European Union Aviation Safety Agency

SAFETY MATERIAL

RMT.0573 'Fuel procedures and planning'

SPT.0097

'Promotion of the new European provisions on fuel/energy planning and management'

DRAFT FUEL IMPLEMENTATION MANUAL

V0.1

together 4safety

In collaboration with

AGENCIA ESTATAL DE SEGURIDAD AÉREA

EDITION RECORD

00	From publication	First draft edition

REFERENCES

Reg. (EU) 965/2012	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.
Reg. (EU) 2021/1296	COMMISSION IMPLEMENTING REGULATION (EU) 2021/1296 of 4 August 2021 amending and correcting Regulation (EU) No 965/2012 as regards the requirements for fuel/energy planning and management, and as regards requirements on support programmes and psychological assessment of flight crew, as well as testing of psychoactive substances.
ED Decision 2022/005/R	*Fuel/energy planning and management — fuel schemes*

LIST OF ACRONYMS

AFM	*Aircraft Flight Manual*
AMC	*Acceptable Mean of Compliance*
AOC	*Air Operator Certificate*
APU	*Auxiliary Power Unit*
ATS	*Air Traffic Services*
CAT	*Commercial Air Transport*
ELA2	*European Light Aircraft*
ERA	*En-Route Aerodrome*
GM	*Guidance Material*
GNSS	*Global Navigation Satellite System*
HEMS	*Helicopter Emergency Medical Service*
HOFO	*Helicopter Offshore Operations*
MCTOM	*Maximum Certified Take-Off Mass*
MEL	*Minimum Equipment List*
NCC	*Non-Commercial with Complex motor-powered aircraft*
NCO	*Non-Commercial with Other than complex motor-powered aircraft*
NOTAM	*Notice To Airmen*
OM	*Operations Manual*
PBN	*Performance Based Navigation*
RCF	*Reduced Contingency Fuel*
SCF	*Statistical Contingency Fuel*
SPO	*Specialised Operations*

CONTENTS

DISCLAIMER

The Agency has prepared this document to provide stakeholders with an easy-to-read publication. This document is part of the safety material documentation published by EASA. The document provides some of the best practices in the industry to implement Fuel and Flight Planning policy and **does not** form part of the EASA regulatory system (there is no need to comply with this document). This document is for information only. The Agency accepts no liability for damage of any kind resulting from the risks inherent in the use of this document.

1. OBJECT AND SCOPE

The objective of this manual is to support operators and authorities in the application of fuel schemes by complying with EASA regulation.

This document is EASA Safety Promotion Material (SP), thus not part of the formal regulatory system. It is to be considered as support and guidance for the implementation of Fuel schemes.

Edition 1 of this manual contains the existing explanatory notes of RMT.0573 with some editorial modifications mainly for better readability and consistency. The content of the manual will be expanded in future editions to become a living document to address common questions and items of the EASA rulemaking structure necessary for clarification.

2. DEFINITIONS

Explanations of the definitions contained in 'Annex I (Definitions for terms used in Annexes II to VIII) to the Air OPS Regulation':

'Alternate aerodrome'

The definition follows the general structure of the ICAO definition of an 'alternate aerodrome'. The 'adequate aerodrome' definition is maintained as it is a well-understood concept by European pilots and flight operations officers (FOOs). In addition, the ETOPS and extended diversion time operations (EDTOs) documentation, once incorporated into the rules through a different rulemaking task (RMT.0392), will also refer to 'adequate aerodromes'.

Aerodrome selection policy: The operator must ensure that the aircraft has an aerodrome available where it will be able to land safely. The aerodrome selection policy does not form part of the fuel/energy scheme for AOC helicopters, nor for NCC/SPO.

'Current fuel/energy scheme'

This new definition introduces a concept mostly used when operators wish to shift from one approved fuel scheme to another. GM1 CAT.OP.MPA.180 explains the concept, which should be mostly used in the context of individual fuel schemes or basic fuel schemes with variations.

'Flight following'; 'flight monitoring'; 'flight watch'

These definitions were taken from ICAO Doc 9976. Although included in a GM to Definitions in NPA 2016-06 (A), Rulemaking Group RMT.0573 revisited the relevance and use of these concepts and moved them to Definitions as they are largely used in the IRs. The definition of 'flight following' is slightly broadened to include alternate aerodromes whereas the ICAO definition covers only the destination aerodrome. These definitions complete the introduction of the operational control concept, and they are included in a new set of rules. These rules require operators that apply a basic fuel scheme with variations or an individual fuel scheme to use these tools to maintain constant communication between the operations control centre (OCC) on the ground and the operating flight crew.

FLIGHT MONITORING AND FLIGHT WATCH — RELEVANT SAFETY INFORMATION' (GM28 Annex I 'Definitions)

This new GM provides a list of elements that can affect flight safety and are also considered important for the communication between flight operations officers (FOOs) and operating flight crew.

'Relevant safety information' is a term used in the definition of 'flight monitoring'.

As flight monitoring is a capability required by operators that use a basic fuel scheme with variations or an individual fuel scheme, such operators have to ensure that they have communication capabilities to exchange timely information between the operations control centre (OCC) on the ground and the in-flight operating flight crew.

It is likely that the examples provided in this GM may not 100 % fit all operators. Therefore, they may decide to eliminate the non-applicable elements, whereas other operators may decide to enhance this list with elements they consider relevant for the specificity of their fuel scheme.

This GM is harmonised with ICAO Doc 9976 and is similar to the Transport Canada Civil Aviation (TCCA) provisions for flight following/flight watch as well as to the Federal Aviation Administration (FAA) provisions[1]. The term used in the FAA Code of Federal Regulations (CFR) 121.628 is 'inoperable instruments or equipment' whereas this GM uses 'aircraft technical failure' (new point (a)), which is also applicable to in-flight fuel management. The wording takes into account a possible equipment/system failure, which increases the likelihood of the OCC supporting the flight crew in dealing with such a technical failure. As automatic live data communication becomes more and more current, this task could be accomplished with no major difficulties.

'Flight time'

This definition is based on ICAO Annex 1, Part I and Annex 6, Part III. The purpose of introducing this definition is to make it applicable to all possible scenarios in the Air OPS Regulation except for flight time limitations as Subpart FTL of Part-ORO has its own definition of flight time (ORO.FTL.105). Therefore, a definition of flight time for the rest of the Air OPS Regulation was needed to avoid confusion with the ORO.FTL definition of flight time. The new definition includes taxi.

Remark: Item being discussed in EASA SPT.0097.

'Fuel/energy en route alternate (fuel ERA) aerodrome'

A different definition of 'fuel ERA aerodrome' has replaced the current one. Additional fuel rules were introduced into the definition of 'fuel ERA aerodrome' to limit the need for increased planning minima at the normal ERA aerodrome. With the new rules, the weather minima are only required for the fuel ERA aerodrome, and all other ERA aerodromes have to meet only the requirements for an adequate aerodrome.

Remark: Item being discussed in EASA SPT.0097 addresses requirements stipulated in CAT.POL.215.

For the purpose of ICAO Annex 6 Attachment F regarding RFF, the Fuel ERA should be treated as a normal ERA.

[1] See FAA CFR 2012, Title 14, Vol 3, Part 121, Subpart U, as well as Section 121.535 'Responsibility for operational control'.

Fuel/energy scheme: New concept introduced by the Reg. (EU) 2021/1296 which supersedes the current fuel policy for AOC/NCC/SPO. This scheme introduces the concept "energy" to reflect advances in aeroplane engine technology. The approval also includes aerodrome selection and in-flight fuel/energy management.

'Safe landing'

The term 'safe landing' is currently used in European regulations and in ICAO documentation. This term is now used more broadly, particularly in some of the most sensitive requirements, such as those related to FRF. Therefore, it was necessary to create a definition even though ICAO Annex 6, Part I does not include one. The European definition is, to a considerable extent, harmonised with the ICAO understanding of the term; however, it considers the fuel quantity, which ICAO does not.

Fuel/energy and oil supply: These are requirements equivalent to the fuel/energy planning policy for NCC operators.

FUEL ERA AERODROME' (GM30 Annex I 'Definitions)

This new GM exemplifies the cases where a fuel ERA aerodrome could be used:

— 'fuel ERA aerodrome critical scenario';

— 'fuel ERA aerodrome 3 %' (contingency fuel in the context of a basic fuel scheme with variations); and

— 'fuel ERA aerodrome point of no return (PNR)' to determine the PNR in the context of isolated aerodromes.

Fuel/energy planning and in-flight replanning policy: The operator must ensure that the aircraft is capable of completing the planned flight safely, and if decision is taken to modify the flight once it has commenced, this can also be completed safely.

FUEL/ENERGY' (GM29 Annex I 'Definitions)

This GM explains the reason for replacing the term 'fuel' with 'fuel/energy' in the Air OPS IRs, where appropriate. The change allows new technologies for aircraft propulsion that are based on other sources or types of energy than hydrocarbon-based fuel to fit in the Air OPS IRs for the operation of such aircraft.

In-flight fuel/energy management policy: The operator shall establish procedures that ensure that the amount of fuel/energy planned or replanned in-flight continues being valid to complete the flight safely. This includes managing the flight in the event that the planning assumptions have changed.

In-flight fuel/energy management: These are requirements equivalent to the in-flight fuel/energy management policy for NCC operators.

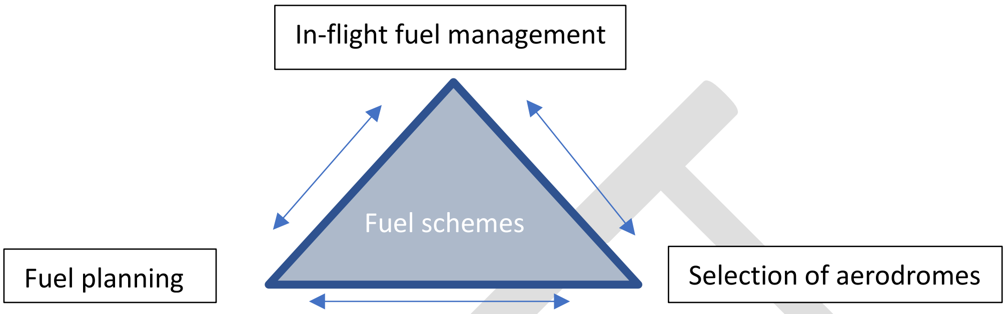
Selection of aerodromes and operating sites: These are requirements equivalent to the aerodrome selection policy for AOC helicopters.

Special refuelling or defuelling: For AOC operators, the following cases are defined to be special refuelling or defuelling: refuelling with an engine running or rotor turning; refuelling/defuelling with passengers embarking, on board, or disembarking; or refuelling/defuelling with wide-cut fuel.

3. CONCEPT OF FUEL SCHEMES

The concept of 'fuel scheme'

The 'fuel scheme' integrates the fuel planning policy with the selection of aerodromes and the in-flight fuel management policies as follows:



— Interrelationship between the preflight fuel calculation and selection of aerodromes under the ICAO provisions

For the preflight fuel calculation ('fuel planning') and selection of aerodromes, ICAO Doc 9976 and ICAO Annex 6, Part I clearly indicate (see aforementioned ICAO SARPS 4.3.4.4 and 4.3.6.6) that pre-flight fuel calculation and selection of aerodromes depend on each other: 'based on the results of a specific safety risk assessment (…) variation to the pre-flight fuel calculation (…) shall include at least (…) use of alternate aerodromes (…)'.

— Interrelationship between the in-flight fuel management, preflight fuel calculation, and selection of aerodromes

The RMG acknowledged the interrelationship between the in-flight fuel management and the two above-mentioned policies although ICAO did not explicitly take this approach. The RMG's study of several incidents or serious incidents where aircraft landed or could have landed with less than the final reserve fuel (FRF) supported this approach. The study showed that when the outcome of the reviewed events was successful, this was due to the effective in-flight fuel management policy applied by the flight crew and to the capabilities of the operators' operational control system (cf. closure of the London Heathrow Airport on 12 July 2013).

The outcome of the study on in-flight fuel management can be summarised as follows:

- the consequences of poor fuel planning and/or poor selection of aerodromes will be borne during flight, where the situation will need to be handled accordingly by applying the in-flight fuel management policy;
- a good flight planning alone does not guarantee a safe outcome without proper in-flight fuel management; the same principle applies to the selection of aerodromes;
- the combination of a good fuel planning policy and a poor in-flight fuel management policy may lead to an unsafe fuel situation (e.g. fuel emergency, minimum fuel or similar); and

— conversely, poor flight planning will probably have a safe outcome with proper in-flight fuel management (e.g. early diversion to an alternate aerodrome to refuel).

Therefore, the RMG reached full consensus on that matter, and the need for an integrated approach that encompasses all three policies became apparent: the 'fuel scheme'. The RG continued with the RMG's approach.

A 'fuel scheme' requires prior approval by the competent authority, . It integrates the fuel planning policy with the selection of aerodromes policy and the in-flight fuel management policy (see CAT.OP.MPA.180).

Following a performance-based approach, the regulatory consists of:

— implementing rules (IRs), where the safety objectives are defined;

— AMC that provide three different means to meet the safety objectives: a basic fuel scheme, a basic fuel scheme with variations, and an individual fuel scheme; they allow operators to fully customise their fuel planning, aerodrome selection and in-flight fuel management policies, provided that they satisfy certain conditions; and

— GM that provide additional explanations, clarifications, and references to related ICAO documentation.

It should be noted, that not all AMC provide means for basic fuel scheme with variations. Where none are provided, the basic fuel scheme regulation applies also for basic fuel scheme with variations. See GM1 CAT.OP.MPA.180.

The 'fuel scheme' concept is similar to the flight time specification schemes (see Subpart ORO.FTL of Annex III (Part-ORO) to the Air OPS Regulation).

EASA Fuel schemes follows ICAO Standards and Recommended Practices (SARPs) 4.3.4.4 and 4.3.6.6 as amended in mendment38 to ICAO Annex 6, Part I, followed by ICAO Doc 9976 'Flight Planning and Fuel Management (FPFM) Manual' (1st Edition, 2015).

4. CAT OPERATORS – AEROPLANES.

4.1. Fuel/energy scheme

All operators holding an AOC currently possess an approved fuel policy. Due to the application of the Regulation (EU) 2021/1296, this concept is updated and extended to the fuel/energy scheme, prior approval is required.

The requirements are performance-based to improve energy efficiency. They distinguish fuel/energy planning, aerodrome selection and in-flight fuel/energy management.

The fuel/energy scheme requirements depend on whether the aircraft is an aeroplane or a helicopter.

The fuel/energy scheme for commercial air transport with aeroplanes is divided into three types depending on the capability of the operation. They are based on safety and operational data and allow capable operators to adapt the safety targets through general and particular analysis:

- The **basic fuel/energy scheme** derives from a large-scale analysis of safety and operational data from previous performance and experience of the industry, applying scientific principles. The basic fuel/energy scheme shall ensure, in this order, a safe, effective, and efficient operation of the aircraft.
- The **basic fuel/energy scheme with variations**, which is the basic scheme just mentioned, but introducing variations to it, which enhance its efficiency by requiring certain mitigation measures.
- The **individual fuel/energy scheme** which derives from a comparative analysis of the operator's safety and operational data, applying scientific principles. The analysis is used to establish a scheme with a higher or equivalent level of safety to that of the plan previously approved that ensures, in this order, a safe, effective, and efficient operation of the aircraft.

To grant approval for a fuel/energy scheme, the competent authority will evaluate compliance of the three policies established by the operator into which these schemes are divided, together with the processes to support their implementation and continuous monitoring:

- The **fuel/energy planning and in-flight replanning policy** ensures that the aeroplane has enough fuel for a safe landing.
- The **aerodrome selection policy** must ensure the availability of an aerodrome for a safe landing..
- The **in-flight fuel/energy management policy** includes verification of the amount of fuel available for the rest of the flight and how this is managed to accomplish a safe landing.

For an individual fuel/energy scheme to be approved, the operator must demonstrate that the level of operational safety attained is at least as high as in the previously approved plan.

Operators that intend to apply these types of schemes must establish an operational safety plan with risk control and mitigation, by defining a series of indicators that need to be monitored prior approval and thereafter, together with statistical data for a period of at least two years, always provided that a significant number of flights are included.

4.2. Fuel/energy planning and in-flight replanning policy

The procedures developed from this policy must be included in the Operations Manual.

This must include the procedures, in case it is decided to modify the plan during the flight, to calculate the fuel needed to complete the flight with a safe landing.

The calculations to determine how much fuel is needed should be based on the data from a consumption monitoring system, or alternatively from data provided by the manufacturer. Consumption monitoring systems should collect data automatically whenever possible.

Following concepts have changed in respect to previous regulation:

- **Contingency**: the basic scheme includes as contingency fuel/energy 5% of the trip fuel or 5 minutes at holding speed at 1500ft, which ever is higher.
- **Alternate**: check that the description matches the text of AMC1 CAT.OP.MPA.181.
- **Additional**: check that the description matches the text of AMC1 CAT.OP.MPA.181.

- **Extra**: this definition has changed, with a new concept being introduced. This is fuel/energy to take into account anticipated delays or specific operational constraints.
- **Discretionary**: this is a new name for an existing concept. It is fuel/energy carried if required by the commander. This is what was formerly called extra fuel.

The text of GM1 CAT.OP.MPA.181, where several aspects of fuel/energy planning are set out and clarified, should be reviewed by the operator.

Operators should take into account the impact of the last minute increase to ZFW in the fuel planning calculations. CAT.OP.MPA.260 states that "The commander shall only commence a flight […], when satisfied that the aircraft carries at least the planned amount of usable fuel/energy and oil to safely complete the flight, taking into account the expected operating conditions". To help with this, most of the flight planning systems provide the amount of extra fuel consumption for every 1000 kf of ZFW increment in every OFP. However, this kind of procedure should be restricted in the OM to a maximum value of the ZFW variation, in a similar way that the LMC in the weight and balance.

AMCs AND GMs FOR FUEL/ENERGY PLANNING AND IN-FLIGHT REPLANNING POLICY. BASIC SCHEME

AMC1 CAT.OP.MPA.181 BASIC FUEL SCHEME — PRE-FLIGHT CALCULATION OF USABLE FUEL FOR PERFORMANCE CLASS A AEROPLANES **AMC2 CAT.OP.MPA.181** BASIC FUEL SCHEME — PRE-FLIGHT CALCULATION OF USABLE FUEL FOR PERFORMANCE CLASS B AND C AEROPLANES **AMC3 CAT.OP.MPA.181** BASIC FUEL SCHEME — PRE-FLIGHT CALCULATION OF USABLE FUEL FOR ELA2 AEROPLANES **AMC4 CAT.OP.MPA.181** BASIC FUEL SCHEME — PRE-FLIGHT CALCULATION OF USABLE FUEL **GM1 CAT.OP.MPA.181** BASIC FUEL SCHEME TAXI FUEL — LOCAL CONDITIONS PLANNING OF FLIGHTS FUEL CONSUMPTION MONITORING SYSTEM ANTICIPATED MASSES — LAST-MINUTE CHANGES TRIP FUEL — ARRIVAL ROUTING UNFORESEEN FACTORS DESTINATION ALTERNATE AERODROME FINAL RESERVE FUEL ANTICIPATED DELAYS DISCRETIONARY FUEL IN-FLIGHT REPLANNING

4.2.1. *Basic* Fuel/energy planning policy

- AMC 1 CAT.OP.MPA 181 (f)

  Most Critical Point: The specific point along the route for which the diversion procedure required towards the nearest planned landing option (based on a great circle route) has the least margin in terms of fuel.

- AMC1 CAT.OP.MPA.181 (f)

  The "additional fuel" concept requires two scenarios:

  - Engine failure, and
  - Loss of pressurization

Flight planning system should be able to compute the fuel required to proceed from the most critical point along the route, to the nearest ERA aerodrome in the two scenarios mentioned before plus 15 minutes. the diversion route used to calculate the fuel consumption is a DIRECT TO route.

If this diversion to this ERA generates additional fuel, it becomes a Fuel ERA (= planning minima)

4.2.2. Fuel/energy planning policy with variations

Operators envisaging any of the following concepts in their fuel policy shall be considered to be using the basic scheme with variations:

- Statistical calculation for taxi fuel, AMC5 CAT.OP.MPA.181.
- Contingency fuel of 3% of the trip fuel with a fuel en route alternate (Fuel ERA), AMC6 CAT.OP.MPA.181 point (c) and AMC7 CAT.OP.MPA.181
- a calculation of statistical contingency fuel (SCF), AMC6 CAT.OP.MPA.181 point (c)
- reduced contingency fuel (RCF), AMC6 CAT.OP.MPA.181 point (d).

AMCs AND GMs FOR FUEL/ENERGY PLANNING AND IN-FLIGHT REPLANNING POLICY. BASIC SCHEME WITH VARIATIONS

THOSE OF THE BASIC SCHEME AND:
AMC5 CAT.OP.MPA.181
BASIC FUEL SCHEME WITH VARIATIONS — TAXI FUEL
AMC6 CAT.OP.MPA.181
BASIC FUEL SCHEME WITH VARIATIONS — CONTINGENCY FUEL
AMC7 CAT.OP.MPA.181
BASIC FUEL SCHEME WITH VARIATIONS — LOCATION OF THE FUEL EN ROUTE ALTERNATE AERODROME TO REDUCE CONTINGENCY FUEL TO 3 %
GM2 CAT.OP.MPA.181
BASIC FUEL SCHEME WITH VARIATIONS — STATISTICAL CONTINGENCY FUEL METHOD

4.2.2.1. Statistical Contingency Fuel – detailed explanation.

Operators must verify that the text in AMC6 CAT.OP.MPA.181 and meet the safety target of GM2 CAT.OP.MPA.181.

There are different types of Contingency Fuel from which one must legally be carried. In any case the Contingency fuel value can never be less than 5 minutes holding fuel at 1500 feet, clean, at the planned landing weight:

The Contingency Fuel values are 5% of trip fuel when using the basic fuel scheme, or 3% of trip fuel (with a FERA), 20- minutes fuel or Statistical Contingency Fuel when using the basic fuel scheme with variations. 5%, 3% and 20-minutes Contingency Fuel can be allocated to a flight when no statistical data has been calculated or is available.

These fuel values are allocated as Contingency Fuel and as such, the purpose of such fuel is for unforeseen circumstances. These unforeseen circumstances may be for a variety of reasons, such as longer taxi-out time, flight planned levels not flown and/or an early descent given by ATC.

With improvements in computer flight planning and metrological forecasting, other factors, most obviously airborne holding, now tend to dominate the variation in actual fuel usage compared to the planned fuel on the OFP. It is often suggested that operators should make specific allowances for anticipated airborne holding delays, but efforts to predict them, especially at the dispatch time may be difficult. SCF allows a more accurate analysis of required contingency fuel than the prescriptive method. It is based on past experience and requires reliable data analysis and continuous monitoring of fuel consumption data. As it is based on past experience, an unpredictable component remains but much smaller than with prescribed contingency fuel.

4.2.2.1.1. Evaluation of use case for operators:

SCF is calculated for a specific city-pair and aircraft type. Prior to obtaining the approval for statistical fuel method by the competent authority, a continuous 2-year operation is required during which statistical contingency fuel (SCF) data is recorded. Collected number of flights shall be statistically significant and regularly spread over the observation period. When considering appropriate percentiles, specific route segment specialties, runway availabilities, seasonality, time of the day, etc. should be considered and a safety risk assessment shall be done. Common practice (but not exhaustive) are values of 90%/95%/99%. Normally an operator will choose to define the same standard percentiles for all SCF flights.

After obtaining the approval, the operator should continuously monitor the fuel consumption and ensure a statistically relevant number of flights is available in the relevant observation period to update the required contingency fuel for that city pair/aeroplane combination.

The decision to use SCF for specific city pair/aeroplane combination could consider availability of intermediate landing possibilities throughout the flight, reliability of weather forecasts and accuracy of weather information for enroute, destination and alternate aerodromes.

4.2.2.1.2. Coverage:

The central concept of SCF is 'coverage'. This is the percentage of flights which burn less than their planned fuel. A coverage of 95% means that 95% of flights in the past, landed with all their Destination Alternate and Final Reserve Fuel intact.

As coverage rises, so does the required fuel, but disproportionately – the difference between 95% and 99% coverage is not 4% fuel, but an amount which depends on the variability of the fuel consumption on the route in question. 100% coverage would imply that there was no flight using the Destination Alternate Fuel.

The coverage does not represent a fixed amount of fuel; A route with high variation will require more SCF to 'cover' it than one where there is little variation in usage. For example, the ABC321 has a high variation in the amount of trip fuel used per flight (sometimes it uses a lot more than the trip amount, sometimes it uses a lot less than the trip amount). For this flight, the amount of SCF required to 'cover 95% flights is a large amount of fuel (2593kg).

However, the ABC123 has very little variation in the amount of fuel used per flight (it generally uses only a little bit more or less than the trip amount). Therefore, for this flight, the amount of SCF required to 'cover' 95% flights is only a small amount of fuel (1334kg).

Figure 1. Shows how the fuel burn compares with the plan for these two flights. The less variable the fuel burn is for a flight the closer the line will be to the horizontal 'zero deviation' line. So here we can see the less variable ABC123 (orange line) is less steep than the more variable ABC321 (blue line). From this we can see that the 95% 'coverage' for each route corresponds to the two very different fuel amounts.

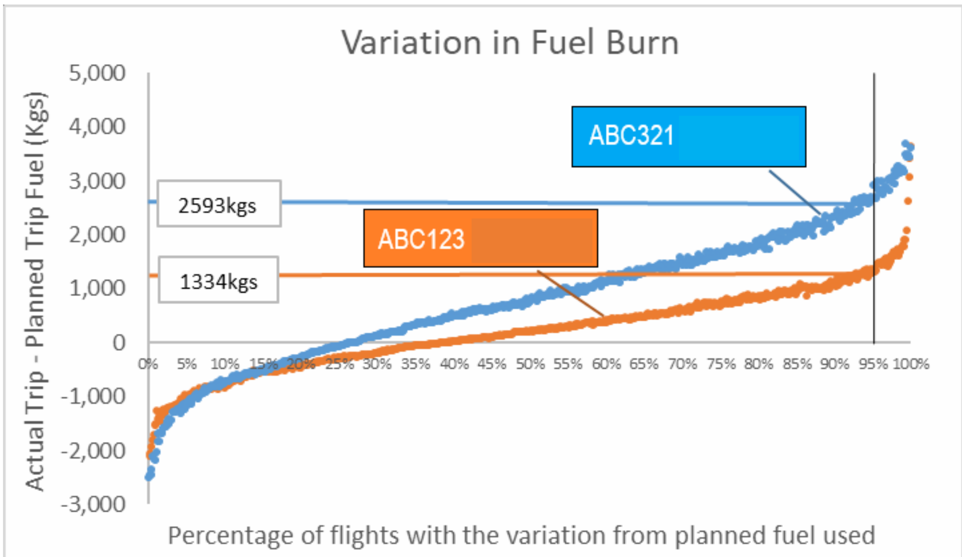


Figure 1 - Coverage

4.2.2.1.3. Discretionary Fuel and SCF:

With a SCF value of 95% allocated on the OFP, the crew at the planning stage could ask themselves if they are one of the flights, that require more fuel for the mission.

The key here, is deciding when the limit of normal operation has been reached. Forecast low visibility operations or high winds at the destination, would be obvious examples of when Discretionary Fuel would be entirely appropriate! The benefit of SCF, however, is that it takes much of the guesswork out of the Discretionary Fuel decision, as most of the unknowns have been considered.

Remember, the statistical value is only that – a statistic. It will therefore include common variations to the OFP, such as early descents issued by ATC (and not flight plannable) or extended track miles regularly flown on the flight, but not the specific weather conditions on the day, especially if extreme.

Another point to consider is the major difference between SCF and the 3%, 5% and 20 - minutes contingency values (as described above). These values have no science behind them, hence being legally required for 'unforeseen' circumstances. SCF on the other hand has a more scientific/performance- based approach attributed to it. Therefore, when using SCF, you should expect to statistically burn some or all of this fuel during the flight.

This could be in the climb, cruise or descent phase of flight. This point is important to consider when doing an in-flight fuel check. The crew should not be alarmed if the calculated arrival fuel does not contain all of the contingency value.

The other important point to consider is the SCF value relates to the amount of fuel (kgs) statistically required, not time. The time value on the OFP is just a calculated conversion of the fuel (kg) value allocated. Seeing a SCF time of 20 mins fuel does not mean a 20-minute delay at destination, it simply means that the amount of fuel statistically allocated equates to 20 minutes of flying time.

One important issue for operational use of SCF is therefore the training of involved operational personnel and crews to ensure proper understanding of the statistical concept and tools provided to interpret the historical data broken down to their flight.

4.2.2.1.4. How SCF is calculated:

Trip Fuel deviation in percentage of trip fuel are calculated by subtracting the planned Trip Fuel from the actual Trip Fuel burn. The Trip Fuel deviations are corrected to account for take-off weight differences from plan (either due to last minute payload changes or carriage of Discretionary Fuel) and for aircraft performance (FMS) factors.

The Trip Fuel deviations can then be normalized to account for the influence of route distance.

Trip Fuel deviations are grouped by aircraft type and city pair. These deviations may then be further grouped by arrival time and by season. Until a statistically significant number of flights is obtained, the prescribed contingency method is used [3%, 5% or 20 mins] (typically this happens when a new route is introduced to a fleet type).

Each Trip Fuel deviation may be weighted based on how recent the trip was, with the more recent flights given a higher weighting than older flights. This means that recent flight data has a much bigger influence on the calculation than data from flights two years ago (see figure 2 below).

To use the resulting trip fuel deviation percentage value for flight planning, this is then transfered to a fuel amount in kg in the flight plan.

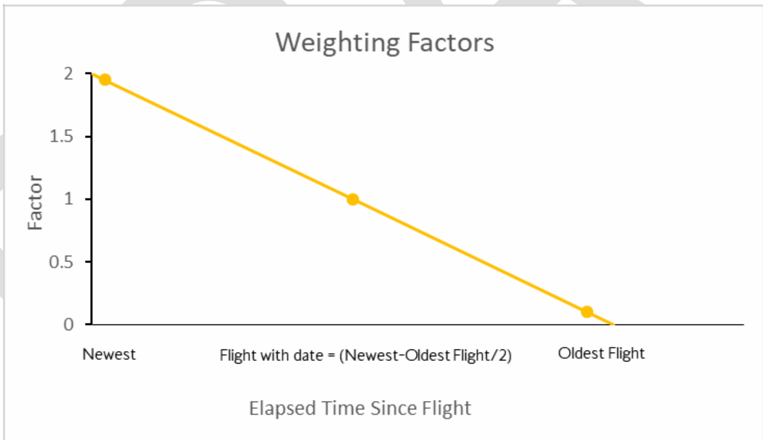


Figure 2 - Weighting

The trip fuel deviations are normally distributed and the mean and standard deviation of each group of Trip Fuel deviation is calculated. *Figure 3* shows a graphical representation with the 95th percentiles highlighted. Providing such a graphical presentation to the operational personnel and crews could be good practice depending on the capabilities of the operator. The height and the statistical dispersion (width) of the curve can help to interpret SCF.

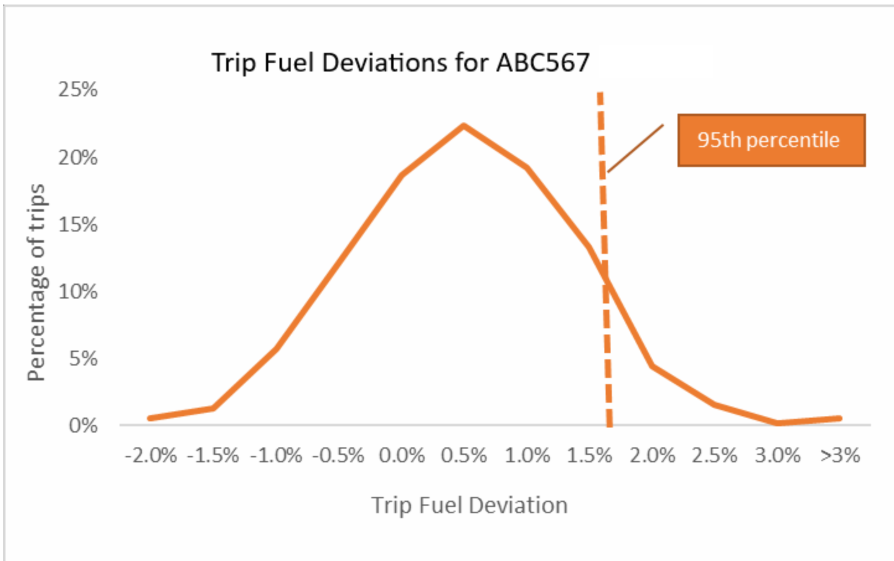


Figure 3. 95th percentile

Remember, the SCF value can never be less than 5 minutes holding fuel at 1500 feet, clean, at the planned landing weight.

*4.2.3 Individual Fuel Scheme Planning Policy*TBD

4.3. Aerodrome selection policy

The aerodrome selection policy included in a basic scheme shall principally address the following points. The description shall be consistent with the text of the requirement CAT.OP.MPA.182, together with its AMCs and GMs:

- The conditions determining whether an aerodrome is selectable as alternate for take-off or landing; the cases in which flying without an alternate is permitted.
- The mandatory requirement, for which alternates to be included in the ATS flight plan for instrument flights, as stipulated in AMC1 CAT.OP.MPA.175 (a).
- How weather forecasts should be applied in terms of the use made of the aerodrome.
- What reaching the destination is understood to mean.
- What the safety margins applied with respect to meteorological conditions are, both at the destination, fuel enroute and take-off alternate aerodromes.
- What the meteorological minima at destination aerodromes are, in terms of the type of approach made.
- The limitation of the PBN if based on GNSS, or if there are operational credits.
- Confirmation that the aerodrome selected for landing possesses the equipment necessary for instrument approaches.

AMCs AND GMs FOR THE AERODROME SELECTION POLICY. BASIC SCHEME

AMC1 CAT.OP.MPA.182
BASIC FUEL SCHEME — TAKE-OFF ALTERNATE AERODROME
AMC2 CAT.OP.MPA.182
BASIC FUEL SCHEME — DESTINATION ALTERNATE AERODROME.
AMC3 CAT.OP.MPA.182
BASIC FUEL SCHEME — AERODROME FORECAST METEOROLOGICAL CONDITIONS
AMC4 CAT.OP.MPA.182
BASIC FUEL SCHEME — REACHING THE DESTINATION AERODROME
AMC5 CAT.OP.MPA.182
BASIC FUEL SCHEME — SAFETY MARGINS FOR METEOROLOGICAL CONDITIONS
AMC6 CAT.OP.MPA.182
BASIC FUEL SCHEME— PLANNING MINIMA
GM1 CAT.OP.MPA.182
BASIC FUEL SCHEME
SAFE-LANDING OPTIONS
ONE SAFE-LANDING OPTION
ONE OR MORE AERODROMES
TWO SAFE-LANDING OPTIONS
SAFETY MARGINS
GM4 CAT.OP.MPA.182
FUEL – SCHEMES – PLANNING MINIMA – INSTRUMENT APPROACH OPERATIONS
AMC1 CAT.OP.MPA.182(f)
BASIC FUEL SCHEME — DESTINATION AERODROMES — PBN OPERATIONS
BASIC FUEL SCHEME — DESTINATION AERODROMES — OPERATIONAL CREDITS
GM1 CAT.OP.MPA.182(f)
BASIC FUEL SCHEME — DESTINATION AERODROMES — PBN OPERATIONS

4.3.1. Basic aerodrome selection policy.

AMC6 CAT.OP.MPA.182

Considerations to “take into account any limitations related to OEI operations2 must be observed.

Let´s consider the next scenario,

- Operational minimum for alternate destination CAT 3 (TYPE B) DH=0 ft NO DH
- Airplane limitation for one engine inoperative DH=50 ft

According to the above requirement, the planning minima for this airplane for this particular aerodrome should be: **50 ft + 200 ft** instead of 0 ft + 200 ft

While for AMC8 CAT.OP.MPA.182 and AMC9, this consideration of OEI is not consider on the basis of the specific mitigation measures describe in the AMC which leads to be less likely the condition of OEI and if this occurs the pilots will have the support of at least flight monitoring capability.

4.3.2. Aerodrome selection policy with variations

Operators considering any of the following concepts in aerodrome selection will be considered to be using the basic scheme with variations:

- Fly an IFR flight with “no destination alternate”, AMC2 CAT.OP.MPA.182.
- Flying to an isolated destination, AMC7 CAT.OP.MPA.182.
- Using planning minima with reduced margins, AMC8 CAT.OP.MPA.182 and AMC9 CAT.OP.MPA.182.

Isolated aerodromes used as destinations must be approved by the competent authority

AMCs AND GMs FOR THE AERODROME SELECTION POLICY. BASIC SCHEME WITH VARIATIONS

THOSE OF THE BASIC SCHEME AND:
AMC7 CAT.OP.MPA.182
BASIC FUEL SCHEMES WITH VARIATIONS — ISOLATED AERODROME — POINT OF NO RETURN
AMC8 CAT.OP.MPA.182
BASIC FUEL SCHEME WITH VARIATIONS — PLANNING MINIMA
AMC9 CAT.OP.MPA.182
BASIC FUEL SCHEME WITH VARIATIONS — PLANNING MINIMA
GM2 CAT.OP.MPA.182
BASIC FUEL SCHEME WITH VARIATIONS — NORMAL CRUISE CONSUMPTION
GM3 CAT.OP.MPA.182
BASIC FUEL SCHEME WITH VARIATIONS — FACILITIES WITH A SYSTEM MINIMUM OF 200 FT OR LESS

- AMC2 CAT.OP.MPA.182

The provision to fly an IFR flight with “no destination alternate” moved from ‘basic fuel scheme’ to ‘basic fuel scheme with variations’ in 2023 through the ED Decision 2023/007/R. This variation does not require fuel consumption monitoring system or flight watch capability in the operator control centre. This variation is based on specific mitigation measures:

1- Extension of the flight: this mitigation tries to ensure that the planned MET will be what occurs in the approach to the destination aerodrome, (e.g. TAFORS are more reliable the shorter the prediction is). The reason to further limit the in-flight replanning to 4 hours is because the access to the MET information is less in an aircraft in flight than on ground, however this is quickly changing as the aircraft in flight become more connect, nevertheless there are other resources that are available on the ground that are more difficult to have access from an aircraft in flight (e.g. a face to face discussion with a flight dispatcher, or with maintenance engineer, etc). In addition this limitation in the flight time will reduce the chances of unexpected changes in the flight plan (e.g. difference in the fuel burned flying many hours in a non-optimum cruise FL, etc).

2- Availability of runways: two separated runways are necessary. Separated runways are defined as:

▪ Definition (107) in Annex I Reg.(EU) 965/2012: ‘separate runways’ means runways at the same aerodrome that are separate landing surfaces. These runways may overlay or cross in such a way that if one of the runways is blocked, it will not prevent the planned type of operations on the other runway. Each runway shall have a separate approach procedure based on a separate navigation aid.

3- Increased weather minima. The weather should be forecasted close to VFR.

Remark: The AMC2 CAT.OP.MPA.182 is misleading, as it includes two regulations. One for basic fuel scheme and one for basic fuel scheme with variations. The SPT.0097 will request to segregate the information to make it clearer.

- AMC8 CAT.OP.MPA.182

  During the adoption process of the fuel Regulation, Sweden, Denmark and Norway requested to address an edge case scenario where a number of ILSs at their aerodromes are categorised as Type A instrument approach operation instead of Type B. This usually does not happen in the rest of Europe as the system minima for an ILS is 200 ft. To address this issue, EASA worked together with the NCAs from Sweden, Denmark and Norway to develop a new basic fuel scheme with variations. The basic fuel scheme with variations in AMC8 CAT.OP.MPA.182 proposes something intermediate of what is included in AMC6 CAT.OP.MPA.182 for basic fuel schemes and AMC9 CAT.OP.MPA.182 for basic fuel schemes with variations.

4.3.3. Individual Aerodrome selection policy

TBD

4.4. In-flight fuel/energy management policy

An important parameter for in-flight fuel management is the actual fuel quantity remaining on board in real time.

- In-flight fuel check

The flight crew should "carry out at regular intervals" in-flight fuel checks.
For obvious safety reasons (detecting overburn, fuel leak,...) AMC1 CAT.OP.MPA 185 (a), paragraph (a)(1), limits the interval between two in-flight fuel checks to 60 minutes.
An in-flight fuel check consists of noting the remaining usable fuel and the actual consumption.
Paragraph (a)(2) explains what the flight crew shall do with these two figures:

  - Compare the actual consumption with the planned consumption which can be read on the OFP (or estimated if the fuel check is done somewhere between two OFP waypoints). This allows the crew to detect whether certain fuel reserves have already been consumed.
  - Verify that the remaining fuel allows to land at Destination with Alternate fuel + FRF still on board (or FRF only if no Alternate required).
  - Determine the fuel expected to be on board upon landing in order to calculate the available holding time and the landing performance.

  Note: good airmanship also recommends adding the remaining fuel + consumption and comparing with the off-block fuel to identify any fuel leaks.

Recording of all of these "operational" in-flight fuel checks, mentioned above, on the OFP is not required.

- Recording of relevant Fuel Data

CAT.OP.MPA.185 (a)(4) states that relevant fuel/energy data shall be recorded.
This measure enables the competent authority to ensure the safety oversight and to establish the baseline safety performance of the current fuel/energy scheme.
A fuel scheme shall be approved and therefore AMC.CAT.OP.MPA.185(a)§(a)(3)(i) recalls that the relevant fuel data to be recorded by the operator shall be agreed with the competent authority.
GM1 CAT.OP.MPA.185 explains how to comply with the recording requirement of CAT.OP.MPA.185 (a)(4).
Fuel data recording is divided into two parts:

a) Recording of some In-flight fuel checks. The Operator may decide at which regular intervals In-flight fuel checks shall be recorded.
   As required in AMC CAT.OP.MPA.175(a), paragraph (a)(16), the OFP provides boxes allowing the flight crew to record the actual fuel data at each waypoint. The GM suggests filling the boxes at intervals of maximum 30 minutes for short range flights and 60 minutes for longer flights, but this interval can be extended until overflying the next waypoint if this one is further away than 60 minutes.

b) Recording of at least 6 fuel data figures for each flight, like off-block fuel, etc. (see point (b), GM1 CAT.OP.MPA.185)
Note that on modern aircraft some of these 6 data can be automatically recorded and send to the operator via ACARS but Minimum Fuel or Mayday Fuel declarations need a pilot report.

- Minimum fuel and May Day fuel

Procedures must be established for using the "MINIMUM FUEL" and "MAYDAY MAYDAY MAYDAY FUEL" declarations with regard to the consumption of final reserve fuel/energy.

The establishment of procedures for in-flight fuel management is considered crucial in the new context of fuel planning and management. The procedures for in-flight fuel management need to be closely linked to the training provided to flight crew, thus ensuring compliance also with the requirement of point ORO.GEN.200 (a)(4) on maintaining the personnel trained and competent to perform their tasks.

This requirement describes a coordinated escalation process with regard to ATC and FRF protection. Although each situation is different and may be handled at any stage of the process, normally, this process should follow a three-step approach (the EU approach follows the rationale of ICAO Doc 9976):

— Step 1: request delay information when required (as per point CAT.OP.MPA.185 (b) and ICAO Annex 6, Part I, Section 4.3.7.2.1);

— Step 2: declare 'MINIMUM FUEL' when committed to land at a specific aerodrome and any change in the clearance may result in landing with less than the planned FRF (as per point CAT.OP.MPA.185 (c) and ICAO Annex 6, Part I, Section 4.3.7.2.2); and

— Step 3: declare 'a situation of fuel/energy emergency' when the calculated fuel on landing at the nearest suitable aerodrome where a safe landing can be made will be less than the planned FRF (as per point CAT.OP.MPA.185 (d) and ICAO Annex 6, Part I, Section 4.3.7.2.3).

The requirement related to the 'MINIMUM FUEL' call is included in point SERA.11012 'Minimum Fuel and Fuel Emergency' of the Annex to Implementing Regulation (EU) 2016/1185[2].

For further information, please refer to ICAO Doc 9976, Chapter 6.10 'Minimum fuel and MAYDAY (due to fuel) declaration scenarios'.

- Delay information from reliable source CAT.OP.MPA.185 Point (b)

The related ICAO SARP mandates the commander to request delay information from a reliable source (an ATC or another similar reliable source).

The former IR prescribed that the commander must take into account the prevailing traffic and operational conditions, without specifying how such information should be obtained. The current rules however, provides the flexibility to collect information through any reliable source and not just the ATC (as required

[2] Commission Implementing Regulation (EU) 2016/1185 of 20 July 2016 amending Implementing Regulation (EU) No 923/2012 as regards the update and completion of the common rules of the air and operational provisions regarding services and procedures in air navigation (SERA Part C) and repealing Regulation (EC) No 730/2006 (OJ L 196, 21.7.2016, p. 3) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1580809330519&uri=CELEX:32016R1185).

by ICAO Annex 6, Part I, SARP 4.3.7.2.1). Such a reliable source could be contacted, for example, via the operator's system for exercising operational control. This flexibility increases the range of information available to the commander to decide the best course of action when the alternate fuel is being consumed.

The condition to contact the ATC to obtain information on delays remains in point (b)(2)(i) of AMC1 CAT.OP.MPA.185(a). The new point (c) of GM1 CAT.OP.MPA.185 'Fuel/energy scheme — in-flight fuel/energy management policy — aeroplanes BASIC FUEL SCHEME — RELIABLE SOURCE TO OBTAIN DELAY INFORMATION' establishes the criteria that a reliable source of information should meet.

In-fight fuel management policies are not intended to replace preflight planning or in-flight replanning activities, but act as controls to ensure that planning assumptions are continually validated. Such validation is necessary to initiate, when necessary, the reanalysis and adjustment activities that will ultimately ensure the safe completion of each flight.

- Safe landing CAT.OP.MPA.185 Point (a)(3)

The amount of usable fuel remaining on board must not be less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned FRF remaining upon landing.

This point is introduced to mitigate the risk when the operator follows the policy of no destination alternate aerodrome (ICAO Annex 6, Part I, SARP 4.3.7.2.1).

The term 'safe landing' is used to ensure that the commander must always consider the safe landing option first. The commander must declare a fuel emergency whenever a safe landing cannot be performed without using the FRF. Only after declaring fuel emergency, other landing options may be considered.

If 'safe landing' was not included in point (c), it would be possible to consider unsafe landing options without declaring fuel emergency, e.g. a military airport or an unprepared runway where a landing can be performed with remaining fuel upon landing that is higher than the FRF. This situation must be avoided.

The following example illustrates this situation:

Actual fuel on board is 1 500 kg. The FRF is 1 000 kg. The required trip fuel to reach a safe landing option is 600 kg. The required trip fuel to reach an unprepared runway is 300 kg. The fuel remaining when landing on the nearest safe landing option is: 1500 – 600 = 900 kg, which is lower than the FRF. Hence, the commander must declare 'MAYDAY'.

The fuel remaining when landing on an unprepared runway is: 1500 – 300 = 1200 kg, which is higher that the FRF. If 'safe landing' were removed from the IR, the commander would no longer need to declare 'MAYDAY' and could opt to land on an unprepared runway.

This IR prevents the use of the second option as it is considered less safe; therefore, 'safe landing' is kept in the IR.

- 'MINIMUM FUEL' declaration CAT.OP.MPA.185 Point (c)

The IR reflects the changes to ICAO Annex 6 and Doc 4444 'Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM)' with regard to 'minimum fuel'. The use of such a requirement, which is already mandated by several EASA Member States through their aeronautical information publications

(AIPs), improves coordination between flight crew and ATC when anticipating emergency or distress situations.

The addition of such a requirement to the IR enhances the safety aspects of the in-flight fuel management requirements (see also SIB 2018-08).

- 'MAYDAY MAYDAY MAYDAY FUEL' CAT.OP.MPA.185 Point (d)

The IR reflects the changes to ICAO Annex 6 and Doc 4444 'PANS-ATM' with regard to situations of fuel emergency. Use of the standard call 'MAYDAY FUEL' promotes safety as it provides an immediate and clear understanding of the nature of the emergency both to ATC and the commanders of other flights operating on the same frequency.

The text of point (d) stems from ICAO Annex 6, Part I, SARP 4.3.7.2.3:

'The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.'

4.4.1. Basic in-flight fuel management policy.

AMC1 CAT.OP.MPA.185(a) 'Fuel/energy scheme — In-flight fuel/energy management policy — aeroplanes BASIC FUEL SCHEME — PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT' (new)

This AMC includes parts of the current point CAT.OP.MPA.280 'In-flight fuel management — aeroplanes' that is deleted.

Point (a)(1) 'regular intervals for in-flight fuel checks'

Fuel checks should be done at regularly, generally within 30 minutes (60 minutes for longhaul flights) intervals at relevant points included in the operational flight plan. There might be intervals between waypoints on the flight plan, that are more distant than the suggested intervals. Then the next possible way point after the 30/60 minutes should be used for the fuel check.

Point (a)(3) 'relevant fuel data to be recorded'

Rulemaking Group (RG) RMT.0573 discussed the recording of the relevant fuel data. The discussion was also triggered by several comments on NPA 2016-06 (A).

RG RMT.0573 had to determine what is 'relevant' in the context of basic fuel schemes and basic fuel schemes with variations (GM on individual fuel schemes was already included in NPA 2016-06 (A)). RG RMT.0573 agreed that recording this data (including fuel remaining upon landing) is necessary for the understanding of the data in the context of the mandatory occurrence reporting. In addition, recording this data is the actual condition for issuing 'minimum fuel' and 'emergency fuel' calls. Such data can be recorded either in the technical log (to be stored for 36 months) or in the flight planning records (to be stored for a much shorter period: 3 months).

Other benefits from collecting relevant fuel data are the following:

— data records are created for further analysis and efficiency increase;

— the proper route cause for fuel starvation occurrences is determined;

— clearer statistics of fuel consumption can be produced; and

— training needs for pilots and ATC can be better assessed.

RG RMT.0573 analysed the relation between the relevant fuel data to be recorded (especially when they are linked to 'minimum fuel' declarations or 'emergency fuel' calls) and the operator's safety management system (SMS), as it is expected that the former should feed the latter. Although from this perspective the requirement could have been inserted in Subpart ORO.GEN just as well, it was decided to keep it where it was initially proposed, i.e. in Subpart CAT.OP.MPA.

The rationale behind GM1 CAT.OP.MPA.185 provided below explains further the 'minimum fuel' call.

Point (a)(3) — 'de-identification of collected data'

Another element identified was that not all air operators consistently apply 'just culture' as a policy. This was a strong argument in favour of adding a clear requirement for the protection of collected fuel data.

GM1 CAT.OP.MPA.185 'Fuel/energy scheme — in-flight fuel/energy management policy — aeroplanes BASIC FUEL SCHEME — RELEVANT FUEL DATA TO BE RECORDED' (new)

This part of the GM is related to point (a)(3) of AMC1 CAT.OP.MPA.185.

The condition to record relevant fuel data is introduced into the related AMC1 CAT.OP.MPA.185(a) after repeated feedback was received from the accident and incident investigation boards of several EASA Member States (especially the Spanish ones that investigated the fuel incident of 26 July 2012 in Valencia), as well as from the competent authorities of several EASA Member States (especially the Civil Aviation Authority of the United Kingdom (UK CAA) that carried out an in-depth analysis of the subject).

Modern aircraft allow to record the fuel amount just before take-off and just after landing, therefore, the competent authorities are encouraged to request the operators to record these figures. The comparison between off-block fuel and take-off fuel can provide a good indication of taxi fuel calculations and of whether the operator consistently uses contingency fuel for taxi. This practice should be discouraged.

In accordance with Regulation (EU) No 996/2010[3], minimum fuel does not trigger any mandatory occurrence reporting. However, the operator should record the amount of minimum fuel declared as this data provides a good safety performance indicator (SPI) of the operator's fuel scheme.

This GM clarifies that it is at the operator's discretion to decide how long the regular intervals for fuel recording should be. It provides examples of regular intervals for long-haul flights and short-haul flights.

In addition, the GM provides a list of fuel data that are considered relevant for recording by operators, when applying a basic fuel scheme or a basic fuel scheme with variations.

This list of relevant data to be recorded is linked to the requirement of point CAT.OP.MPA.180 (d) on the baseline SPIs of an operator's current fuel scheme. A similar GM is created for individual fuel schemes (GM2 CAT.OP.MPA.180). While the recording of such data will be useful for operators to determine the robustness and safety of its fuel scheme, this data will also enable operators to move from their current fuel schemes to more performance-based ones, once they have gained the necessary experience and collected the required data.

[3] Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L 295, 12.11.2010, p. 35) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1580822280503&uri=CELEX:32010R0996).

RELIABLE SOURCE TO OBTAIN DELAY INFORMATION

Air navigation service providers (ANSPs) are considered to have the characteristics of a reliable source, which cannot be replaced by information found on the internet or another similar source.

This does not imply that the flight crew should directly contact the ANSP to obtain information, but that they can receive the information via the operator's OCC.

RG RMT.0573 discussed this GM proposal and agreed on a number of features that a reliable source of information on delays should have.

The rationale behind point CAT.OP.MPA.185 (b) above expands further on this topic.

'MINIMUM FUEL' DECLARATION (point CAT.OP.MPA.185 (c))

Notes 1 and 2 of ICAO Annex 6, Part I, SARP 4.3.7.2.2 address the scope and implications of the 'MINIMUM FUEL' call, thus providing operators with clear expectations about the declaration of 'MINIMUM FUEL'.

RG RMT.0573 discussed this topic at length. There are numerous cases where the 'minimum fuel' declaration was wrongly used, as there is a different level of understanding between ATC personnel and pilots as well as among pilots regarding the use of this declaration.

RG RMT.0573 reviewed a significant number of occurrence reports indicating that the 'minimum fuel' call was treated as an emergency when, in fact, it was only a miscalculation of fuel quantity or misinterpretation of the current regulations by either ATC or pilots. At the same time, in accordance with Regulation (EU) No 376/2014[4] (amending Regulation (EU) No 996/2010), the 'minimum fuel' declaration does not have to be reported. Therefore, operators do not have enough data to establish the correct root cause of fuel starvation occurrences.

Due to the lack of such data that would help to determine the source of the errors, RG RMT.0573 discussed whether the 'minimum fuel' call should become a reportable event through a new IR in both the Air OPS Regulation and Regulation (EU) No 376/2014 on occurrence reporting. The conclusion was that since the 'minimum fuel' declaration is not a safety event per se, operators should not report it but record it internally. For the same purpose of collecting more data to better understand the causes of misuse, the amount of fuel upon landing should be part of the relevant data to be recorded.

RG RMT.0573 developed in this GM three typical examples of cases where the 'minimum fuel' declaration should be made.

RG RMT.0573 also concluded that additional training should be provided to operators and ATC units to clarify the meaning and use of similar messages, such as 'MINIMUM FUEL', 'PAN PAN PAN' and 'MAYDAY MAYDAY MAYDAY FUEL'. EASA will provide further support on this topic through safety promotion activities, following publication of this Opinion.

Furthermore, this GM includes a reference to ICAO Doc 9976, as well as several sample scenarios to explain when 'MINIMUM FUEL' should be declared and what the ATC's reaction should be.

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[4] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1580825192600&uri=CELEX:32014R0376)

ENSURING A SAFE LANDING — FINAL RESERVE FUEL PROTECTION

This part of the GM addresses landing options on other-than-adequate aerodromes to clarify that the FRF must always be protected. This part, which is slightly redrafted to also address comments received on NPA 2016-06 (A), is based on ICAO Annex 6:

'4.3.7.2 The pilot-in-command shall continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining upon landing.

Note: the FRF protection is intended to ensure a safe landing at any aerodrome when unforeseen occurrences may not permit safe completion of an operation as originally planned. Guidance on flight planning, including the circumstances that may require re-analysis, adjustment and/or re-planning of the planned operation before take-off or en route, is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).'

The term 'safe landing' is explained in the context of protecting the final reserve fuel both during normal and emergency operations.

In addition, this part explains 'safe landing' in the context of the Air OPS Regulation, particularly with regard to the FRF protection where 'adequate aerodrome' is used instead of the ICAO 'unqualified aerodrome'.

This part of the GM clarifies that FRF protection during normal operations is applicable to aerodromes that were assessed as 'adequate aerodromes' by the operator (see Definitions, point CAT.OP.MPA.105 'Use of aerodromes and operating sites', as well as point (a)(A)(8.1.2) 'Criteria and responsibilities for determining the adequacy of aerodromes to be used' of AMC3 ORO.MLR.100 'Operations manual — general').

Exercising other last-ditch landing options (e.g. military aerodromes, closed runways, 'emergency' aerodromes) is subject to the emergency declaration 'MAYDAY FUEL'. In such a case, the commander 'may deviate from rules, operational procedures and methods in the interest of safety', as stated in point CAT.GEN.MPA.105 (b).

The part also provides a reference to ICAO Doc 9976 for developing the operator's in-flight fuel management policy and procedures, especially with respect to the protection of the FRF under normal operations, including replanning or committing to a single landing option.

FURTHER GUIDANCE ON PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT

This part of the GM refers to ICAO DOC 9976 for further guidance.

AMCs AND GMs FOR IN-FLIGHT FUEL/ENERGY REPLANNING POLICY. BASIC SCHEME

GM1 CAT.OP.MPA.185
BASIC FUEL SCHEME
- RELEVANT FUEL DATA TO BE RECORDED
- RELIABLE SOURCE TO OBTAIN DELAY INFORMATION
- 'MINIMUM FUEL' DECLARATION
- ENSURING A SAFE LANDING — FINAL RESERVE FUEL PROTECTION
- FURTHER GUIDANCE ON PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT

AMC1 CAT.OP.MPA.185(a)
BASIC FUEL SCHEME — PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT

AMC3 CAT.OP.MPA.185 'Fuel/energy scheme — in-flight fuel/energy management policy — aeroplanes INDIVIDUAL FUEL SCHEME — COMMITTING TO LAND AT A SPECIFIC AERODROME'

This AMC is created to raise awareness and encourage the operator's operations control centre (OCC) structure to be proactive in furnishing the relevant information to the cockpit when the commander has to decide to commit to land at a specific aerodrome. It is related to the concept of 'reaching the destination' when relevant information from the OCC is decisive for the commander's commitment to land at a specific aerodrome.

4.4.2. *In-flight fuel management policy with variations.*

An in-flight fuel/energy management policy including reduced contingency fuel (RCF) or flights to isolated destinations require approval for basic fuel scheme with variations.

AMC2 CAT.OP.MPA.185(a) 'Fuel/energy scheme — in-flight fuel/energy management policy — aeroplanes BASIC FUEL SCHEME WITH VARIATIONS — PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT' (new)

This AMC2 CAT.OP.MPA.185(a) is created to include the additional procedures applicable to a basic fuel scheme with variations.

Point (b) 'calculation of the PNR for flights on isolated aerodromes'

This calculation is done by the computerised planning system (a basic fuel scheme with variations requires flight monitoring and flight watch capabilities from the operator) and not manually, the formulae to calculate the PNR could be included in future safety promotion material, and not in a GM.

4.4.3. *Individual In-flight fuel management policy.*

TBD

AMCs AND GMs FOR IN-FLIGHT FUEL/ENERGY REPLANNING POLICY. BASIC SCHEME WITH VARIATIONS

THOSE OF THE BASIC SCHEME AND: **AMC2 CAT.OP.MPA.185(a)** BASIC FUEL SCHEME WITH VARIATIONS — PROCEDURES FOR IN-FLIGHT FUEL MANAGEMENT

5. CAT OPERATORS – HELICOPTERS.

To grant approval of a fuel/energy scheme, for operators of commercial air transport with helicopters, the competent authority will evaluate the fuel/energy planning and in-flight replanning policy, together with the processes to support their implementation.

The fuel/energy scheme must be appropriate to the types of operations performed and correspond to the capability of the operator to support its implementation.

5.1. Fuel/energy scheme

5.1.1. Fuel/energy planning and in-flight replanning policy

The fuel/energy planning policy must ensure that the helicopter has sufficient fuel to complete the flight with a safe landing .

The calculations to determine how much fuel is needed shall be based on statistical data or, alternatively, from data provided by the manufacturer.

The procedure associated to this policy must be included in the Operations Manual. At the moment of flight planning, the amount of fuel necessary for different purposes, such as the trip fuel, contingency, final reserve, etc., shall be determined.

The policy shall include the procedures to calculate the fuel necessary for the flight to be completed safely, if it is necessary to modify the existing plan.

In the case of helicopters with MCTOM of 3175 kg or less on daytime visual flights or local flights, alleviations are envisaged for calculating the final reserve fuel, in accordance with CAT.OP.MPA.191(e).

AMCs AND GMs FOR FUEL/ENERGY PLANNING AND IN-FLIGHT REPLANNING POLICY

AMC1 CAT.OP.MPA.191(b)&(c) PLANNING CRITERIA

5.1.2. Selection of aerodromes and operating sites

In the case of helicopters, aerodrome selection <u>does not form part of the fuel/energy scheme</u> and does not require prior approval.

Take-off and landing alternate aerodromes or operating sites must be selected, as determined by the type of flight.

The operator must also apply safety margins to allow for possible changes in weather, and make sure that the selected aerodrome facilities include those necessary to perform instrument approaches and landings, etc.

AMCs AND GMs FOR AERODROME SELECTION

AMC1 CAT.OP.MPA.192 PLANNING MINIMA AND SAFETY MARGINS FOR A DESTINATION AERODROME AND SELECTION OF ALTERNATE AERODROMES PLANNING MINIMA FOR DESTINATION ALTERNATE AERODROMES AND ISOLATED AERODROMES DETERMINATION OF THE METEOROLOGICAL CONDITIONS FOR A SAFE LANDING AT THE DESTINATION **AMC1 CAT.OP.MPA.192(a)** PLANNING MINIMA FOR TAKE-OFF ALTERNATE AERODROMES **GM1 CAT.OP.MPA.192(c)&(d)** METEOROLOGICAL INFORMATION **GM2 CAT.OP.MPA.192(c)&(d)** SUPPLEMENTAL METEOROLOGICAL INFORMATION USING DIGITAL IMAGERY **AMC1 CAT.OP.MPA.192(d)** DESTINATION AND DESTINATION ALTERNATE AERODROMES — PBN OPERATIONS **GM1 CAT.OP.MPA.192(d)** DESTINATION AND DESTINATION ALTERNATE AERODROMES — PBN OPERATIONS

5.1.3. *In-flight fuel/energy management policy*

The in-flight fuel/energy management policy shall indicate how the amount of fuel available for the rest of the flight is calculated. These data must be compared with how much the helicopter should have at that moment according to the planning, as well as how the flight should be managed to land safely in the event the planning changes.

Procedures must be established for using the “MINIMUM FUEL” and “MAYDAY MAYDAY MAYDAY FUEL” declarations with regard to the consumption of final reserve fuel/energy.

AMCs AND GMs FOR IN-FLIGHT FUEL/ENERGY REPLANNING POLICY.

AMC1 CAT.OP.MPA.195 ENSURING A SAFE LANDING FOR COMPLEX MOTOR-POWERED HELICOPTERS IN OTHER-THAN-LOCAL OPERATIONS **GM1 CAT.OP.MPA.195** ‘MINIMUM FUEL’ DECLARATION SAFE LANDING — FINAL RESERVE FUEL PROTECTION

5.2. HEMS approval

With regard to the fuel/energy policy, in cases of HEMS operations under VFR within a local area, in defining the final reserve fuel/energy, SPA.HEMS.150, the term for normal cruising speed is replaced by the best-range speed.

6. SPECIAL REFUELLING OR DEFUELLING

Special refuelling or defuelling may only be performed if a risk assessment has been conducted, procedures for the same have been developed, and a training programme for the personnel who participate in those operations has been established.

6.1. Aeroplanes

Below, the types of special refuelling or defuelling procedures for aeroplanes are detailed, <u>and all of them require prior approval</u>.

6.1.1. *Refuelling with an engine running*

To refuel with an engine running, the conditions set out in AMC1 CAT.OP.MPA.200 must be satisfied, the risk assessment must have been performed and the procedures for all the personnel involved have been developed in the Operations Manual, including training.

This task must be avoided whenever possible. To accomplish this, dispatching conditions should be introduced in the MEL to ensure that aeroplanes with inoperative APU avoid destinations without appropriate supporting ground equipment.

The procedures for refuelling with an engine running must be consistent with those defined by the manufacturer. In case there are no specific procedures for refuelling with an engine running available in the AFM, the operator and the manufacturer may wish to cooperate to establish such procedures.

6.1.2. Refuelling/defuelling with passengers embarking, on board, or disembarking

According to AMC5 CAT.OP.MPA.200 refuelling or defuelling with avgas (aviation gasoline) or wide-cut fuel must never be conducted in the presence of passengers. For the remaining fuels, qualified personnel must always be in charge of the aeroplane to perform an evacuation as rapidly as possible, and the task must be accomplished in accordance with the precautions set out in AMC6 CAT.OP.MPA.200.

6.1.3. Refuelling or defuelling with wide-cut fuel

Using these fuels should be avoided whenever possible.

Refuelling or defuelling wide-cut fuel may only be performed if appropriate procedures have been established which take into account the high risk posed by the use of these fuels and observe the indications in GM3 CAT.OP.MPA.200.

6.2. Helicopters

Below, the types of special refuelling or defuelling for helicopters are detailed.

6.2.1. Refuelling helicopters with engines running and/or rotors turning

To refuel with rotors turning, the operator must have performed the risk assessment and developed the procedures for all the personnel involved in the Operations Manual, including training.

All the following conditions must be met for it to be possible to refuel a helicopter with rotors turning:

- It is not practical to shut down or restart the engine.
- There must be no passengers embarking or disembarking.
- The task must take place according to the manufacturer's procedures.
- The fuel must be Jet A or Jet A-1.
- There must be no passengers or technical crew on board, embarking or disembarking.
- The aerodrome or operating site allows this operations.
- The task must take place in the presence of the aerodrome firefighting teams.
- A checklist drawn up on the basis of risk assessment for this task must be verified.

The refuelling procedures for helicopters with rotors turning must be approved in advance by the competent authority.

6.2.1.1. Refuelling with rotors turning

For helicopters, this is the only special refuelling or defuelling for which prior approval is required.

To refuel with rotors turning, the risk assessment must have been performed and developed the procedures for all the personnel involved in the Operations Manual, including training.

Refuelling with an engine running or rotors turning shall only take place if the conditions in AMC3 CAT.OP.MPA.200 are met.

The procedures must incorporate the precautions set out in AMC3 CAT.OP.MPA.200, as well as in AMC4 CAT.OP.MPA.200 in the case it takes place with passengers on board.

The risk assessment must always be carried out, including the reasons for which it is not practical to refuel with rotors stopped. The additional risks and how these are to be controlled must be identified. HEMS and HOFO operations are examples in which the benefits offset the risks, always provided that measures to mitigate the latter are taken.

To perform the risk assessment, at least equivalent measures to those indicated in GM2 CAT.OP.MPA.200 must be taken into account.

6.2.2. Refuelling/defuelling with passengers embarking or disembarking

In the case of helicopters, refuelling/defuelling in the presence of passengers is not subject to approval.

Refuelling or defuelling with aviation gasoline or wide-cut fuel must never be conducted in the presence of passengers. For the remaining fuels, qualified personnel must always be in charge of the helicopter to perform an evacuation as rapidly as possible, and the task must be accomplished in accordance with the precautions set out in AMC7 CAT.OP.MPA.200.

6.2.3. Refuelling or defuelling with wide-cut fuel

In the case of helicopters, refuelling or defuelling with wide-cut fuel is not subject to approval.

Using these fuels should be avoided whenever possible.

Refuelling or defuelling wide-cut fuel may only be performed if appropriate procedures have been established which take into account the high risk posed by the use of these fuels and observe the indications in GM3 CAT.OP.MPA.200.

6.3. HEMS approval

With regard to refuelling with passengers on board, SPA.HEMS.155, reference is made directly to the conditions set out in CAT.OP.MPA.200 which, in AMC7 CAT.OP.MPA.200, states that the general practice should be to disembark passengers before refuelling or embark passengers after refuelling, except for HEMS missions, where in addition, it is stated that the provisions for refuelling with rotors turning in the procedures described in the Operations Manual must be observed.

7. ADDITIONAL INFORMATION

7.1. Training for dispatchers

It is the responsibility of the CAT operator to train dispatchers/flight operations officers with flight-monitoring/flight-watch tasks who do not hold licences. The training plan is set out in AMC1 ORO.GEN.110(c)&(e) and must be included in the Operations Manual.

7.2. Briefing between dispatchers/flight operations officers

As part of the operator's responsibilities with regard to personnel procedures, including ground personnel, ORO.GEN.110(f), when there is a handover of flight surveillance activities, flight-following/flight-monitoring/flight-watch, a prior briefing must be given by the outgoing personnel to the incoming personnel, as set out in AMC2 ORO.GEN.110(f) and GM2 ORO.GEN.110(f). Among the information which must be shared is the weather, the NOTAMs applicable, operational restrictions, flights in the air and those which have not yet started, the flight schedule, etc.

8. NCC OPERATORS

The principal changes affecting NCC operators are described below.

8.1. Fuel/energy scheme

The fuel/energy scheme must be defined by the operator, be appropriate to the operations performed and correspond to the capability of the operator to support its implementation.

The procedures relating to this scheme must be included in the Operations Manual.

The fuel/energy scheme consists of:

8.1.1. Fuel/energy planning and in-flight replanning policy

It must be ensured that the aircraft is carrying sufficient fuel/energy to complete the planned flight safely and allow for deviations from the planned operation.

The calculations to determine how much fuel is needed shall be based on statistical data or, alternatively, from data provided by the manufacturer, and must take into account the conditions under which the operation is to take place.

At the moment of flight planning, the amount of fuel necessary for different purposes, and depending on the aircraft type, such as the trip fuel, contingency, final reserve, etc., shall be determined.

8.1.2. In-flight fuel/energy management policy

It must be stated how the amount of fuel available for the rest of the flight is calculated. These data must be compared with how much fuel the aircraft should have available to reach an aerodrome or operating site and land safely.

Procedures must be established for using the “MINIMUM FUEL” and “MAYDAY MAYDAY MAYDAY FUEL” declarations with regard to the consumption of final reserve fuel/energy.

9. NCO OPERATORS

9.1. Fuel/energy and oil supply

The pilot-in-command is responsible for ensuring that the aircraft is carrying sufficient fuel/energy, taking into account the conditions of the operation and the aircraft, and for making sure that one part is protected as final reserve fuel to ensure a safe landing.

The pilot-in-command must monitor the amount of fuel available during the flight to ensure that it is not less than the required to proceed to an aerodrome or operating site and land safely.

The pilot-in-command must use the “MINIMUM FUEL” and “MAYDAY MAYDAY MAYDAY FUEL” declarations with regard to the consumption of final reserve fuel/energy.

10. SPO OPERATORS

The principal changes affecting SPO operators are described below.

10.1. Fuel/energy scheme

The fuel/energy scheme must be defined by the operator, be appropriate to the operations performed, and correspond to the capability of the operator to support its implementation.

The procedures relating to this scheme must be included in the Operations Manual.

The fuel/energy scheme consists of:

10.1.1. Fuel/energy planning and in-flight replanning policy

It must be ensured that the aircraft is carrying sufficient fuel/energy to complete the planned flight safely and allow for deviations from the planned operation.

The calculations to determine how much fuel is needed shall be based on statistical data or, alternatively, from data provided by the manufacturer, and must take into account the conditions under which the operation is to take place.

At the moment of flight planning, the amount of fuel necessary for different purposes, and depending on the aircraft type, such as the trip fuel, contingency, final reserve, etc., shall be determined.

10.1.2. In-flight fuel/energy management policy

It must be stated how the amount of fuel available for the rest of the flight is calculated. These data must be compared with how much fuel the aircraft should have available to reach an aerodrome or operating site and land safely.

Procedures must be established for using the “MINIMUM FUEL” and “MAYDAY MAYDAY MAYDAY FUEL” declarations with regard to the consumption of final reserve fuel/energy.

11. EPILOGUE

11.1. Frequently asked questions (FAQ) and answers.

•"Is VHF voice considered an airborne communications system?"

YES

•"Would VHF voice and VHF Datalink (VDL Mode 2) be considered independent?"

NO, see below GM3 CAT.OP.MPA.180 point (b)

GM3 CAT.OP.MPA.180 Fuel/energy scheme — aeroplanes

INDIVIDUAL FUEL SCHEMES — OPERATOR CAPABILITIES — COMMUNICATIONS SYSTEMS

(a) In the context of point (e)(6) of AMC1 CAT.OP.MPA.180, the availability of two independent communications systems at dispatch, is particularly relevant for flights over oceanic and remote areas (e.g. when flying over the ocean without VHF coverage, operators need either HF or satellite communications (SATCOM)).

(b) Consideration should also be given to the operational control system associated with the use of the aircraft communications addressing and reporting system (ACARS). Two communications systems (e.g. VHF and SATCOM) should be used to support the ACARS functionality to ensure the required degree of independence unless the operator has established contingency procedures for reverting to voice communication only.

(c) Additional means of communication may be required by other regulations that are not linked to fuel schemes.

Note: For further information, see ICAO Doc 9976 Flight Planning and Fuel Management (FPFM) Manual, Appendix 7 to Chapter 5 A performance-based approach job-aid for an approving authority (1st Edition, 2015).

11.2. Legislation and references

Primary legislation and references:

European Regulations:

- Regulation (EU) 2021/1296 of 4 August 2021 amending Regulation (EU) 965/2012.
  - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1296

ED Decisions:

- ED Decision 2022/005/R 'Fuel/energy planning and management — fuel schemes'
  - https://www.easa.europa.eu/en/document-library/agency-decisions/ed-decision-2022005r

Explanatory notes and Safety promotion material (The safety material is included in the Explanatory note)

- Explanatory note to the ED Decision 2022/005/R and Regulation (EU) 2021/1296.
  - https://www.easa.europa.eu/en/downloads/136244/en

Secondary legislation and references:

- ED Decision 2023/007/R Helicopter emergency medical service performance and public interest sites and other amendments.
    - https://www.easa.europa.eu/en/document-library/agency-decisions/ed-decision-2023007r.

For info:

- EASA Opinion No 02/2020 Fuel/energy planning and management
    - https://www.easa.europa.eu/en/document-library/opinions/opinion-022020
- EASA Notice of proposed of Amendments 2016-06 (A) Fuel planning and management: Aeroplanes - Annex I (Definitions), Part-ARO, Part-CAT
    - https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2016-06
- NPA 2016-06 (B) Fuel planning and management: Helicopters - Annex I (Definitions), Part-CAT, Part-SPA, Part-NCC, Part-NCO & Part-SPO
    - https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2016-06-b
- NPA 2016-06 (C) Fuel planning and management: Aeroplanes/helicopters - Part-NCC, Part-NCO & Part-SPO
    - https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2016-06-c
- ToR RMT.0573 Fuel procedures and planning
    - https://www.easa.europa.eu/en/downloads/18536/en
- ICAO DOC 9976 Flight Planning and Fuel Management (FPFM) Manual.

Other Related documents

CRD 2016-06 (A) Fuel planning and management: Aeroplanes - Annex I (Definitions), Part-ARO, Part-CAT

CRD 2016-06 (B) Fuel planning and management: Helicopters - Annex I (Definitions), Part-CAT, Part-SPA, Part-NCC, Part-NCO & Part-SPO

CRD 2016-06 (C) Fuel planning and management: Aeroplanes/helicopters - Part-NCC, Part-NCO & Part-SPO

11.3. More information at National level

11.3.1. Spain – AESA (Agencia Estatal de Seguridad Aérea).

- Amendments to the fuel policy as requested by AESA Spain:
    - Fill out the following form: https://sede.seguridadaerea.gob.es/sede-aesa/catalogo-de-procedimientos/certificado-de-operador-a%C3%A9reo-aoc-avi%C3%B3n-y-helic%C3%B3ptero), and attach the following annexes from Appendix B:
        - Annex III. Part 16. Fuel/energy scheme. Airplanes.
        - Annex III. Part 16. Fuel/energy scheme. Helicopters.
        - Annex III. Part 18. Special refuelling or defuelling. Aeroplanes. All operators wishing to apply for approval for this operations.
        - Annex III. Part 18. Special refuelling or defuelling. Helicopters. All operators wishing to apply for approval for this operations.

- NCCs.
  - Annex Refuelling helicopters with engines and/or rotors turning from Appendix B. Helicopters. All operators wishing to apply for approval for this operations.

To include other authorities.

11.4. Acknowledgments.

The industry experts updating this safety promotion activity are nominated by the EASA advisory bodies as follows:

RAMROTH, Peter	IFALDA
BORER, Thomas (Alternate GIESEN, Ferdinand)	IATA – Lufthansa group, SWISS International Airlines IATA – Lufthansa group.
HAKALA, Tom	TRAFICOM (Finish Authority) – FINNAIR Airlines.
ARROYO, Gabriel	AESA (Spanish Authority) – Oversight expert.
DEJEAN DE LA BATIE, Antoine	DGAC France – OPS Inspector.
NORTON, Spencer	IATA - IAG

https://www.easa.europa.eu/community/system/files/2023-05/SPT%20Group%20Composition%20%E2%80%94%20SPT.0012%20V1%20issue%201%202023.pdf

11.5. Work plan of SPT.0097

To BE summarised from WORK plan document.

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