected, then a fuel emergency should be declared and any landing option explored (e.g. for aeroplanes, aerodromes not assessed by the operator, military aerodromes, closed runways), including deviating from rules, operational procedures and methods in the interest of safety.

Further detailed guidance for the development of a comprehensive in-flight fuel management policy and procedures is contained in ICAO Doc 9976 — Flight Planning and Fuel Management (PFM) Manual.

Note: SAFE LANDING: safe landing in the context of the fuel policy is a landing at an adequate aerodrome or operating site or, for helicopters, precautionary landing site, with no less than the final reserve fuel and in compliance with the applicable operational procedures and aerodrome operating minima.

7. New GM1 NCC.OP.205(c) is introduced as follows:

GM1 NCC.OP.205(c) In-flight fuel management

DECLARATION OF MINIMUM FUEL

The declaration of MINIMUM FUEL informs the air traffic control (ATC) that all planned landing options have been reduced to a specific aerodrome or operating site of intended landing, and for helicopters, no precautionary landing site is available, and that any change to the existing clearance may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur.

Pilots should not expect any form of priority handling as a result of a MINIMUM FUEL declaration. The ATC should, however, advise the flight crew of any additional expected delays, as well as coordinate



when transferring the control of the aircraft to ensure that other ATC units are aware of the flight's fuel state.

Guidance on declaring MINIMUM FUEL is contained in ICAO Doc 9976 — Flight Planning and Fuel Management (FPFM) Manual.

3.10. Draft regulation (draft opinion) — Part-NCO

1. NCO.OP.125 is amended as follows:

NCO.OP.125 Fuel and oil supply — aeroplanes and helicopters

(a) The pilot-in-command shall ensure that the quantity of energy/fuel and oil carried on board is sufficient to guarantee that the intended flight is completed safely, taking into account the meteorological conditions, any element affecting the performance of the aircraft, and any delays that are expected in flight, with an allowance for contingencies that may reasonably be expected to affect the flight.

(b) The pilot-in-command shall plan a quantity of fuel/energy to be protected as final reserve fuel/energy in order to ensure a safe landing when unforeseen occurrences may not permit safe completion of an operation as originally planned. In determining the quantity of the final reserve fuel/energy, the pilot-in-command shall take into account:

- (1) the severity of the hazard to persons or property that may result from an emergency landing after fuel/energy starvation;
- (2) the terrain in which such an emergency landing is made;
- (3) the weather conditions at and close to the destination/alternate aerodrome;
- (4) the precision of the measurement and calculation of fuel/energy expected on board at the end of the flight;
- (5) the availability of alternative landing options; and
- (6) the likelihood of unexpected circumstances that might prevent or delay a safe landing at the end of the intended flight;

(ac) The pilot-in-command shall only commence a flight if the aircraft carries sufficient energy/fuel and oil for the following:

- (1) for visual flight rules (VFR) flights:
 - (i) ~~by day, taking off and landing at the same aerodrome/landing site and always remaining in sight of that aerodrome/landing site, to fly the intended route and thereafter for at least 10 minutes at normal cruising altitude;~~
 - (ii) ~~by day, to fly to the aerodrome of intended landing and thereafter to fly for at least 30 minutes at normal cruising altitude; or~~
 - (iii) ~~by night, to fly to the aerodrome of intended landing and thereafter to fly for at least 45 minutes at normal cruising altitude;~~

(2) for IFR flights:



- ~~(i) — when no destination alternate is required, to fly to the aerodrome of intended landing and thereafter to fly for at least 45 minutes at normal cruising altitude; or~~
 - ~~(ii) — when a destination alternate is required, to fly to the aerodrome of intended landing, to an alternate aerodrome and thereafter to fly for at least 45 minutes at normal cruising altitude.~~
- (1) for visual flight rules (VFR) flights and instrument flight rules (IFR) flights, when no destination alternate is required, sufficient energy/fuel and oil to fly to the aerodrome or operating site of intended landing, plus the final reserve fuel/energy; and
 - (2) for IFR flights, when a destination alternate is required, sufficient energy/fuel and oil to fly to the aerodrome or operating site of intended landing, and thereafter to an alternate aerodrome, plus the final reserve fuel/energy.
- (b) ~~In computing the fuel required including to provide for contingency, the following shall be taken into consideration:~~
- ~~(1) — forecast meteorological conditions;~~
 - ~~(2) — anticipated ATC routings and traffic delays;~~
 - ~~(3) — procedures for loss of pressurisation or failure of one engine while en-route, where applicable; and~~
 - ~~(4) — any other condition that may delay the landing of the aeroplane or increase fuel and/or oil consumption.~~
- (c) ~~Nothing shall preclude amendment of a flight plan in flight, in order to re-plan the flight to another destination, provided that all requirements can be complied with from the point where the flight is re-planned.~~

2. NCO.OP.126 is deleted as follows:

~~NCO.OP.126 Fuel and oil supply — helicopters~~

- (a) ~~The pilot-in-command shall only commence a flight if the helicopter carries sufficient fuel and oil for the following:~~
- ~~(1) — for VFR flights, to fly to the aerodrome/operating site of intended landing and thereafter to fly for at least 20 minutes at best-range speed; and~~
 - ~~(2) — for IFR flights:~~
 - ~~(i) — when no alternate is required or no weather permissible alternate aerodrome is available, to fly to the aerodrome/operating site of intended landing, and thereafter to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the destination aerodrome/operating site under standard temperature conditions and approach and land; or~~
 - ~~(ii) — when an alternate is required, to fly to and execute an approach and a missed approach at the aerodrome/operating site of intended landing, and thereafter:~~
 - ~~(A) — to fly to the specified alternate; and~~



- ~~(B) to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the alternate aerodrome/operating site under standard temperature conditions and approach and land.~~
- ~~(b) In computing the fuel required including to provide for contingency, the following shall be taken into consideration:~~
- ~~(1) forecast meteorological conditions;~~
 - ~~(2) anticipated ATC routings and traffic delays;~~
 - ~~(3) procedures for loss of pressurisation or failure of one engine while en-route, where applicable; and~~
 - ~~(4) any other condition that may delay the landing of the aircraft or increase fuel and/or oil consumption.~~
- ~~(c) Nothing shall preclude amendment of a flight plan in flight, in order to re-plan the flight to another destination, provided that all requirements can be complied with from the point where the flight is re-planned.~~
3. New NCO.OP.147 is introduced as follows:

NCO.OP.147 Refuelling with engine(s) and/or rotors running — helicopters

Refuelling with engine(s) and/or rotors running shall only be conducted:

- (a) if it is not practical to shut down or restart the engine;
- (b) in accordance with any specific procedures and limitations in the aircraft flight manual (AFM);
- (c) with JET A or JET A-1 fuel types;
- (d) with no passengers or task specialists on board, embarking or disembarking;
- (e) if the aerodrome/operating site operator does not prohibit such operations;
- (f) in the presence of the appropriate rescue and fire fighting facilities (RFFF); and
- (g) in accordance with a checklist; this checklist for refuelling with engine(s) and/or rotors running shall contain:
 - (1) normal and contingency procedures;
 - (2) the required equipment;
 - (3) any limitations; and
 - (4) responsibilities and duties of the pilot-in-command, and, if applicable, crew members and task specialists.

4. NCO.OP.185 is amended as follows:

NCO.OP.185 In-flight fuel management

- (a) The pilot-in-command shall ~~check at regular intervals that~~ monitor the amount of usable fuel/energy or, for balloons, ballast remaining in flight to ensure that it is not less than the fuel/energy or ballast required to proceed to a weather-permissible aerodrome or operating site and the planned reserve fuel as required by NCO.OP.125, NCO.OP.126 or NCO.OP.127 site where a safe landing can be made with the planned final reserve fuel/energy remaining.
- (b) The pilot-in-command of a controlled flight shall advise the air traffic control (ATC) of a minimum fuel/energy state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome or operating site, the pilot calculates that any change to the existing clearance to land at that aerodrome or operating site, or other air traffic delays, may result in landing with less than the final reserve fuel/energy.
- (c) The pilot-in-command of a controlled flight shall declare a situation of fuel/energy emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL when the usable fuel/energy estimated to be available upon landing at the nearest site where a safe landing can be made in accordance with normal operating procedures is less than the planned final reserve fuel/energy.

5. NCO.SPEC.140 is amended as follows:

NCO.SPEC.140 Fuel and oil supply — helicopters

~~Notwithstanding NCO.OP.126(a)(1), the~~ The pilot-in-command of a helicopter may only commence a VFR flight by day remaining within 25 NM of the aerodrome/operating site of departure with reserve fuel of not less than 10 minutes at best-range-speed.

3.11. Draft AMC and GM (draft decision) — Part-NCO

1. New AMC1 NCO.OP.125(b) is introduced as follows:

AMC1 NCO.OP.125(b) Fuel and oil supply — aeroplanes and helicopters

The final reserve quantity should be no less than required to fly:

(a) for aeroplanes:

- (1) for 10 min at normal cruising altitude for visual flight rules (VFR) flights by day, taking-off and landing at the same aerodrome/landing site and always remaining in sight of that aerodrome/landing site;
- (2) for 30 mins at normal cruising altitude for other VFR flights by day; and
- (3) for 45 min at normal cruising altitude for VFR flights by night, and instrument flight rules (IFR) flights; and

(b) for helicopters:

- (1) for 20 min at best-range speed for VFR flights; and
- (2) for 45 min at holding speed at 1 500 ft (450 m) above the destination for instrument flight rules (IFR) flights.



2. New AMC2 NCO.OP.125(b) is introduced as follows:

AMC2 NCO.OP.125(b) Fuel and oil supply — aeroplanes and helicopters

The quantity of final reserve fuel/energy should be planned before flight and be an easily recalled figure against which the pilot-in-command is able to assess the current fuel/energy state of the aircraft.

3. New GM1 NCO.OP.125(b) is introduced as follows:

GM1 NCO.OP.125(b) Fuel and oil supply — aeroplanes and helicopters

The planned final reserve fuel/energy is intended to be protected as a reserve in normal operations, i.e. the pilot-in-command should consider it to be an emergency if the fuel/energy on board falls below the final reserve fuel/energy. The final reserve fuel/energy is not intended to be used as a contingency in normal operations. When the final reserve fuel can no longer be protected, then a fuel emergency should be declared and any landing option explored, including deviating from rules, operational procedures and methods in the interest of safety.

4. New AMC1 NCO.OP.125(c) is introduced as follows:

AMC1 NCO.OP.125(c) Fuel and oil supply — aeroplanes and helicopters

IN-FLIGHT REPLANNING

A flight plan may be amended during flight in order to replan the flight to another destination provided that all requirements are complied with from the point where the flight is replanned.

5. New GM1 NCO.OP.125(b)(6) is introduced as follows:

GM1 NCO.OP.125(b)(6) Fuel and oil supply — aeroplanes and helicopters

The likelihood of unexpected circumstances arising after the aircraft is fuelled may increase with the duration of the planned flight (eg. during a long flight, a problem at the destination aerodrome or operating site is more likely to have occurred than during a short local flight).

6. New AMC1 NCO.OP.145&147 is introduced as follows:

AMC1 NCO.OP.145&147 Refuelling with engine(s) and/or rotors running — helicopters

CHECKLIST

- (a) Before commencing a refuelling with rotors turning, the pilot-in-command should conduct a risk assessment, assessing the complexity of the activity in order to determine the hazards and associated risks inherent in the operation, and establish mitigating measures.
- (b) Refuelling with rotors turning should be performed in accordance with a checklist. Based on the risk assessment, the pilot-in-command should establish a checklist appropriate to the activity and aircraft used, taking this AMC into account.



- (c) The checklist should cover relevant elements of GM1 NCO.SPEC.105.
- (d) The checklist that is relevant to the duties of the pilot-in-command, crew members, and task specialists should be readily accessible.
- (e) The checklist should be regularly reviewed and updated, as appropriate.

7. New GM1 NCO.OP.145&147 is introduced as follows:

GM1 NCO.OP.145&147 Refuelling with engine(s) and/or rotors running — helicopters

REFERENCES

AMC1 SPO.OP.157 and GM1 SPO.OP.157 (AMC/GM to Part-SPO) provide a generic framework for the development of a standard operating procedure (SOP) for refuelling with rotors turning.

8. New GM1 NCO.OP.185(b)&(C) is introduced as follows:

GM1 NCO.OP.185(b)&(c) In-flight fuel management

- (a) The pilot-in-command may consider reporting the remaining fuel/energy endurance after a MINIMUM FUEL or MAYDAY MAYDAY MAYDAY FUEL call.

Note: as for CAT, the final reserve fuel is always 30 min, but for Part-NCO operators, the final reserve varies from 10 to 45 min; therefore, the air traffic control (ATC) may not be aware of the amount of the remaining fuel/energy.

- (b) The declaration of MINIMUM FUEL informs the ATC that all planned aerodromes or operating sites of intended landing, and no precautionary landing site are available, and that any change to the existing clearance may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur.

Pilots should not expect any form of priority handling as a result of a MINIMUM FUEL declaration. The ATC should, however, advise the flight crew of any additional expected delays, as well as coordinate when transferring the control of the aircraft to ensure that other ATC units are aware of the flight's fuel state.

- (c) A precautionary landing site refers to a landing site, other than the site of intended landing, where it is expected that a safe landing can be made prior to the consumption of the planned final reserve fuel.

3.12. Draft regulation (draft opinion) — Part-SPO

1. SPO.OP.131 is amended as follows:

SPO.OP.131 Fuel and oil supply — helicopters

- (a) The pilot-in-command shall only commence a flight if the helicopter carries sufficient fuel and oil for the following:

(1) for VFR flights:



- (i) to fly to the aerodrome/operating site of intended landing and thereafter to fly for at least 20 minutes at best-range-speed; or
 - (ii) for VFR flights by day, a reserve fuel of 10 minutes at best-range-speed provided the he/she remains within 25 NM of the aerodrome/operating site of departure; and
- (2) for IFR flights:
- (i) when no alternate is required or no weather-permissible alternate aerodrome is available, to fly to the aerodrome/operating site of intended landing, and thereafter to fly for 30 minutes at ~~normal~~ **cruising-holding** speed at 450 m (1500 ft) above the destination aerodrome/operating site under standard temperature conditions and approach and land; or
 - (ii) when an alternate is required, to fly to and execute an approach and a missed approach at the aerodrome/operating site of intended landing, and thereafter:
 - (A) to fly to the specified alternate; and
 - (B) to fly for 30 minutes at ~~normal~~ holding speed at 450 m (1 500 ft) above the alternate aerodrome/operating site under standard temperature conditions and approach and land.

(...)

2. New SPO.OP.157 is introduced as follows:

SPO.OP.157 Refuelling with engine(s) and/or rotors running — helicopters

(a) Refuelling with engine(s) and/or rotors running shall only be conducted:

- (1) with no passengers, technical crew members or task specialists embarking or disembarking;
- (2) if the aerodrome/operating site operator allows such operations;
- (3) in accordance with any specific procedures and limitations in the aircraft flight manual (AFM);
- (4) with JET A or JET A-1 fuel types; and
- (5) in the presence of the appropriate rescue and fire fighting facilities (RFFF).

(b) The operator shall assess the risks associated with refuelling with engine(s) and/or rotors running.

(c) The operator shall establish appropriate procedures to be followed by all involved personnel such as crew members, task specialists and ground personnel.

(d) The operator shall train its crew members and ground personnel as well as any task specialist involved in the procedures.

(e) All related procedures shall be specified in the operations manual.

3. SPO.OP.190 is amended as follows:



SPO.OP.190 In-flight fuel management

- (a) The operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are performed.
- (b) The pilot-in-command shall ~~check at regular intervals that~~ monitor the amount of usable fuel ~~remaining in flight to ensure that it is not less than the fuel required to proceed a weather-permissible aerodrome or operating site and the planned reserve fuel as required by SPO.OP.130 or SPO.OP.131~~ to a site where a safe landing shall be made with the planned final reserve fuel remaining.
- (c) The pilot-in-command shall advise the air traffic control (ATC) of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome or operating site, the pilot calculates that any change to the existing clearance to that aerodrome or operating site, or other air traffic delays, may result in landing with less than the final reserve fuel.
- (d) The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the usable fuel estimated to be available upon landing at the nearest site where a safe landing can be made in accordance with normal operating procedures is less than the planned final reserve fuel.

3.13. Draft AMC and GM (draft decision) — Part-SPO

1. AMC1 SPO.OP.155 is amended as follows:

AMC1 SPO.OP.155 Refuelling with persons embarking, on board or disembarking

OPERATIONAL PROCEDURES — AEROPLANES

- (a) Operational procedures should specify that at least the following precautions are taken:
 - (1) One qualified person should remain at a specified location during fuelling operations with persons on board. This qualified person should be capable of handling emergency procedures concerning fire protection and firefighting, handling communications and initiating and directing an evacuation.
 - (...)

OPERATIONAL PROCEDURES — HELICOPTERS

- ~~(b) Operational procedures should specify that at least the following precautions are taken:~~
 - ~~(1) Door(s) on the refuelling side of the helicopter remain closed.~~
 - ~~(2) Door(s) on the non-refuelling side of the helicopter remain open, weather permitting.~~
 - ~~(3) Firefighting facilities of the appropriate scale be positioned so as to be immediately available in the event of a fire.;~~
 - ~~(4) Sufficient qualified personnel are on board and be prepared for an immediate emergency evacuation.~~



- ~~(5) — If the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling, fuelling should be stopped immediately.~~
- ~~(6) — The ground area beneath the exits intended for emergency evacuation be kept clear.~~
- ~~(7) — Provision should be made for a safe and rapid evacuation.~~

2. New AMC2 SPO.OP.155 is introduced as follows:

AMC2 SPO.OP.155 Refuelling with engines and rotors stopped — with passengers on board, embarking, or disembarking — helicopters

OPERATIONAL PROCEDURES

Refuelling should normally be performed with engine(s) and/or rotors stopped and without passengers on board.

When the helicopter rotors are stopped, the efficiency and speed of passengers disembarking and re-embarking on board helicopters is such that refuelling with passengers on board, embarking or disembarking should never be justified. However, should such operations be needed, the operator should refer to AMC1 SPO.OP.157 and AMC2 SPO.OP.157. Operational procedures to be described in the operations manual should specify that at least the relevant precautions are taken, among the ones developed in the above-mentioned AMC.

3. New AMC1 SPO.OP.157 is introduced as follows:

AMC1 SPO.OP.157 Refuelling with engine(s) and/or rotors running — no passengers on board — helicopters

OPERATIONAL PROCEDURES

- (a) The requirements of ORO.GEN.205 should be complied with.
- (b) In addition, operational procedures to be described in the operations manual should specify that at least the following precautions are taken;
 - (1) all necessary information should be exchanged in advance with the aerodrome operator, operating site operator and refuelling operator;
 - (2) the procedures to be used by crew members should be defined;
 - (3) the procedures to be used by all ground operations personnel of the operator that may be in charge of refuelling or assisting in emergency evacuations should be described;
 - (4) the operator's training programmes for crew members and ground operations personnel of the operator should be described;
 - (5) the minimum distance between the helicopter turning parts and the refuelling vehicle or installations should be defined when the refuelling takes place outside an aerodrome or at an aerodrome where there are no such limitations;



- (6) besides any rescue and firefighting services (RFFS) required to be available by aerodrome regulations, an additional handheld fire extinguisher with the equivalent of 5 kg of dry powder should be immediately available and ready;
- (7) a means for a two-way communication between the crew and the person in charge of refuelling should be defined and established;
- (8) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling/defuelling, fuelling should be stopped immediately;
- (9) the pilot should stay at the controls, constantly monitor the refuelling, and be ready to shut off the engines and evacuate at all times; and
- (10) any additional precautions should be taken as determined by the risk assessment.

4. New AMC2 SPO.OP.157 is introduced as follows:

AMC2 SPO.OP.157 Refuelling with engine(s) and/or rotors running — with passengers on board — helicopters

OPERATIONAL PROCEDURES

In addition to AMC1 SPO.OP.157, for refuelling with passengers on board, operational procedures to be described in the operations manual should specify that at least the following precautions are taken:

- (a) the way the helicopter should be positioned related to the wind and refuelling facilities or vehicles should be defined, whenever practicable, together with the corresponding helicopter evacuation strategy;
- (b) on a heliport, the ground area beneath the exits intended for emergency evacuation should be kept clear;
- (c) the passenger briefing and instructions should be defined, and the 'No smoking' signs should be on;
- (d) interior lighting should be set to enable identification of emergency exits;
- (e) the use of doors during refuelling should be defined: doors on the refuelling side should remain closed, while doors on the opposite side should remain unlocked or, weather permitting, open unless otherwise specified in the aircraft flight manual (AFM);
- (f) one qualified person capable of handling emergency procedures concerning fire protection and firefighting, handling communications, and initiating and directing an evacuation should remain at a specified location; this person should not be the qualified pilot at the controls or the person performing the refuelling; and
- (g) unless passengers are regularly trained in emergency evacuation procedures, an additional crew member or ground crew member should be assigned to assist in the rapid evacuation of the passengers.



5. New GM1 SPO.OP.157 is introduced as follows:

GM1 SPO.OP.157 Refuelling with engine(s) and/or rotors running — helicopters

RISK ASSESSMENT

The risk assessment should explain why it is not practical to refuel with engine(s) and/or rotors stopped, identify the additional hazards and describe how the additional risks are controlled. Helicopter emergency medical service (HEMS) and helicopter offshore operations (HOFO) are typical operations where the benefits should outweigh the risks, with mitigations in place.

Guidance on safe refuelling practices is contained in ICAO Doc 9137 — Airport Services Manual, Parts 1 and 8.

The operator's risk assessment may include, but not be limited to, the following hazards and mitigations:

- the assessment of the risk related to refuelling with rotors turning;
- the assessment of the risk related to the shutting down of the engines, including the risk of failures during start-up;
- environmental conditions, such as wind limitations, displacement of exhaust gases and blade sailing, should be considered;
- the assessment of any risks related to human factors (HF) and fatigue management, especially when helicopters are flown single-pilot for long periods of time;
- the mitigation of the risks, such as safety features of the fuel installation, rescue and firefighting capability, number of staff members available, ease of emergency evacuation of the helicopter etc.;
- the use of radio transmitting equipment should be assessed;
- the use of passenger seat belts should be determined;
- the portable electronic device (PED) policy should be reviewed; and
- if passengers are to disembark, their disembarking before rather than after the refuelling should be considered, and if passengers are to embark, their embarking after rather than before the refuelling should be considered.

6. New GM1 SPO.OP.190(b)& (d) is introduced as follows:

GM1 SPO.OP.190(b)&(d) In-flight fuel management

PROTECTION OF FINAL RESERVE FUEL

The protection of the final reserve fuel is intended to ensure a safe landing at any aerodrome or operating site or, for helicopters, precautionary landing site, when unforeseen occurrences may not permit the flight to proceed as originally planned.

When the final reserve fuel can no longer be protected, then a fuel emergency should be declared and any landing option explored (e.g. for aeroplanes, aerodromes not assessed by the operator, military



aerodromes, closed runways), including deviating from rules, operational procedures and methods in the interest of safety.

Further detailed guidance for the development of a comprehensive in-flight fuel management policy and procedures is contained in ICAO Doc 9976 — Flight Planning and Fuel Management (FPFM) Manual.

Note: SAFE LANDING: safe landing in the context of the fuel policy is a landing at an adequate aerodrome or operating site or, for helicopters, precautionary landing site, with no less than the final reserve fuel and in compliance with the applicable operational procedures and aerodrome operating minima.

7. New GM1 SPO.OP.190(c) is introduced as follows:

GM1 SPO.OP.190(c) In-flight fuel management

DECLARATION OF MINIMUM FUEL

The declaration of MINIMUM FUEL informs the air traffic control (ATC) that all planned landing options have been reduced to a specific aerodrome or operating site of intended landing, and that for helicopters, no precautionary landing site is available, and that any change to the existing clearance may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur.

Pilots should not expect any form of priority handling as a result of a MINIMUM FUEL declaration. The ATC should, however, advise the flight crew of any additional expected delays, as well as coordinate when transferring the control of the aircraft to ensure that other ATC units are aware of the flight's fuel state.

Guidance on declaring MINIMUM FUEL is contained in ICAO Doc 9976 — Flight Planning and Fuel Management (FPFM) Manual.



4. RIA

4.1. Issues to be addressed

Refuelling with engines running is a common practice in the helicopter domain, however, it is riskier than refuelling with engines shut down and rotors stopped, and requires to use specific procedures. This is currently not reflected in the rule.

[NPA 2015-18 — Update of the rules on air operations \(Air OPS Regulation — all Annexes & related AMC/GM\)](#) proposes to extend the requirements for refuelling with passengers on board/embarking/disembarking to refuelling with rotors turning as well. This proposal, if adopted, would eventually regulate refuelling activities with rotors turning, albeit with the following drawbacks:

- this proposal of NPA 2015-18 would not be aligned with the current ICAO amendments, and would mean that refuelling with rotors turning and passengers on board/embarking/disembarking would be allowed even though deemed unsafe; and
- specific risks related to refuelling with rotors turning, compared to refuelling with passengers on board/embarking/disembarking, would not be taken into account.

This sub-NPA proposes amendments to the Air OPS Regulation in order to address this specific safety-related issue.

It proposes to clarify the rule text of the current alleviations of CAT.OP.MPA.151 and SPA.HERMS.150.

Furthermore, it proposes to achieve consistency throughout all related Annexes to the Air OPS Regulation so that the final reserve fuel is calculated in the same way, whether using Part-SPO, Part-NCC, Part-NCO, Part-CAT or Part-SPO (with or without the alleviations of CAT.OP.MPA.151 and SPA.HERMS).

4.1.1. Safety risk assessment

As discussed above, refuelling with engines running and rotor(s) turning generates additional safety risks that should be addressed by a specific procedure.

The proper management of the fuel on board during the flight is recognised as a safety issue in the Agency's Safety Risk Portfolio — Offshore Helicopters (see [Annual Safety Review 2014](#)), which can be extended to all helicopter operations.

4.1.2. Who is affected?

This sub-NPA affects the following stakeholders:

- air operators of motor-powered aircraft for commercial as well as non-commercial operations:
 - pilots, and
 - flight dispatchers in operator control command (OCC);
- the competent authorities overseeing air operators; and
- air traffic management (ATM), in relation to fuel issues being dealt with, and to fuel emergencies being broadcast by pilots.



4.1.3. How could the issue/problem evolve?

Refuelling with rotors turning is currently used mainly in offshore operations and aerial work. Offshore operations typically operate in accordance with very high standards, which were taken into account when drafting this sub-NPA. Aerial work operators are currently regulated by national rules and will soon be unregulated if no action is taken. Therefore, aerial work safety may evolve in a negative way in the near future.

4.2. Objectives

The objectives of this RIA are to align the Air OPS Regulation with Amendment 19 to ICAO Annex 6, Part III, to improve the current Air OPS Regulations regarding fuel policy, and to regulate helicopter refuelling operations with rotors turning.

4.3. Policy options

Table 1: Selected policy options

Option No	Short title	Description
0	Minimal changes	Baseline option: minimum change in rules; only align the Air OPS Regulation with Amendment 19 of ICAO Annex 6, Part III.
1	Improve the Air OPS Regulation	Improve the Air OPS Regulation regarding fuel policy and align it with Amendment 19 of ICAO Annex 6, Part III.
2	Regulate hot refuelling only	Regulate helicopter refuelling operations with rotors turning.
3	Options 1+2	Implement Options 1 and 2 combined.

4.4. Applied methodology

Multi-criteria analysis (MCA) is used for simplicity.

4.5. Analysis of impacts

4.5.1. Safety impact

Regulating helicopter refuelling activities with rotors turning will improve safety.

Impact/Option	Option 0	Option 1	Option 2	Option 3
Safety impact	0/-	0	+	+

4.5.2. Environmental impact

No environmental impact is expected.

4.5.3. Social impact

Bringing consistency into the fuel policy across the various Annexes (Parts) to the Air OPS Regulation would lead to simplifying various kinds of operations in which pilots and operators are involved.



Benefits in terms of simplicity and ease of operation may in turn be converted into (albeit negligible) safety benefits as resources will be used for more important tasks.

Impact/Option	Option 0	Option 1	Option 2	Option 3
Social impact	0	+	0	+

4.5.4. Economic impact

No economic impact is foreseen, whichever option is chosen, because no additional restriction is imposed on hot refueling provided that the current best practices are maintained.

4.5.5. General aviation (GA) and proportionality issues

It is assumed that refuelling with passengers on board is both not necessary to Part-NCO operators and not to be achieved without organisational and safety management processes. Part-NCO operators will not be allowed to use this procedure but the Air OPS regulation will be easier to comply with when refuelling is performed with rotors turning and no passengers on board.

Proportionality objectives are, therefore, met by all options.

4.5.6. Impact on 'better regulation' and harmonisation

A clearer and leaner Air OPS Regulation regarding fuel policy will meet the 'smart regulations' principle.

The amended Air OPS Regulation regarding refuelling with rotors turning will keep EU regulations aligned with ICAO as well as with various initiatives led by industry.

Impact/Option	Option 0	Option 1	Option 2	Option 3
Impact on 'better regulation' and harmonisation	0	+	+	++

4.6. Comparison and conclusion

4.6.1. Comparison of options

Comparing the options clearly shows that Option 3 is the way forward.

Impact/Option	Option 0	Option 1	Option 2	Option 3
Safety impact	0/-	0	+	+
Social impact	0	+	0	+
Impact on 'better regulation' and harmonisation	0	+	+	++



4.6.2. Monitoring and ex post evaluation

Fuel exhaustion events and events related to refuelling with rotors turning, as well as their circumstances, will be monitored, and those circumstances considered through the European Central Repository (ECR) for for accident and incident reports in aviation.



5. References

5.1. Affected regulations

Commission Regulation (EU) No 965/2012 of 28 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EU) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)

5.2. Affected CS, AMC and GM

- Decision N° 2012/015/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to 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 ‘Guidance Material to Annex I — Definitions
- Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 ‘AMC and GM to Part-ORO — Issue 2’
- Decision 2014/015/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-CAT of Regulation (EU) No 965/2012 and repealing Decision 2012/018/R of the Executive Director of the Agency of 24 October 2012 ‘AMC and GM to Part-CAT — Issue 2’
- Decision N° 2012/019/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to 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 ‘Acceptable Means of Compliance and Guidance Material to Part-SPA’
- Decision 2013/021/Directorate R of the Executive Director of the Agency of 23 August 2013 on adopting Acceptable Means of Compliance and Guidance Material for Non-commercial operations with complex motor-powered aircraft (Part-NCC)
- Decision 2014/016/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-NCO of Regulation (EU) No 965/2012 and repealing Decision 2013/022/R of the Executive Director of the Agency of 23 August 2013 ‘AMC and GM to Part-NCO — Issue 2’
- Decision 2014/018/R of the Executive Director of the Agency of 24th 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’

5.3. Reference documents

- ICAO Annex 6 to the Chicago Convention on International Civil Aviation — Operation of Aircraft, Chicago, 7 December 1944



- ICAO Document 9976 — Flight Planning and Fuel Management Manual, 1st Edition, 2015
- ICAO State Letter 11/2014, subject to the adoption of Amendment 19 to ICAO Annex 6, Part III, 7 April 2014, (ref.: AN 11/32.3.11-14/11)
- Safety Recommendation FRAN-2012-026 (BEA)

