

Extended Diversion Time Operations: Proposed amendments and rationale in detail

Background

When planning long range operations, problems that need to be considered include the availability of suitable aerodromes where a landing can be made in the event of an emergency.

To maintain a high standard of safety in the event of the loss of a power unit or of certain major systems on twin-engined aircraft, ICAO imposed a requirement¹ that a limit be set on the distance a twin may be from an adequate aerodrome without special requirements being imposed. This distance was equal to one hour's flight time, in still air, at the normal one-engine-inoperative cruise speed.

Any operation that was planned to involve flight by a twin-engined public transport aeroplane beyond this distance from an adequate aerodrome was considered to be an Extended Range Operation and required an extended range twin operations (ETOPS) approval.

ICAO first introduced ETOPS in 1985 to ensure that twin-engined aeroplanes had an overall level of operational safety consistent with the three- and four-engined aeroplanes operating at the time. ETOPS restrictions only applied to twin-engined aeroplanes.

The original ETOPS rules have been subject to periodic review by ICAO to ensure that they are still fit for purpose, particularly to determine if operators and national aviation authorities (NAAs) consider them to be too restrictive.

A review was prompted by the fact that engine reliability had improved so much over time that the loss of a power unit was not the most likely or limiting factor, and as a result, operators of multi-turbine-engined aeroplanes were setting flight paths ever further from adequate aerodromes.²

This meant that consideration needed to be given to other time-limited systems, such as fire suppression in the hold or depressurisation. Having three or four engines in those cases would not be of benefit. ICAO concluded that multi-engined aircraft should therefore be subject to the same restrictions on extended diversion time as twin-engined aircraft, namely, that there should be limits on the distance the aircraft could be from an adequate aerodrome without special requirements or conditions being imposed.

¹ In *International Standards and Recommended Practices, Operation of Aircraft — International Commercial Air Transport — Aeroplanes* (Annex 6, Part I to the Convention on International Civil Aviation)

² Based on Extended Range Operations, source: www.skybrary.aero

In October 2007, after some NAAs had introduced extended operations provisions in their own regulations, ICAO sent a State Letter to introduce new Standards and Recommended Practices (SARPs) relating to “Extended Diversion Time Operations” (EDTO).

They were not adopted immediately. Instead, in 2008, ICAO established a Special Operations Task Force to develop the new EDTO criteria that have been included in Annex 6, section 4.7 and address comments from contracting States. The international EDTO provisions that emerged from this process were adopted by the ICAO Council in May 2012 through Amendment 36 to Annex 6, Part 1. The related SARPs were published in Annex 6 Part 1 Section 4.7, with July 2012 as the effectivity date and November 2012 as the applicability date.

The new EDTO standards:

- a) enable greater flexibility **for aeroplanes with two turbine engines**, therefore allowing the potential for longer EDTO operations based on the propulsion reliability and overall operational safety of current ETOPS twins; the related criteria have been evolved from the ETOPS Standards previously set out in ICAO’s Annex 6; and
- b) introduce similar measures for EDTO operations of **aeroplanes with more than two turbine engines**, through a few additional operational requirements (consideration of time-limited systems/policy for selection and monitoring of en-route alternate aerodromes); there are neither additional maintenance requirements for EDTO operations of aeroplanes with more than two engines, nor any additional certification requirements.

The position in UK law

The ETOPS provisions of Annex 6 were introduced and incorporated into national law while the United Kingdom was a Member State of the European Union. They were included in Commission Regulation (EU) No 965/2012 laying down technical requirements and administrative procedures related to air operations (the EU Air Ops Regulation). This Regulation was enacted on 5 October 2012 and so predated the ICAO EDTO amendments.

The UK left the EU on 31 January 2020. A transition period to finalise the future UK relationship with the EU was agreed and ended on 31 December 2020. During that transition period, EU law continued to be directly applicable in the UK in the same way it had done when the UK was a Member State. This included the EU Air Ops Regulation, which had still not been updated to reflect the ICAO EDTO amendments.

On 31 December 2020, at the end of the transition period, the European Union (Withdrawal) Act 2018 (the Withdrawal Act) came into force and repealed the European Communities Act 1972, which had been the legal basis for the UK’s membership in the EU. This meant that EU law ceased to be directly applicable in the UK.

To ensure legal continuity and certainty, the Withdrawal Act provided that existing EU aviation safety law as it stood on 31 December 2020 would be converted into UK domestic law. This body of law became known as “retained EU law”. With the Retained EU Law (Revocation and Reform) Act 2023 in force, retained EU law is now referred to as “assimilated law”.

Assimilated Regulation (EU) No. 965/2012 (the UK Air Ops Regulation)³ is one of the EU instruments that became retained EU law at the end of 2020 and is now part of assimilated law.

Amendment 36 to Annex 6, Part 1, has been applicable since 15th November 2012. As a signatory to the Chicago Convention, the UK is under an obligation either to implement the relevant SARPs or to file a difference with ICAO. Now that the UK is responsible for and able to amend the Air Ops Regulation, these actions fall to the Secretary of State and the CAA.

The CAA considers that the UK Air Ops Regulation does not, in its present form, fully support the new operational concepts established by Amendment 36. Action therefore needs to be taken to ensure that the UK complies with its international obligations.

Options

As regards what action to take, we have considered the following options:

- **Do nothing** - No change to the existing ETOPS provisions in the UK Air Ops Regulation and no difference filed with ICAO. This would result in the UK being non-compliant with its international obligations.
- **Non-legislative route** - File a difference with ICAO but make no changes to the legislation. This would result in the UK being compliant with its international obligations, but there would be no legal requirement for operators of three and four-engined aircraft to hold an EDTO approval and **additional safety benefits would not be realised**.
- **Legislation** - Update the UK regulatory framework, notably the UK Air Ops Regulation, by transposing the relevant SARPS from ICAO Annex 6, Part I. This would ensure compliance with the UK’s international obligations as well as realising the safety benefits these provisions are designed to achieve.

Having considered these options, our proposal is to amend the legislation. This is the only option that supports our primary objective of ensuring that all operators and new entrants operate at the same high standard of safety. We consider that incorporating ICAO’s EDTO

³ UK Reg (EU) No. 965/2012 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, <https://regulatorylibrary.caa.co.uk/965-2012-PDF/PDF.pdf>

provisions into UK law will maintain the strong safety record for UK-registered civil aircraft undertaking long-range operations⁵ and thereby help to ensure the continued contribution of the UK aviation sector to economic growth. It will also maintain consistency and interoperability with other NAAs, including both the FAA and EASA. In our view, upholding the UK's civil aviation safety record and consistency of civil aviation standards across jurisdictions are prerequisites for the safe and sustainable functioning of the UK aviation sector.

Detailed proposals and rationale

We have set out the detail of how we propose to implement Amendment 36 by illustrating how these policy changes might appear in the UK Air Ops Regulation and providing a rationale for each change alongside these illustrative amendments.

Our proposed approach is intended to align with the ICAO SARPs and, to the extent that is reasonable in a UK context, to achieve consistency and maintain interoperability with equivalent regulation in the EU and with other NAAs.

The following is an overview of our key proposals.

- Replace the 'ETOPS' acronym, which explicitly refers to two-engined aeroplanes, with the new, more generic term 'EDTO', which refers to Extended Diversion Time Operations. Although ICAO makes clear that use of 'EDTO' is not mandatory and some NAAs have chosen to retain 'ETOPS', we felt that keeping the same acronym while extending its applicability to aeroplanes with more than two engines could be confusing because the ETOPS concept had been connected only to twin engine aeroplanes for many years. We propose this change to ensure that UK legislation accurately reflects the scope and applicability of the new ICAO Standards.
- Update definitions, to align with the terminology in Annex 6, Part 1 and the [ICAO EDTO Manual](#) Document 10085
- Limit the distance any aeroplane can be from an adequate aerodrome without an EDTO approval, including aeroplanes with more than two engines. This change is intended to ensure that UK legislation is fully aligned with the new EDTO Standards established by Amendment 36 (see in particular 4.7.2).
- For aeroplanes with more than two engines, set the new EDTO threshold distance as the distance flown in 180 minutes at the selected all engines operating (AEO) speed. The rationale for this threshold distance is as set out in the ICAO EDTO Manual, namely that "the vast majority of long-range operations over the last 50 years have been conducted successfully within 180-minute maximum diversion time and were not subject to any specific criteria, [so] the threshold time for such EDTO operations should normally be set at 180 minutes".⁴
- Introduce a general requirement to demonstrate compliance with the entire EDTO Subpart of Part-SPA, and structuring that Subpart in a simpler way to make it more accessible and easier to understand for those who are subject to its requirements.
- Clarify provisions setting out the different categories of EDTO operational approval, considering the maximum diversion time applied for, as well as those setting out the relevant criteria to determine the approval process to be used. We consider that these clarifications allow for a simpler structure of the regulatory provisions and will help operators to understand and comply with the relevant requirements.

⁴ ICAO EDTO Manual, Doc 10085, paragraph 3.1.3.2.

- Introduce a specific provision for dealing with type design requirements for the aeroplanes concerned and ensure compliance that the intended levels of continued airworthiness requirements be met by an operator to be granted an EDTO operational approval. A specific provision for EDTO initial and continuing airworthiness requirements would assist operators when choosing aircraft for their fleet and ensuring it meets the relevant requirements.
- Identify the data and procedures that an operator approved for EDTO must include in their operations manual to ensure compliance with ORO.MLR.101 Operations manual - structure for commercial air transport. All non-type-related operational policies, instructions, and procedures such as EDTO operations should be adequately covered.

Changes to AMC and GM

Acceptable means of compliance (AMC) are means by which the Implementing Rule to which it relates can be met and the CAA may use to establish compliance with the Regulation (EU) 2018/1139 (the UK Basic Regulation). However, entities may show compliance by other means.

Guidance Material (GM) provides explanatory and interpretation material on how to achieve the requirements in the law and the AMC. It contains information to assist with the interpretation of the legislative process.

We propose to update the associated AMC and GM at the same time as the Implementing Rules. This will provide valuable guidance and background to the changes, as well providing the means by which to comply with the regulatory requirements.

In addition, we are proposing to move relevant parts from the manual, General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances (AMC 20-6 Subpart B) into UK Regulation (EU) 965/2012 (Air Operations). By consolidating this information under one provision will provide greater clarity to the operators. This simpler structure of the regulatory provisions will support the EDTO approvals process and compliance by operators.

In some cases, particularly where we have transposed information from AMC 20-6B, the updated AMC material has been adapted to create new AMC specifically for aeroplanes with more than two engines. We propose that there should be separate AMC, particularly relating to approvals, for two-engined aeroplanes and aeroplanes with more than two engines. This will provide more clarity between these two distinct categories.

Transition period

We propose that there should be a transition period between the date these provisions are made into law, when it will become clear exactly what legal obligations will be imposed, and the date the provisions come into force and operators become liable to comply with them.

We propose that this transition period be 9 months to cover one recurrent training cycle. We consider that this is an appropriate length of time to permit familiarisation with the new legal requirements, as well as training of relevant personnel, updating of operation manuals, planning software changes, and any other practical steps required to enable full implementation.

This transition period takes into account the delay between the making of the legislation and the publication of the amended AMC and GM. We consider that, notwithstanding this delay (which we will endeavour to keep to a minimum), operators will have enough time to benefit from this material to inform their compliance with the legal requirements.

How to use this document

In the following parts of this document—

- proposed additions are highlighted in grey;
- proposed deletions are ~~formatted in strikethrough~~.

Part 1 sets out how we propose that the UK Air Operations Regulation should be amended to achieve the policy intent we have outlined above. **The wording of the proposed additions and deletions is intended only to illustrate our policy intent.** It should not be treated as definitive. The drafting of any agreed amendments would be the responsibility of the Department for Transport, and such amendments would be made by the Secretary of State by Statutory Instrument. We welcome your views on the policy changes that are represented by these illustrative amendments.

Part 2 sets out how we propose to amend AMC and GM to reflect the changes to the UK Air Operations Regulation. The changes to AMC and GM would depend on changes being made to the legislation and will therefore be finalised only after the legislation is made. **The CAA can amend AMC and GM directly.** We therefore welcome your views on the wording we have proposed, and your suggestions on how the AMC and GM could be clearer and easier to understand.

Note on amendments to the UK Air Ops Regulation

The new Aviation Safety (Amendment) Regulations 2024⁵ include provisions that will amend the UK Air Ops Regulation when they come into force on 5 October 2025. Some of those amendments will affect provisions that are relevant to this consultation. They will be in force before any legislation is made to implement the changes proposed here.

Bearing that in mind, in Part 1 below, the illustration shows the proposed amendments made to the legislation **as it will appear after 5 October 2025**: see the text in magenta in the informal consolidated version of the [UK Air Operations Regulation](#) published in the CAA Regulatory Library.

Part 1: Proposed amendments to Assimilated Regulation (EU) No. 965/2012

Article 5 - Air operations

[...]

2. Operators shall comply with the relevant provisions of Annex V when operating:

[...]

(c) ~~two-engine~~ aeroplanes with two or more engines used for extended range diversion time operations (~~ETOPS~~EDTO) in commercial air transport;

[...]

Rationale

The change has been introduced to replace the previously used term 'ETOPS' by the new term 'EDTO' and to extend EDTO requirements to operators of aeroplanes with two or more engines.

Annex I – Definitions

⁵ S.I. 2014/1290. <https://www.legislation.gov.uk/ukSI/2024/1290/contents/made>

Definitions to be inserted at the appropriate place in Annex I:

'approved diversion time' means, for the purposes of EDTO route planning, the longest diversion time to an EDTO ERA aerodrome, approved for the related operator, and which defines the boundaries of the EDTO area of operations in ISA/still air conditions;

'extended diversion time operations (EDTO)' means any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time;

'EDTO en-route alternate (ERA) aerodrome' means, for the purpose of EDTO route planning, an en-route alternate aerodrome which meets the applicable dispatch minima and which is selected by the operator for the planned EDTO flight;

'EDTO threshold distance' means the maximum distance to an ERA aerodrome along the route, derived from the threshold time and based on:

(a) a selected one-engine-inoperative (OEI) speed for two-engine aeroplanes;

(b) a selected all-engines-operating (AEO) speed for aeroplanes with more than two-engines;

'threshold time' means the range, expressed in time, to an ERA aerodrome, beyond which an EDTO operational approval is required.

Rationale

The change has been introduced to add specific definitions related to EDTO that are used in implementing rules, and reflecting the definitions used by ICAO in Annex 6, Part I.

Annex II (Part-ARO)

Appendix II to Annex II AUTHORITY REQUIREMENTS FOR AIR OPERATIONS

Operations Specifications Form

OPERATIONS SPECIFICATIONS (subject to the approved conditions in the operations manual)				
CAA: contact details Telephone ⁽¹⁾ : _____; Fax: _____; Email: _____				
AOC ⁽²⁾ :	Operator name ⁽³⁾ :	Date ⁽⁴⁾ :	Signature:	
	t/a			
Operations specifications #:				
Aircraft model ⁽⁵⁾ :				
Registration marks ⁽⁶⁾ :				
Types of operations: Commercial air transport				
<input type="checkbox"/> Passengers	<input type="checkbox"/> Cargo	<input type="checkbox"/> Others ⁽⁷⁾ : _____		
Area of operation ⁽⁸⁾ :				
Special limitations ⁽⁹⁾ :				
Specific approvals:	Yes	No	Specification ⁽¹⁰⁾	Remarks
Dangerous goods:	<input type="checkbox"/>	<input type="checkbox"/>		
Low-visibility operations				
Take-off	<input type="checkbox"/>	<input type="checkbox"/>	RVR ⁽¹¹⁾ ... m	
Approach and landing	<input type="checkbox"/>	<input type="checkbox"/>	CAT ⁽¹²⁾ DA/H: ft, RVR:... m	
Operational credits	<input type="checkbox"/>	<input type="checkbox"/>	CAT ⁽¹³⁾DA/H: ft, RVR:... m	
RVSM ⁽¹⁴⁾ <input type="checkbox"/> N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ETOPS ⁽¹⁵⁾ <input type="checkbox"/> N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Maximum diversion time ⁽¹⁶⁾ : min.	

- (15) Extended range operations (ETOPS) currently applies only to two-engined aircraft. Therefore, the Not Applicable (N/A) box may be checked if the aircraft model has less or more than two engines.
- (16) The threshold distance may also be listed (in NM), as well as the engine type.
- (17) Performance-based navigation (PBN): one line is used for each complex PBN specific approval (e.g. RNP AR APCH), with appropriate limitations listed in the 'Specifications' or 'Remarks' columns, or in both. Procedure-specific approvals of specific RNP AR APCH procedures may be listed in the operations specifications or in the operations manual. In the latter case, the related operations specifications must have a reference to the related page in the operations manual.
- (18) Specify if the specific approval is limited to certain runway ends or aerodromes, or both.

- (19) Insertion of the particular airframe or engine combination.
- (20) Approval to conduct the training course and examination to be completed by applicants for a cabin crew attestation as specified in Annex V (Part-CC) to UK Regulation (EU) No 1178/2011.
- (21) Approval to issue cabin crew attestations as specified in Annex V (Part-CC) to UK Regulation (EU) No 1178/2011.
- (22) Insertion of the list of type B EFB applications together with the reference of the EFB hardware (for portable EFBs). This list is contained either in the operations specifications or in the operations manual. In the latter case, the related operations specifications must make a reference to the related page in the operations manual.
- (23) The name of the person or organisation responsible for ensuring that the continuing airworthiness of the aircraft is maintained and a reference to the regulation that requires the work, i.e. Subpart G of Annex I (Part-M) to UK Regulation (EU) No 1321/2014.
- (24) Other approvals or data may be entered here, using one line (or one multi-line block) per authorisation (e.g. short landing operations, steep approach operations, reduced required landing distance, helicopter operations to or from a public interest site, helicopter operations over a hostile environment located outside a congested area, helicopter operations without a safe forced landing capability, operations with increased bank angles, maximum distance from an adequate aerodrome for two-engined aeroplanes without an ETOPS approval).

CAA Form 139

Please see the attached form

Note: The form to which these amendments are proposed is the form as it will appear from 30 October 2025. See [regulation 5\(3\)](#) of S.I. 2024/1290.

In row 18 of column 1: ~~ETOPS~~EDTO

In note 15: Extended ~~diversion time range~~ operations (EDTO~~ETOPS~~) currently applies only to ~~two-engined aircraft~~ with two or more engines that are EDTO

capable. Therefore, the Not Applicable (N/A) box may be checked if the aircraft model has less ~~or more~~ than two engines or is not EDTO capable.

In note 16: The threshold distance may also be listed (in NM), as well as the engine type. In the case of an approved 15% increase of the diversion time, either the routes or areas to which this extension applies, or a reference to the related page in the operations manual where these routes or areas are listed.

In note 24: [...] maximum distance from an adequate aerodrome for ~~two-engine~~ aeroplanes without an ~~ETOPS~~ EDTO approval

Rationale

- *replace the previously used term 'ETOPS' by the new term 'EDTO';*
- *include aeroplanes with more than two engines within the scope of the approvals, as required by ICAO: see Section 4.7.2 of Annex 6, Part I.*

Annex IV (Part-CAT)

CAT.OP.MPA.140 Maximum distance from an adequate aerodrome for ~~two-engine~~ aeroplanes with two or more engines without an ~~ETOPS~~ EDTO operational approval

(a) Unless approved by the CAA in accordance with Subpart F of Annex V (Part-SPA), the operator shall not operate an ~~two-engine~~ aeroplane with two or more engines over a route that contains a point further from an adequate aerodrome, under standard conditions in still air, than the appropriate distance for the given type of aeroplane among the following:

(1) for performance class A aeroplanes;

- (i) for two engine aeroplanes, with a maximum operational passenger seating configuration (MOPSC) of 20 or more the distance flown in 60 minutes at the selected one-engine-inoperative (OEI) ~~cruising~~ speed determined in accordance with point (b);
- (ii) for aeroplanes with more than two engines, the distance flown in 180 minutes at the all engines operating (AEO) speed determined in accordance with point (b);

- (2) for two engine performance class A aeroplanes with an MOPSC of 19 or less, the distance flown in 120 minutes or, subject to approval by the CAA, up to 180 minutes for turbojet aeroplanes, at the selected OEI ~~cruising~~ speed determined in accordance with point (b);
- (3) for two engine performance class B or C aeroplanes, whichever is less:
 - (i) the distance flown in 120 minutes at the selected OEI ~~cruising~~ speed determined in accordance with point (b);
 - (ii) 300 NM.
- (b) The operator shall determine a speed for the calculation of the maximum distance to an adequate aerodrome for each ~~two-engine~~ aeroplane type or variant operated, not exceeding VMO (maximum operating speed) based upon the true airspeed that the aeroplane can maintain with one engine inoperative for two-engine aeroplanes or with all engines operating (AEO) for aeroplanes with more than two engines.
- (c) The operator shall include the following data, specific to each type or variant, in the operations manual:
 - (1) the selected AEO speed for aeroplanes with more than two engines and the ~~determined~~ selected OEI ~~cruising~~ speed for two-engine aeroplanes; and
 - (2) the determined maximum distance from an adequate aerodrome.
- (d) To obtain the approval referred to in point (a)(2), the operator shall provide evidence that:
 - (1) training and procedures have been established for flight operations, including planning and dispatch;
 - (2) specific maintenance instructions, ~~and~~ procedures and training to ensure that the intended levels of continued airworthiness and reliability of the aeroplane including its engines have been established and included in the operator's aircraft maintenance programme in accordance with Annex I (Part-M) to Regulation (EU) No 1321/2014, including:
 - (i) an engine oil consumption programme;
 - (ii) an engine condition monitoring programme.
 - (iii) a system for the reporting of engine events and the implementation of required corrective actions.
- (e) When conducting operations beyond 60 minutes with aeroplanes at the selected OEI speed for two-engine aeroplanes and at the selected AEO speed for aeroplanes with more than two engines from a point on a route to an ERA aerodrome without an EDTO operational approval, the operator shall:
 - (1) identify ERA aerodromes so that the applicable EDTO threshold distance is not exceeded;

- (2) provide the flight crew with the most up-to-date information on identified ERA aerodromes, including operational status and meteorological conditions;
- (3) ensure that, for all aeroplanes, the most up-to-date information provided to the flight crew indicates that conditions at the identified ERA aerodromes will be at or above the operator's established aerodrome operating minima for the operation at the estimated time of use;
- (4) reflect such operations in its:
- (i) operational control procedures;
 - (ii) flight dispatch procedures;
 - (iii) operating procedures; and
 - (iv) training programmes.

Rationale

The change has been introduced to:

- *replace the previously used term 'ETOPS' by the new term 'EDTO';*
- *include aeroplanes with more than two engines within the scope of this implementing rule, as required by ICAO standards (see in particular section 4.7) the speed to be used to calculate the EDTO threshold distance for such aeroplanes is defined;*
- *ensure a consistent use of the terms 'selected OEI/AEO speed', compared to the 'approved OEI/AEO speed' in the context of an EDTO operational approval; some additional guidance is provided in the proposed new GM2 SPA.EDTO.100(b).*
- *introduce a system for the reporting of engine events and the implementation of required corrective actions to ensure any engine events are captured and monitored.*
- *introduce new requirements for the operations of aeroplanes with two or more engines at diversion times exceeding 60 minutes, directly transposed from ICAO Annex 6 Part I standards (see in particular section 4.7).*

CAT.POL.A.220 En route — aeroplanes with three or more engines, two engines inoperative

- (a) An aeroplane that has three or more engines shall not be away from an aerodrome at which the requirements of points CAT.POL.A.230 or CAT.POL.A.235(a) for the expected landing mass are met accordingly, at any point along the intended track for more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air, unless points (b) to (ef) of this point are complied with.
[...]

- (e) Fuel jettisoning shall be permitted to an extent consistent with reaching the aerodrome with the required fuel reserves in accordance with point CAT.OP.MPA.181 and CAT.OP.MPA.185 referred to in point (f), if a safe procedure is used.
- (f) The expected mass of the aeroplane at the point where the two engines are assumed to fail shall not be less than that which would include sufficient fuel or energy to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at an altitude of at least 450 m (1500 ft) directly over the landing area and thereafter to fly for 15 minutes at cruising power or thrust, as appropriate.

Rationale

The change has been introduced to:

- avoid inconsistencies in the required fuel to the en-route alternate compared with CAT.OP.MPA.181/185 and/or the new AMC1 SPA.EDTO.115(b);
- harmonise with the equivalent implementing rule CAT.POL.A.215 dealing with the one-engine-inoperative scenario.

Annex V (Part-SPA)

SUBPART F: EXTENDED RANGE DIVERSION TIME OPERATIONS WITH TWO-ENGINE AEROPLANES (ETOPSEDTO)

SPA.ETOPSEDTO.100 ETOPSEDTO operational approval

- (a) In commercial air transport operations, ~~two-engine~~ aeroplanes shall only be operated beyond the threshold distance determined in accordance with CAT.OP.MPA.140 if the operator has been granted an ETOPSEDTO operational approval by the CAA.
- (b) The operator may apply for one of the following EDTO operational approval categories:
 - (1) For two-engine aeroplanes—
 - (i) maximum diversion time of up to 90 minutes;
 - (ii) maximum diversion time beyond 90 minutes and up to 180 minutes;
 - (iii) maximum diversion time beyond 180 minutes;

(2) For aeroplanes with more than two engines, maximum diversion time beyond 180 minutes.

(c) To obtain an EDTO operational approval, the operator shall demonstrate to the CAA compliance with the applicable requirements contained in this Subpart, considering the operational approval category that the operator is applying for, as well as the operator's prior in-service experience with the related aeroplane/engine combination or with EDTO, where relevant.

Rationale

The change has been introduced to:

- (a) *replace the previously used term 'ETOPS' by the new term 'EDTO';*
- (b) *include a general requirement to demonstrate compliance with SPA.EDTO as a whole, to enable this Subpart to be structured in a simpler and more accessible way (for example, by having individual provisions relating to initial and continuing airworthiness requirements, training and operating procedures) .*

In addition, new text is included to enhance clarity on the different categories of EDTO operational approval, considering the maximum diversion time applied for, as well as on the relevant criteria to determine the approval process to be used.

SPA.ETOPSEDTO.105 ~~ETOPS operational approval~~ EDTO initial and continuing airworthiness requirements

~~To obtain an ETOPS operational approval from the CAA, the operator shall provide evidence that:~~ When conducting EDTO operations under this Subpart, the operator shall ensure that:

- ~~(a) the aeroplane/engine combination holds an ETOPS or EDTO type design and reliability approval for the intended operation;~~
 - ~~(b) a training programme for the flight crew members and all other operations personnel involved in these operations has been established and the flight crew members and all other operations personnel involved are suitably qualified to conduct the intended operation;~~
 - ~~(c) the operator's organisation and experience are appropriate to support the intended operation;~~
 - ~~(d) operating procedures have been established.~~
- (b) specific maintenance instructions and procedures to ensure that the intended levels of continued airworthiness and reliability of the aeroplane and its engines have been established and included in the operator's aircraft maintenance programme in accordance with Annex I (Part-M) with Regulation (EU) No 1321/2014.

- (c) Notwithstanding (a), in the case of aeroplanes with two engines, with a maximum diversion time of 120 minutes or 180 minutes, the operator may request to the CAA a 15 % increase of its approved diversion time for specific routes or areas to be used on a flight-by-flight basis when EDTO ERA aerodromes are not available within the operator's approved diversion time, and provided that the operator demonstrates that the resulting routing does not reduce the overall safety of the operation, including the consideration of time-limited systems capability.

Rationale

The change has been introduced to:

- *add the new term 'EDTO' together with the existing one 'ETOPS'. The two terms are kept in this specific paragraph related to aircraft certification since the term ETOPS has been used for the certification of most of the related two-engine aeroplanes;*
- *introduce a specific implementing rule dealing with type design requirements for the aeroplanes concerned, as well continuing airworthiness requirements to be met by an operator to be granted an EDTO operational approval;*
- *specify at implementing rule level the possibility for an operator to receive under specific conditions an approval for a 15 % increase of its approved diversion time, which would exceed the aeroplane maximum diversion time and therefore deviate from the requirement set in point (a);*
- *reflect the proposal to move EDTO training requirements to new SPA.EDTO.110.*

SPA.EDTO.110 EDTO training requirements

- (a) The operator shall establish a dedicated training programme for the flight crew members and all other operations personnel involved in EDTO and ensure that such flight crew members and other operations personnel are suitably qualified and adequately briefed to conduct the intended operation.
- (b) The training programme for flight crew members shall include initial and recurrent training, consisting of theoretical and practical training covering normal, abnormal and contingency procedures.
- (c) The training programme for other operations personnel shall include initial and refresher theoretical training covering elements relevant for the performance of their duties.

Rationale

The change has been introduced to include a specific implementing rule related to EDTO training as required in 4.7.1.2 of Annex 6, Part 1. Details in ICAO EDTO manual 10085

SPA.ETOPS.115 ETOPS en-route alternate aerodrome planning minima

- (a) ~~The operator shall only select an aerodrome as an ETOPS en-route alternate aerodrome when the appropriate weather reports or forecasts, or any combination thereof, indicate that, between the anticipated time of landing until one hour after the latest possible time of landing, conditions will exist at or above the planning minima calculated by adding the additional limits of Table 1.~~
- (b) ~~The operator shall include in the operations manual the method for determining the operating minima at the planned ETOPS en-route alternate aerodrome.~~

Table 1 Planning minima for the ETOPS en-route alternate aerodrome

Type of approach	Planning minima
Precision approach	DA/H + 200 ft RVR/VIS + 800 m
Non-precision approach or Circling approach	MDA/H + 400 ft RVR/VIS + 1500 m

Rationale

SPA.ETOPS.115 ‘en-route alternate aerodrome planning minima’ is replaced with SPA.EDTO.115 ‘Operating procedures’, with a new content — see next implementing rule proposal.

SPA.EDTO.115 Operating procedures

The operator shall ensure that its intended EDTO operations are adequately covered in its operating procedures established under this Regulation specifying:

- (a) the equipment to be carried, including its operating limitations and appropriate entries in the minimum equipment list (MEL);
- (b) the flight planning, including fuel supply, the consideration of time-limited systems capability and the EDTO ERA aerodromes selection;
- (c) the normal, abnormal and contingency procedures; and
- (d) the monitoring and incident reporting.

Rationale

The change has been introduced to include a specific implementing rule related to procedures and provide details on the procedures and documentation to be established.

The content of the proposed to be deleted SPA.ETOPS.115 has been transferred into the new SPA.EDTO.120 containing all the requirements related to EDTO ERA aerodromes.

SPA.ETOPS.110 EDTO.120 ETOPS EDTO en-route alternate aerodromes

- (a) ~~An ETOPS en-route alternate aerodrome shall be considered adequate, if, at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic services (ATS), sufficient lighting, communications, weather reporting, navigation aids and emergency services and has at least one instrument approach procedure available.~~
- (a) Prior to conducting an ~~ETOPS~~EDTO flight, the operator shall ensure that an ~~ETOPS~~EDTO ERA aerodromes ~~are~~is available along the planned EDTO route, within either the operator's approved diversion time, or a diversion time based on the ~~MEL generated serviceability~~ EDTO status of the aeroplane, whichever is shorter.
- (b) The operator shall only select an aerodrome as an EDTO ERA aerodrome if:
- (1) at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic services (ATS), sufficient lighting, communications, weather reporting, navigation aids and emergency services, and has at least one instrument approach procedure available; and
 - (2) the aerodrome meets the applicable EDTO ERA aerodrome flight dispatch minima established in accordance with CAT.OP.MPA.182; if the operator has been granted an approval for an individual fuel scheme covering dispatch minima in accordance with CAT.OP.MPA.180, it shall implement the requirements of CAT.OP.MPA.180(d) for its EDTO operations before applying these minima to the EDTO ERA.
- (c) The operator shall specify any required ~~ETOPS~~EDTO ERA aerodrome in the operational flight plan and ATS flight plan.
- (d) In the specific case of an operator approved for CAT II and/or CAT III operations, the increments defined in CAT.OP.MPA.182 may be used for CAT II and/or CAT III minima provided that:
- (1) the operator demonstrates that the specific aeroplane type can maintain the capability to safely conduct and complete the CAT II/III approach and landing, in accordance with CAA CS-AWO, having encountered failure conditions in the airframe and/or propulsion systems associated with an inoperative engine that would result in the need for a diversion to the en-route alternate; and
 - (2) systems to support one-engine inoperative CAT II or III capability are serviceable if required to take advantage of CAT II or III landing minima at the planning stage.

Rationale

The change has been introduced to:

- replace the previously used term 'ETOPS' by the new term 'EDTO';
- combine the two previous implementing rules related to EDTO ERA selection and EDTO ERA dispatch minima;
- clarify that an EDTO ERA has to be adequate and meet the applicable dispatch minima to be selected;
- align the type of approaches with the ICAO new classification of approaches (Annex 6, Part 1, 4.2.8.3);
- introduce considerations for operators approved for CAT II and CAT III.

Part 2: Proposed amendments to acceptable means of compliance (AMC) and guidance material (GM) relating to Assimilated Regulation (EU) No. 965/2012

AMC & GM to Annex I – Definitions

GM1 Annex I Definitions

DEFINITIONS FOR TERMS USED IN ACCEPTABLE MEANS OF COMPLIANCE AND GUIDANCE MATERIAL

For the purpose of this Regulation, the following definitions should apply:

[...]

‘aeroplane maximum diversion time’ means, for the purpose of EDTO, the maximum certified diversion time value (e.g. 120 min) or category (e.g. beyond 180 min) of An aeroplane with two or more engines

[...]

‘EDTO area of operations’ means, for the purposes of EDTO route planning, the area based on the operator’s approved diversion time and calculated under standard conditions in still air, at the approved one-engine-inoperative (OEI) speed for two-engined aeroplanes;

[...]

‘in-flight shut down (IFSD) rate’ means, for the purpose of EDTO, a reliability figure calculated by dividing the chargeable number of in-flight shutdowns by the total engine operating hours accrued during the same period. It is usually computed over a 12-month rolling average basis for the respective aeroplane/engine combination (AEC). It may be computed for the worldwide fleet of the AEC concerned (this is the rate monitored by the state of design to assess the EDTO capability of a given AEC) or by the operator for its fleet of AEC concerned.

Rationale

The change has been introduced to introduce specific definitions related to EDTO for terms which are used at AMC or GM level.

GM2 Annex I Definitions

ABBREVIATIONS

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

[...]

AEC aeroplane/engine combination

[...]

~~ETOPS extended range operations with two engine aeroplanes~~

EDTO extended diversion time operations

[...]

GM36 Annex I Definitions

EDTO/ETOPS

ICAO Annex 6 Part I replaced in 2012 the set of ETOPS Standards by EDTO Standards, primarily to address operations with longer diversion times for aeroplanes with two turbine engines, mainly based on the propulsion reliability and overall operational safety of current ETOPS two-engine aeroplanes, and also to address operations of aeroplanes with more than two engines on routes with extended diversion times. The EDTO provisions were built on the best practices and lessons learned from ETOPS and do not differ from the basic principles of ETOPS.

The main reason for the change in terminology from ETOPS to EDTO stems from the need to accurately reflect the scope and applicability of the new Standards. Nevertheless, this name change is not intended to mandate a similar and concurrent name change in the aeroplane documentation concerned.

This is in line with the note introduced in the EDTO Standards of Annex 6, which clarifies that the term 'ETOPS' may still be used instead of 'EDTO', as long as the concepts are correctly embodied in the documentation concerned. As ETOPS and EDTO are built on the same concepts, it means that, when an EDTO type design and reliability approval is required, it is acceptable to perform EDTO flights with an aeroplane that is certified for ETOPS. In other words, the EDTO operational approval of an operator of ETOPS-certified aeroplanes does not require that these aeroplanes are re-certified for EDTO, nor that the aeroplane documentation is updated to refer to EDTO instead of ETOPS.

Following this change, the term 'EDTO' has replaced 'ETOPS' in Regulation (EU) No 965/2012. However, the use of 'ETOPS' may not have been updated in other regulations and documentation (e.g. manufacturer documentation), and should be considered as equivalent to EDTO.

Rationale

The change has been introduced to provide some background information related to the use of the two terms (EDTO and ETOPS) and emphasise the equivalence between the two.

AMC & GM to Part-ARO

GM3 ARO.GEN.200(a)(2) Management system

SPECIFIC FLIGHT OPERATIONS INSPECTOR QUALIFICATION

[...]

(b) The following factors should be considered with regard to knowledge of the route and area:

[...]

(3) Navigational procedures, including PBN requirements, ~~ETOPS~~ and requirements on operations with ~~extended~~ diversion time beyond 60 minutes requirements including EDTO;

[...]

Rationale

The change has been introduced to:

— *replace the previously used term 'ETOPS' by the new term 'EDTO';*

— *include operations with diversion time exceeding 60 minutes in the specific factors to be considered with regard to the knowledge of the route and area.*

AMC6 ARO.OPS.200 Specific approval procedure PROCEDURES FOR THE APPROVAL OF EXTENDED DIVERSION TIME OPERATIONS (EDTO) FOR TWO ENGINE AEROPLANES

(a) General

- (1) When verifying compliance with the applicable requirements of Subpart F of Annex V (SPA.EDTO), the CAA should verify that:
 - (i) the aeroplane type holds a valid EDTO or ETOPS type design and reliability approval;
 - (ii) a system is implemented to configure, maintain and dispatch an EDTO aeroplane in accordance with an approved EDTO maintenance, reliability and training programme. In particular, this system should ensure that the aeroplane is not dispatched on EDTO routes with diversion times that are beyond its EDTO capability as defined in the applicable EDTO configuration and maintenance requirements of the EDTO configuration, maintenance and procedures (CMP) document;
 - (iii) the EDTO maintenance checks, servicing and programmes are properly conducted;
 - (iv) the EDTO operational limitations (e.g. the applicable time limitations of the relevant time-limited systems (TLSs) of the aeroplane) are adequately considered and that the EDTO flight preparation and in-flight procedures are properly conducted.
- (2) The scope and thoroughness of the verification of compliance should be linked with:
 - (i) the operator's experience with EDTO, long-range operations, the area of operation, the aircraft type, the engines, etc.;
 - (ii) the approval process selected; and
 - (iii) the intended EDTO operations (i.e. area of operations, list of alternate aerodromes, diversion time requested).

(b) Operational approval process

- (i) When processing an operator's application for an EDTO operational approval, the CAA should assess the operator's overall safety record, past performance, flight crew training and experience, and maintenance programme.

(ii) Assessment of the operator's propulsion system reliability

Following the accumulation of adequate operating experience by the world fleet of the specified aeroplane/engine combination and the establishment of an IFSD rate objective in accordance with Appendix 1 to AMC 20-6B for use in ensuring the propulsion system reliability necessary for extended range operations, an assessment should be made of the applicant's ability to achieve and maintain this level of propulsion system reliability. This assessment should include trend comparisons of the operator's data with other operators (if available), as well as the world fleet average values, and the application of a qualitative judgement that considers all the relevant factors. The operator's past record of propulsion system reliability with related types of power units should also be reviewed, as well as its record of achieved systems reliability with the aeroplane/engine combination for which an approval to conduct EDTO is being sought. Note: Where statistical assessment alone may not be applicable, e.g. when the fleet size is small, the applicant's experience should be reviewed on a case-by-case basis.

(iii) Validation of the operator's EDTO continuing airworthiness and operations capability.

The observation of at least one validation flight should be included in the activities to validate the operator's EDTO capability.

(c) Issuance of EDTO operational approval for two engine aeroplanes

The EDTO operational approval issued by the CAA should include:

- (A) the related aeroplane/engine combination,
- (B) the aeroplanes within the scope of the approval (registrations and serial numbers),
- (C) the authorised area of operations,
- (D) the operator's approved diversion time and the related OEI speed selected

While an EDTO operational approval is possible at entry into service under the accelerated EDTO operational approval process, the CAA may consider granting an EDTO operational approval of up to 90 minutes under the 'in-service EDTO operational approval' process for operators with minimal or no in-service experience with the aeroplane/engine combination. This determination should be based on factors such as:

- (A) the proposed area of operations,
- (B) the operator's demonstrated ability to successfully introduce aeroplanes into operations, and
- (C) the quality of the proposed continuing airworthiness and operations programmes.

In the case of the in-service approval process, the operator's initial approved diversion time may later be progressively increased by the CAA, after the operator applies for it, as it gains experience on the particular aeroplane/engine combination. The factors to consider may include:

- (D) duration of experience,
- (E) total number of flights,
- (F) the operator's diversion events,
- (G) record of the aeroplane/engine combination with other operators,
- (H) quality of operator's programmes, and
- (I) route structure.

(d) Increase to approved diversion time

Where an operator's maximum approved diversion time is 120 -180 minutes, the operator may apply for a 15 % increase to its approved diversion time.

When an operator applies for such increase for specific routes or areas for use on an exceptional basis, the CAA may have to assess the TLS(s) and demonstrated reliability of the aeroplane concerned if its certified EDTO capability is less than the contemplated increased operator's approved diversion time. The increased diversion time approved should be reflected in the operator's operations specifications.

(e) Continued surveillance:

The fleet-average IFSD rate for the specified aeroplane/engine combination will continue to be monitored in accordance with Appendices 1 and 3 to AMC 20-6B. As with all other operations, the CAA should also monitor all aspects of the EDTO operations that it has approved to ensure that the levels of reliability achieved remain at the necessary levels as provided in Appendix 1 to AMC 20-6B, and that the operation continues to be conducted safely. If an acceptable level of reliability is not maintained, if significant adverse trends exist, or if significant deficiencies are detected in the type design or the conduct of the EDTO operation, then the CAA should:

- (i) initiate a special evaluation,
- (ii) impose operational restrictions if necessary, and
- (iii) stipulate corrective action(s) for the operator to take to resolve the problems in a timely manner.

The CAA should alert the certifying authority when a special evaluation is initiated and make provisions for their participation.

(f) Continuity of the EDTO operational approval

If an air operator ceases actual EDTO operations for a period exceeding 12 months, the CAA should assess again the operator's compliance with the EDTO requirements before the operator resumes its EDTO operations.

If the operator maintains simulated EDTO processes, procedures and training as prescribed in its approved procedures, the CAA may not need to re-assess compliance with the EDTO requirements.

Rationale

The change is proposed to introduce a specific AMC setting out the procedure the CAA intends to follow when considering an application for EDTO approval for two-engined aeroplanes.

PROCEDURES FOR THE APPROVAL OF EXTENDED DIVERSION TIME OPERATIONS (EDTO) FOR AEROPLANES WITH MORE THAN TWO ENGINES

(a) General

- (1) When verifying compliance with the applicable requirements of Subpart F of Annex V (SPA.EDTO), the CAA should verify that:
 - (i) a system is implemented to configure, maintain and dispatch an EDTO aeroplane. In particular, this system should ensure that the aeroplane is not dispatched on EDTO routes with diversion times that are beyond its EDTO capability.
 - (ii) the EDTO maintenance checks, servicing and programmes implemented by the operator are properly conducted;
 - (iii) the EDTO operational limitations (e.g. the applicable time limitations of the relevant time-limited systems (TLSs) of the aeroplane) are adequately considered and that the EDTO flight preparation and in-flight procedures are properly conducted.
- (2) The scope and thoroughness of the verification of compliance should be linked with:
 - (i) the operator's experience with long-range operations, the area of operation, the aircraft type, the engines, etc.;
 - (ii) the intended EDTO operations (i.e. area of operations, list of alternate aerodromes, diversion time requested).

(b) Operational approval process

- (i) When processing an operator's application for an EDTO operational approval, the CAA should assess the operator's overall safety record, past performance, flight crew training and experience, and maintenance programme.
- (ii) Assessment of the operator's propulsion system reliability
The operator's past record of propulsion system reliability with related types of power units should also be reviewed, as well as its record of achieved systems reliability with the aeroplane/engine combination for which an approval to conduct EDTO is being sought. Note: Where statistical assessment alone may not be applicable, e.g. when the fleet size is small, the applicant's experience should be reviewed on a case-by-case basis.
- (iii) Validation of the operator's EDTO continuing airworthiness and operations capability. The observation of at least one validation flight should be included in the activities to validate the operator's EDTO capability.

(c) Issuance of EDTO operational approval for aeroplanes with more than two engine aeroplanes

The EDTO operational approval issued by the CAA should include:

- (A) the related aeroplane/engine combination,
- (B) the aeroplanes within the scope of the approval (registrations and serial numbers),
- (C) the authorised area of operations,
- (D) the operator's approved diversion time and the related AEO speed selected

An EDTO operational approval is possible at entry into service based on factors such as:

- (A) the proposed area of operations and route structure, and the operator's operational experience
- (B) the operator's demonstrated ability to successfully introduce aeroplanes into operations,
- (C) the quality of the proposed continuing airworthiness and operations programmes
- (D) record of aeroplane/engine combination with other operators
- (E) the time limited systems.

In the case of the in-service approval process, the factors to consider may include:

- (D) duration of experience,
- (E) total number of flights,
- (F) the operator's diversion events,
- (G) record of the aeroplane/engine combination with other operators,
- (H) quality of operator's programmes, and
- (I) route structure
- (J) time limited systems

(d) Continued surveillance:

The CAA should monitor all aspects of the EDTO operations that it has approved to ensure that the levels of reliability achieved remain at the acceptable levels, and that the operation continues to be conducted safely. If an acceptable level of reliability is not maintained, if significant adverse trends exist, or if significant deficiencies are detected in the type design or the conduct of the EDTO operation, then the CAA should:

- (i) initiate a special evaluation,
- (ii) impose operational restrictions if necessary, and
- (iii) stipulate corrective action(s) for the operator to take to resolve the problems in a timely manner.

The CAA should alert the certifying authority when a special evaluation is initiated and make provisions for their participation.

(e) Continuity of the EDTO operational approval

If an air operator ceases actual EDTO operations for a period exceeding 12 months, the CAA should assess again the operator's compliance with the EDTO requirements before the operator resumes its EDTO operations.

If the operator maintains simulated EDTO processes, procedures and training as prescribed in its approved procedures, the CAA may not need to re-assess compliance with the EDTO requirements.

Rationale

The change is proposed to introduce a specific AMC setting out the procedure the CAA intends to follow when considering an application for EDTO approval for aeroplanes with more than two engines.

GM1 ORO.GEN.130(b) Changes related to an AOC holder

CHANGES REQUIRING PRIOR APPROVAL

The following GM is a non-exhaustive checklist of items that require prior approval from the CAA as specified in the applicable Implementing Rules:

[...]

(q) maximum distance from an adequate aerodrome for ~~two-engined~~ aeroplanes without an extended diversion time range operations (EDTO) approval ~~with two-engined aeroplanes (ETOPS) approval:~~

- (1) air operations with two-engined performance class A aeroplanes with a maximum operational passenger seating configuration (MOPSC) of 19 or less and a maximum take-off mass less than 45 360 kg, over a route that contains a point further than 120 minutes from an adequate aerodrome, under standard conditions in still air;

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' with 'EDTO' and to correct the scope of items requiring prior approval in the case of EDTO without an EDTO operational approval.

GM2 ORO.GEN.200(a)(3) Management system

RISK MANAGEMENT OF FLIGHT OPERATIONS WITH KNOWN OR FORECAST VOLCANIC ASH CONTAMINATION

[...]

(c) Volcanic activity information and operator's potential response

[...]

(3) ~~On-going~~ Ongoing eruption

[...]

For the purpose of flight planning, the operator should treat the horizontal and vertical limits of the temporary danger area (TDA) or airspace forecast to be contaminated by volcanic ash as applicable, to be overflowed as it would mountainous terrain, modified in accordance with its safety risk assessment. The operator should take account of the risk of cabin depressurisation or engine failure resulting in the inability to maintain level flight above a volcanic cloud, especially when conducting ~~EDTO~~ETOPS operations. Additionally, minimum equipment list (MEL) provisions should be considered in consultation with the TCHs.

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' with 'EDTO'.

GM1 ORO.AOC.125(a)(2) Non-commercial operations of an AOC holder with aircraft listed on an AOC

EXAMPLES OF DIFFERENT OPERATING PROCEDURES APPLIED TO NON-COMMERCIAL OPERATIONS

[...]

(f) Non-EDTO/ETOPS/EDTO/ETOPS

EDTO/ETOPS are applicable to CAT operations only and thus a flight operated according to Part-NCC/Part-NCO may be performed without the EDTO/ETOPS restrictions.

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' with 'EDTO'.

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

[...]

8 OPERATING PROCEDURES

8.5 Extended-range diversion time operations with aeroplanes with two or more engines

(EDTO/ETOPS). A description of the EDTO/ETOPS operational procedures. (Refer to SPA.EDTO-AMC-20-6)

(a) Brief description of EDTO,

(b) Definitions,

(c) Operator approved diversion time(s),

(d) List of aeroplanes within the scope of the EDTO operational approval,

(e) Flight crew procedures,

(i) Dispatch,

- (ii) Re-routing or diversion-making,
- (iii) En-route monitoring

[...]

B AIRCRAFT OPERATING MATTERS — TYPE RELATED

4 PERFORMANCE

[...]

4.3 EDTO additional performance data for aeroplanes. Additional performance data, where applicable, including the following:

- (a) EDTO area of operation (diversion distance);
- (b) detailed one-engine-inoperative (OEI) performance data including fuel flow for standard and non-standard atmospheric conditions and as a function of airspeed and power setting, where appropriate, covering:
 - (i) drift down (includes net performance);
 - (ii) cruise (altitude coverage including depressurised altitude);
 - (iii) holding;
 - (iv) altitude capability (includes net performance);
 - (v) missed approach
- (c) detailed AEO performance data, including nominal fuel flow data, for standard and non-standard atmospheric conditions covering:
 - (i) cruise performance (altitude coverage including depressurised altitude)
 - (ii) holding
- (d) details of any other conditions relevant to EDTO that can cause significant deterioration of performance, such as ice accumulation on the unprotected surfaces of the aeroplane, ram air turbine (RAT) deployment, thrust reverser deployment, etc.

5 FLIGHT PLANNING

5.1 Data and instructions necessary for pre-flight and in-flight planning including, for aeroplanes, factors such as speed schedules and power settings. Where applicable, procedures for engine(s)-out operations, ETOPS for two engine aeroplanes operating EDTO the established one-engine-inoperative (OEI) cruise speed, and maximum distance to an adequate aerodrome determined in accordance with Annex IV (Part-CAT)) and flights to isolated aerodromes should be included.

[...]

5.3 When applicable, for aeroplanes, performance data for EDTO/ETOPS critical fuel reserve and area of operation, including sufficient data to support the critical fuel

reserve and area of operation calculation based on approved aircraft performance data. The following data should be included:

[...]

- (c) details of any other conditions relevant to **EDTO/ETOPS** operations which can cause significant deterioration of performance, such as ice accumulation on the unprotected surfaces of the aircraft, ram air turbine (RAT) deployment, thrust-reverser deployment, etc.; and
- (d) the altitudes, airspeeds, thrust settings, and fuel flow used in establishing the **EDTO/ETOPS** area of operations for each **airframe/aeroengine** combination should be used in showing the corresponding terrain and obstruction clearances in accordance with Annex IV (Part-CAT).

[...]

9 MINIMUM EQUIPMENT LIST (MEL)

The MEL for each aircraft type or variant operated and the type(s)/area(s) of operation. The MEL should also include the dispatch conditions associated with operations required for a specific approval (e.g. RNAV, RNP, RVSM, **EDTO/ETOPS**). Consideration should be given to using the ATA number system when allocating chapters and numbers.

[...]

C ROUTE/ROLE/AREA AND AERODROME/OPERATING SITE INSTRUCTIONS AND INFORMATION

[...]

(3) Information related to EDTO

- (a) EDTO routes and associated maximum diversion time or distance, including routes or areas subject to a 15 % increase of the operator approved diversion time for two engine aeroplanes in accordance with SPA.EDTO.105(b);
- (b) EDTO ERA aerodromes
- (c) Meteorological facilities and availability of information for in-flight monitoring;
- (d) Low altitude cruise information, minimum diversion altitude, minimum oxygen requirements and any additional oxygen required on specified routes if MSA restrictions apply;
- (e) Aerodrome characteristics (landing distance available, RFFS category and landing aids available) and weather minima for aerodromes that are designated as possible alternates.

[...]

Rationale

The change has been introduced to:

- *replace the previously used term 'ETOPS' with the new term 'EDTO';*
- *provide details on the data/procedures to be included in the different parts of the operations manual for an operator approved for EDTO.*

GM1 ORO.MLR.105(d)(3) Minimum equipment list

SCOPE OF THE MEL

(a) Examples of special approvals in accordance with Part-SPA may be:

- (1) RVSM,
- (2) EDTO~~ETOPS~~,
- (3) LVO.

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' with 'EDTO'.

AMC1 ORO.FC.220 Operator conversion training and checking

OPERATOR CONVERSION TRAINING SYLLABUS

[...]

(d) Flight training

- (1) Flight training should be conducted to familiarise the flight crew member thoroughly with all aspects of limitations and normal, abnormal and emergency procedures associated with the aircraft and should be carried out by suitably qualified class and type rating instructors and/or examiners. For specific operations, such as steep approaches, EDTO~~ETOPS~~, or operations based on QFE, additional training should be carried out, based on any additional elements of training defined for the aircraft type in the operational suitability data in accordance with Commission Regulation (EU) No 748/2012, where they exist.

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' by 'EDTO'.

AMC1 ORO.CC.200(c) Senior cabin crew member

TRAINING PROGRAMME

The senior cabin crew member training course should at least cover the following elements:

(a) Pre-flight briefing:

- (1) operating as a crew;
- (2) allocation of cabin crew stations and responsibilities; and

- (3) consideration of the particular flight, aircraft type, equipment, area and type of operation, including extended diversion time range operations with two-engine aeroplanes (EDTO/ETOPS) and special categories of passengers with emphasis on passengers with disabilities or reduced mobility, infants and stretcher cases.

[...]

Rationale

The change has been introduced to replace the term 'ETOPS' with 'EDTO'.

AMC & GM to Part-CAT

GM1 CAT.OP.MPA.140(c) Maximum distance from an adequate aerodrome for two-engined aeroplanes with two or more engines without an ~~ETOPS~~EDTO approval

~~ONE-ENGINE-INOPERATIVE (OEI) CRUISING SPEED~~

~~The OEI cruising speed is intended to be used solely for establishing the maximum distance from an adequate aerodrome.~~

OEI SPEED FOR TWO-ENGINED AEROPLANES

The selected OEI speed for two-engined aeroplanes is intended to be used solely for establishing the maximum distance from an adequate aerodrome.

Additional guidance for the selection of the all-engines-operating (AEO) speed for aeroplanes with more than two engines and for the determination of the OEI speed for two-engined aeroplanes can be found in ICAO Doc 10085.

Rationale

The change has been introduced to replace the existing GM1 CAT.OP.MPA.140(c) clarifying the intended use of the selected OEI speed for two-engined aeroplanes and to provide guidance for the selection of the AEO speed for aeroplanes with more than two engines by referring to the related ICAO Doc 10085.

AMC1 CAT.OP.MPA.140(d) Maximum distance from an adequate aerodrome for two-engined aeroplanes ~~two-engined aeroplanes without an~~EDTO/ETOPS operational approval

OPERATION OF NON-EDTO/ETOPS-COMPLIANT TWIN TURBO-JET AEROPLANES WITH A MOPSC OF 19 OR LESS BETWEEN 120 AND 180 MINUTES FROM AN ADEQUATE AERODROME

[...]

(d) Maintenance

- (1) The operator's oil-consumption-monitoring programme should be based on engine manufacturer's recommendations, if available. The operator should track oil consumption trends. The monitoring should be continuous ~~to~~ and take account of the oil added and allow the calculation of the consumption rate of the previous leg.

[...]

(f) Pre-departure check

A pre-departure check, additional to the pre-flight inspection required by Part-M and designed to verify the status of the aeroplane's significant systems, should be conducted. Adequate status monitoring information on relevant ~~all~~ significant systems should be available to the flight crew to conduct the pre-departure check. The content of the pre-departure check should be described in the OM. The operator should ensure that flight crew members are fully trained and competent to conduct a pre-departure check of the aeroplane. The operator's required training programme should cover all relevant tasks, with particular emphasis on checking required fluid levels.

(g) MEL

The operator should establish in its MEL the minimum equipment that has to be serviceable for non-ETOPS/EDTO operations between 120 and 180 minutes. The operator should ensure that the MEL takes into account all items specified by the manufacturer relevant to this type of operations.

(h) Dispatch/flight planning rules

[...]

- (4) ERA aerodrome(s): ensuring that ERA aerodromes are available for the intended route, within the distance flown in more than 120 minutes but equal to or less than 180 minutes based upon the OEI ~~cruising~~ speed, which is a speed within the certified limits of the aeroplane, selected by the operator and approved by the CAA. The operator should confirm that, based on the available meteorological information, the weather conditions at ERA aerodromes are at or above the applicable minima for the applicable period of time, in accordance with CAT.OP.MPA.182, ~~from the earliest anticipated time of landing until 1 hour after the latest possible time of landing.~~

Rationale

The change has been introduced to:

- replace the previously used term 'ETOPS' with the new term 'EDTO';
- introduce minor wording modifications for clarification;
- provide the reference to the correct implementing rule (CAT.OP.MPA.182).

GM1 CAT.OP.MPA.140(d) Maximum distance from an adequate aerodrome for two-engined aeroplanes-without an EDTO/ETOPS approval

SIGNIFICANT SYSTEMS

(a) Definition:

Significant systems to be checked are ~~the aeroplane propulsion system and any aeroplane systems~~ whose failure or degradation could adversely affect the safety of a non-EDTO ~~ETOPS~~ diversion flight, or whose functioning is specifically important to continued safe flight and landing during an aeroplane diversion.

(b) When defining the pre-departure check, the operator should give consideration, at least, to the following systems:

[...]

(15) propulsion system fire detection and suppression;

~~(16) emergency equipment (e.g. ELT, hand fire extinguisher, etc.).~~

Rationale

The change has been introduced to:

- *replace the previously used term 'ETOPS' with the new term 'EDTO';*
- *amend the list of systems the operator may consider during the pre-departure check, by removing the emergency equipment, which is already adequately covered by other checks.*

AMC1 CAT.OP.MPA.175(a) Flight preparation OPERATIONAL FLIGHT PLAN — COMPLEX MOTOR-POWERED AIRCRAFT

(a) The operational flight plan used and the entries made during flight should contain the following items:

[...]

(11) type of operation (EDTO ~~ETOPS~~, VFR, ferry flight, etc.);

[...]

Rationale

The change has been introduced to replace the previously used term 'ETOPS' with the new term 'EDTO'.

AMC1 CAT.OP.MPA.182 Fuel or energy scheme – aerodrome selection policy - aeroplanes

BASIC FUEL SCHEME – TAKE-OFF ALTERNATE AERODROME

The take-off alternate aerodrome should not be farther from the departure aerodrome than:

- (a) for two-engined aeroplanes:
 - (1) 1-hour flight time at a one-engine-inoperative (OEI) cruising speed according to the AFM in ISA and still-air conditions using the actual take-off mass; or
 - (2) the ~~extended-range twin operations (ETOPS)~~ diversion time operations (EDTO) diversion time that is approved in accordance with Subpart F of Annex V (Part-SPA) to **UK Regulation (EU) No 965/2012**, subject to any minimum equipment list (MEL) restriction, up to a maximum of 2-hour flight time at the selected OEI cruising speed ~~according to the AFM~~ in ISA and still-air conditions using the actual take-off mass; and
- (b) for three- or four-engined aeroplanes, 2-hour flight time at ~~an~~ the selected all-engines-operating speed according to the AFM in ISA and still-air conditions using the actual take-off mass;
- (c) for operations approved in accordance with Annex V (Part-SPA), Subpart L *SINGLE-ENGINE TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN IMC (SET-IMC)*, 30 minutes flying time at normal cruising speed in still-air conditions, based on the actual take-off mass;
- (d) in the case of multi-engined aeroplanes, if the AFM does not contain an OEI cruising speed, the speed to be used for calculation shall be that which is achieved with the remaining engine(s) set at maximum continuous power.

AMC3 CAT.OP.MPA.182 Fuel or energy scheme — aerodrome selection policy — aeroplanes

BASIC FUEL SCHEME – AERODROME FORECAST METEOROLOGICAL CONDITIONS

Table 1 — Aerodrome forecasts (TAFs) and landing forecasts (TRENDS) to be used for pre-flight planning

The table will be updated to

- replace the previously used term 'ETOPS' by the new term 'EDTO'; and
- align the applicable time window to be considered with the existing provisions of AMC 20-6B that are proposed to be deleted.

AMC2 CAT.IDE.A.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

ACCEPTABLE NUMBER AND TYPE OF COMMUNICATION AND NAVIGATION EQUIPMENT

[...]

- (c) The operator conducting extended range diversion time operations (EDTO) with two-engined aeroplanes (ETOPS) should ensure that the related criteria of SPA.EDTO on aeroplanes have a communication means are met. capable of communicating with an appropriate ground station at normal and planned contingency altitudes. For ETOPS routes where voice communication facilities are available, voice communications should be provided. For all ETOPS operations beyond 180 minutes, reliable communication technology, either voice-based or data link, should be installed. Where voice communication facilities are not available and where voice communication is not possible or is of poor quality, communications using alternative systems should be ensured.

[...]

Rationale

The change has been introduced to:

- (b) *replace the previously used term 'ETOPS' with the new term 'EDTO';*
- (c) *remove some considerations which are already addressed in SPA.EDTO to avoid a duplication of provisions.*

AMC & GM to Part-SPA

AMC1 SPA.EDTO.100(c) EDTO operational approval EDTO OPERATIONAL APPROVAL METHODS

- (a) Depending on the amount of prior in-service experience of the operator with the candidate aeroplane/engine combination, they can apply for one of the following two approval methods to be used::
 - (1) 'Accelerated EDTO operational approval', for which limited or no prior in-service experience with the candidate aeroplane/engine combination is necessary. With this method, the operator needs to build a programme of process validation to address the lack of direct experience (with EDTOs and/or with the candidate aeroplane).
 - (2) 'In-service EDTO operational approval', which is based on a prerequisite amount of prior in-service experience with the candidate aeroplane/engine combination.
- (b) Both EDTO operational approval processes should include the following phases:
 - (1) Application phase;
 - (2) Validation of the operator's EDTO processes;

The intent of this validation phase is to demonstrate that the related EDTO processes are in place and produce the expected results.

(3) Assessment of the operator's propulsion system reliability

The intent of this phase is to demonstrate the operator's ability to achieve and maintain the level of propulsion system reliability established in accordance with Appendix 1 to AMC 20-6B.

(4) Validation of the operator's capability

The intent of this phase, which includes validation flights, is to ensure that the established EDTO flight operations and maintenance processes and procedures can support the planned operations.

Rationale

This AMC has been introduced to provide a general description of the two applicable EDTO operational approval processes based on the content transferred from AMC 20-6B.

AMC2 SPA.EDTO.100(c) EDTO operational approval
EDTO OPERATIONAL APPROVAL PROCESSES FOR TWO-ENGINED AEROPLANES

(a) Eligibility

(1) The following operators are eligible for the in-service EDTO operational approval process:

- (i) Operators of performance class A aeroplanes with a maximum operational passenger seating configuration (MOPSC) of 19 or less, with at least 6 consecutive months of experience in operations with a diversion time between 120 and 180 minutes under CAT.OP.MPA.140(d) with the related aeroplane/engine combination.
- (ii) Operators of other two-engined aeroplanes, with:
 - at least 12 consecutive months of in-service experience without EDTO with the considered aeroplane/engine combination. In this case, the operator may apply for a diversion time of 120 minutes maximum; or
 - at least twelve consecutive months of in-service EDTO experience with diversion time of up to 120 minutes and with the considered aeroplane/engine combination; in this case, the operator may apply for a diversion time of 180 minutes maximum; or
 - at least 6 consecutive months of in-service EDTO experience with a diversion time of 120 minutes or above; in this case, the operator may apply for diversion time beyond 180 minutes; or

- no or minimal in-service experience without EDTO with the considered aeroplane/engine combination. In this case, the operator may apply for a diversion time of 90 minutes maximum based on the in-service approval process. The operator should demonstrate that the reduction of the validation of its EDTO processes that would be required through the accelerated approval process is adequately compensated by the combined consideration of the following factors: the proposed EDTO area of operations, the operator's ability to successfully introduce aeroplanes into operations and the quality of the proposed continuing airworthiness and operations programmes.

In all other cases where the operator has accumulated less than the above-mentioned minimum experience, the accelerated EDTO operational approval process is to be followed.

- (2) Under the accelerated EDTO operational approval process, the operator may apply for any diversion time. In addition, an operator may start EDTO at entry into service with the related aeroplane/engine combination. However, the following conditions should be fulfilled:
 - (i) the aeroplanes operated are already configured in accordance with the configuration, maintenance and procedures (CMP) document;
 - (ii) the personnel involved in continuing airworthiness and operations processes have previous EDTO experience (e.g. from a previous operator) or a third-party organisation has been contracted to support the operator; and
 - (iii) data necessary for the validation of the operator's capability in continuing airworthiness processes has already been accumulated by the operator, or external data is available when these processes are managed by a third-party air operator approved for EDTO under Part-SPA.

(b) Application phase

An operator applying for an EDTO operational approval should submit its application to the CAA at least 6 months before the proposed start of EDTO operations in the case of the accelerated EDTO operational approval process, and at least 2 months before the proposed start of EDTO operations in the case of the in-service EDTO operational approval process.

The application should include:

- (1) the planned start of the EDTO operations (new operations or operations with an increased diversion time);
- (2) the planned routes and the EDTO diversion time necessary to support those routes;
- (3) the aeroplanes concerned (model(s) and MSNs);
- (4) EDTO type design and reliability approval of the aeroplane model concerned;
- (5) conformity of the candidate aeroplanes, including auxiliary power unit (APU) and engines, to the applicable EDTO configuration requirements listed in the EDTO CMP document;

- (6) the proposed OEI speed for two-engined aeroplanes, which may be area-specific depending upon anticipated aeroplane loading and likely fuel penalties associated with the planned procedures;
- (7) except for operators already approved for EDTO with the considered aeroplane type, a description of the resources allocated to each EDTO process to initiate and sustain EDTO in a manner that demonstrates commitment by management and all personnel involved in EDTO continuing airworthiness and operational processes;
- (8) except for operators already approved for EDTO with the considered aeroplane type, a description of the operator's EDTO operational processes, including:
 - (i) operational limitations;
 - (ii) flight preparation;
 - (iii) in-flight procedures.The operator should submit the relevant part of its operations manual as part of its application;
- (9) except for operators already approved for EDTO with the considered aeroplane type, a description of the operator's EDTO continuing airworthiness processes (as per AMC 20-6B Appendix 3), including but not limited to the following:
 - (i) maintenance programme;
 - (ii) EDTO reliability monitoring and reporting programme;
 - (iii) oil consumption monitoring programme;
 - (iv) engine condition monitoring;
 - (v) propulsion system monitoring programme;
 - (vi) EDTO parts control programme;
- (10) flight crew and ground staff EDTO initial and recurrent training programmes, except for operators already approved for EDTO with the considered aeroplane type;
- (11) proposed review gates in the case of accelerated EDTO operational approval process.

Review gates are milestones of the approval process proposed by the operator to demonstrate compliance with the applicable EDTO requirements. The review gate process should start 6 months before the planned start of EDTO. It should cover all processes required to be validated and any additional operator-specific training and procedures relevant to EDTO. Each review gate should be defined in terms of the process elements to be validated.

It should include in particular the plan for the training of flight crew, flight dispatch and continuing airworthiness personnel.

The final review gate should be the EDTO validation flight(s) as described in point (e);

- (12) if applicable, information on how the operator addresses new technology and significant differences in EDTO-significant systems (e.g. engines, electrical, hydraulic, pneumatic, etc.), compared to the aeroplanes currently operated and the aeroplanes for which the operator is seeking EDTO operational approval using the accelerated approval process;
- (13) the source documentation, if the operator uses training programmes, maintenance and/or operational procedures relevant to EDTO for the aeroplane for which the operator is seeking accelerated EDTO operational approval from another source (e.g. from a manufacturer or another organisation);
The operator should highlight the changes it has made to these procedures and provide the rationale behind such changes;
- (14) details of any EDTO support programme from the aeroplane/engine combination or engine (S)TC holder, other operators or any third-country authority;
- (15) approvals held by the contracted organisation(s) together with the control procedures of the contractor(s), if the operator uses a contracted maintenance and/or a flight dispatch organisation.

(c) Validation of the operator's EDTO processes

The extent of validation needs depends on the operator's experience with the related aeroplane type and with EDTO.

In case of the accelerated EDTO process applied to an operator with no prior experience with the aeroplane type and no EDTO experience, all processes should be validated.

For all processes to be validated, the operator should demonstrate that the process is in place and functions as intended. This may be accomplished by providing data, documentation and analysis results and/or by demonstrating in practice that the process works and consistently provides the intended results. The operator should also demonstrate that a feedback loop exists to facilitate the surveillance of the process, based on in-service experience.

If an operator is currently approved for conducting EDTO with a different engine and/or aeroplane/engine combination, it may be able to document proven EDTO processes. In this case, only minimal further validation may be necessary. The operator should demonstrate that processes are in place to assure equivalent results on the engine and/or aeroplane/engine combination being proposed for accelerated EDTO operational approval.

(1) Reduction in the validation requirements of EDTO processes

The following elements will be useful or beneficial in justifying a reduction by the CAA in the validation requirements of EDTO processes:

- (i) Experience with other aeroplanes and/or engines;
- (ii) Previous EDTO experience;
- (iii) Experience with long-range or extended over-water operations;
- (iv) Any experience gained by flight crews, continuing airworthiness personnel and flight dispatch personnel, while working with other EDTO-approved operators,

particularly when such experience is with the same aeroplane or aeroplane/engine combination.

The process validation may be done on the aeroplane/engine combination that will be used or on a different aeroplane type than that for which approval is being sought.

(2) Validation of the EDTO processes on a different aeroplane type

A process may be validated by demonstrating that it produces equivalent results on a different aeroplane type or aeroplane/engine combination. In this case, the validation programme should address the following:

- (i) The operator should demonstrate that the EDTO validation programme can be executed in a safe manner;
- (ii) The operator should establish policy guidance to personnel involved in the EDTO process validation programme, clearly stating that EDTO process validation exercises should not adversely impact the safety of actual operations, especially during periods of abnormal, emergency, or high cockpit-workload operations. It should emphasise that during periods of abnormal or emergency operation or high cockpit workload, EDTO process validation exercises should be terminated;
- (iii) The validation scenario should be of sufficient frequency and operational exposure to validate maintenance and operational support systems that are not validated by other means;
- (iv) A means should be established to monitor and report performance with respect to accomplishment of tasks associated with EDTO process elements. Any recommended changes resulting from the validation programme to EDTO continuing airworthiness and/or operational process elements should be defined.

(3) Methodology for the validation

The following information should be submitted to the CAA prior to the start of the validation process:

- (i) Validation periods, including start dates and proposed completion dates;
- (ii) List of aeroplanes to be used in the validation, including registration numbers, manufacturer and serial number and model of the aeroplane and engines;
- (iii) Description of the areas of operation (if relevant to validation) proposed for validation and actual operations;
- (iv) List of selected EDTO validation routes; the routes should be representative of the planned routes submitted in the initial application and of sufficient duration to allow the validation of the related processes.

The operator should provide periodic process validation reports to the CAA. This may be addressed during the planned review gates.

The operator should compile results of EDTO process validation. In particular, the operator should:

- (i) document how each element of the EDTO process was utilised during the validation;
- (ii) document any shortcomings with the process elements and measures in place to address such shortcomings; and
- (iii) document any changes to EDTO processes, which were required after an in-flight shut down (IFSD), unscheduled engine removals, or any other significant operational events.

(d) Assessment of the operator's propulsion system reliability

The operator should provide all available reliability data that may be used to assess its ability to achieve and maintain the level of propulsion system reliability established in accordance with Appendix 1 to AMC 20-6B.

The operator should provide a report covering the total experience of the operator with the considered aeroplane type, if applicable, and including:

- (i) the operator's current IFSD rate, if applicable;
- (ii) the worldwide fleet average IFSD rate for the family of the aeroplane/engine combination concerned;
- (iii) the list of all engine-related events, including the outcome of the analysis conducted and the actions taken.

(e) Validation of the operator's capability

The operator should demonstrate that the EDTO continuing airworthiness processes and the EDTO flight dispatch and release practices are properly conducted.

In addition, operational validation flight(s) should be conducted to demonstrate that the required EDTO flight operations and maintenance processes and procedures are capable of supporting the planned operations. The validation flight(s) should be performed on route(s) that the operator plans to operate, or on representative routes.

The content of validation flights should be established by the operator based on its previous experience and submitted to the CAA in advance. No abnormal or emergency operations (e.g. OEI diversion) should be simulated during a validation flight.

The validation flight(s) should typically be performed on non-revenue flights without passengers. However, depending on the scope of the EDTO operational approval and the operator's experience with the related area of operations, aeroplane type,

contemplated diversion time, etc., a validation flight may be performed during the first EDTO revenue flight or replaced by a flight on an approved simulator.

Rationale

The proposed AMC provides detailed criteria for the two applicable EDTO operational approval processes based on the transferred content of AMC 20-6B. To provide clarity, the descriptions for the two processes have been merged and the specificities of each process described in each step.

AMC3 SPA.EDTO.100(c) EDTO operational approval

EDTO OPERATIONAL APPROVAL PROCESSES FOR AEROPLANES WITH MORE THAN TWO ENGINES

(a) Eligibility

(1) The in-service EDTO operational approval process:

- At least 12 consecutive months of in-service experience without EDTO with the considered aeroplane engine combination.
- there are no specific categories for EDTO authorisation for operations with aeroplanes with more than two engines

In all other cases where the operator has accumulated less than the above-mentioned minimum experience, the accelerated EDTO operational approval process is to be followed.

(2) Under the accelerated EDTO operational approval process, the operator may apply for any diversion time. In addition, an operator may start EDTO at entry into service with the related aeroplane/engine combination. However, the following conditions should be fulfilled:

- (i) the aeroplanes operated are already configured in accordance with the configuration, maintenance and procedures (CMP) document;
- (ii) the personnel involved in continuing airworthiness and operations processes have previous EDTO experience (e.g. from a previous operator) or a third-party organisation has been contracted to support the operator; and
- (iii) data necessary for the validation of the operator's capability in continuing airworthiness processes has already been accumulated by the operator, or external data is available when these processes are managed by a third-party air operator approved for EDTO under Part-SPA.

(b) Application phase

An operator applying for an EDTO operational approval should submit its application to the CAA at least 6 months before the proposed start of EDTO operations in the case of the accelerated EDTO operational approval process, and at least 2 months before the proposed start of EDTO operations in the case of the in-service EDTO operational approval process.

The application should include:

- (1) the planned start of the EDTO operations (new operations or operations with an increased diversion time);
- (2) the planned routes and the EDTO diversion time necessary to support those routes;
- (3) the aeroplanes concerned (model(s) and MSNs);
- (4) relevant time capabilities of the EDTO time limited systems
- (5) an application package including; routes, desired diversion time, fleet, area of operation, experience, manuals and training.
- (6) Proposed selected AEO speed

- (7) except for operators already approved for EDTO with the considered aeroplane type, a description of the resources allocated to each EDTO process to initiate and sustain EDTO in a manner that demonstrates commitment by management and all personnel involved in EDTO continuing airworthiness and operational processes;

- (8) except for operators already approved for EDTO with the considered aeroplane type, a description of the operator's EDTO operational processes, including:
 - (i) operational limitations;
 - (ii) flight preparation;
 - (iii) in-flight procedures.

The operator should submit the relevant part of its operations manual as part of its application;
- (9) except for operators already approved for EDTO with the considered aeroplane type, a description of the operator's EDTO continuing airworthiness processes
- (10) flight crew and ground staff EDTO initial and recurrent training programmes, except for operators already approved for EDTO with the considered aeroplane type;
- (11) proposed review gates in the case of accelerated EDTO operational approval process.

Review gates are milestones of the approval process proposed by the operator to demonstrate compliance with the applicable EDTO requirements. The review gate process should start 6 months before the planned start of EDTO. It should cover all processes required to be validated and any additional operator-specific training and procedures relevant to EDTO. Each review gate should be defined in terms of the process elements to be validated.

It should include in particular the plan for the training of flight crew, flight dispatch and continuing airworthiness personnel.

The final review gate should be the EDTO validation flight(s) as described in point (d);
- (12) the source documentation, if the operator uses training programmes, maintenance and/or operational procedures relevant to EDTO for the aeroplane for which the operator is seeking accelerated EDTO operational approval from another source (e.g. from a manufacturer or another organisation);

The operator should highlight the changes it has made to these procedures and provide the rationale behind such changes;

- (13) approvals held by the contracted organisation(s) together with the control procedures of the contractor(s), if the operator uses a contracted flight dispatch organisation.

(c) Validation of the operator's EDTO processes

The extent of validation needs depends on the operator's experience with the related aeroplane type and with EDTO.

In case of the accelerated EDTO process applied to an operator with no prior experience with the aeroplane type and no EDTO experience, all processes should be validated.

For all processes to be validated, the operator should demonstrate that the process is in place and functions as intended. This may be accomplished by providing data, documentation and analysis results and/or by demonstrating in practice that the process works and consistently provides the intended results. The operator should also demonstrate that a feedback loop exists to facilitate the surveillance of the process, based on in-service experience.

If an operator is currently approved for conducting EDTO with a different engine and/or aeroplane/engine combination, it may be able to document proven EDTO processes. In this case, only minimal further validation may be necessary. The operator should demonstrate that processes are in place to assure equivalent results on the engine and/or aeroplane/engine combination being proposed for accelerated EDTO operational approval.

(1) Reduction in the validation requirements of EDTO processes

The following elements will be useful or beneficial in justifying a reduction by the CAA in the validation requirements of EDTO processes:

- (i) Experience with other aeroplanes and/or engines;
- (ii) Previous EDTO experience;
- (iii) Experience with long-range or extended over-water operations;
- (iii) Any experience gained by flight crews, continuing airworthiness personnel and flight dispatch personnel, while working with other EDTO-approved operators, particularly when such experience is with the same aeroplane or aeroplane/engine combination.

The process validation may be done on the aeroplane/engine combination that will be used or on a different aeroplane type than that for which approval is being sought.

(2) Validation of the EDTO processes on a different aeroplane type

A process may be validated by demonstrating that it produces equivalent results on a different aeroplane type or aeroplane/engine combination. In this case, the validation programme should address the following:

- (i) The operator should demonstrate that the EDTO validation programme can be executed in a safe manner;

- (ii) The operator should establish policy guidance to personnel involved in the EDTO process validation programme, clearly stating that EDTO process validation exercises should not adversely impact the safety of actual operations, especially during periods of abnormal, emergency, or high cockpit-workload operations. It should emphasise that during periods of abnormal or emergency operation or high cockpit workload, EDTO process validation exercises should be terminated;
- (iii) The validation scenario should be of sufficient frequency and operational exposure to validate operational support systems that are not validated by other means;
- (iv) A means should be established to monitor and report performance with respect to accomplishment of tasks associated with EDTO process elements. Any recommended changes resulting from the validation programme to EDTO operational process elements should be defined.

(3) Methodology for the validation

The following information should be submitted to the CAA prior to the start of the validation process:

- (i) Validation periods, including start dates and proposed completion dates;
- (ii) List of aeroplanes to be used in the validation, including registration numbers, manufacturer and serial number and model of the aeroplane and engines;
- (iii) Description of the areas of operation (if relevant to validation) proposed for validation and actual operations;
- (iv) List of selected EDTO validation routes; the routes should be representative of the planned routes submitted in the initial application and of sufficient duration to allow the validation of the related processes.

The operator should provide periodic process validation reports to the CAA. This may be addressed during the planned review gates.

The operator should compile results of EDTO process validation. In particular, the operator should:

- (i) document how each element of the EDTO process was utilised during the validation;
- (ii) document any shortcomings with the process elements and measures in place to address such shortcomings; and

(d) Validation of the operator's capability

The operator should demonstrate that the continuing airworthiness processes and the EDTO flight dispatch and release practices are properly conducted.

In addition, operational validation flight(s) should be conducted to demonstrate that the required EDTO flight operations procedures are capable of supporting the planned operations. The validation flight(s) should be performed on route(s) that the operator plans to operate, or on representative routes.

The content of validation flights should be established by the operator based on its previous experience and submitted to the CAA in advance. No abnormal or emergency operations should be simulated during a validation flight.

The validation flight(s) should typically be performed on non-revenue flights without passengers. However, depending on the scope of the EDTO operational approval and the operator's experience with the related area of operations, aeroplane type, contemplated diversion time, etc., a validation flight may be performed during the first EDTO revenue flight or replaced by a flight on an approved simulator.

Rationale

The proposed AMC provides detailed criteria for the two applicable EDTO operational approval processes based on ICAO Doc 10085. To provide clarity, the descriptions for the two processes have been merged and the specificities of each process described in each step.

GM1 SPA.EDTO.100(b) EDTO operational approval 15% INCREASE TO A MAXIMUM DIVERSION TIME OF UP TO 180 MINUTES FOR TWO- ENGINED AEROPLANES

A 15 % extension of the diversion time in accordance with SPA.EDTO.105(c) is still included in the operational approval category with a maximum diversion time of up to 180 minutes, and the requirements applicable to the operational approval category beyond 180 minutes do not apply.

Rationale

The new GM has been introduced to provide clarity on the scope of one of the EDTO operational approval categories.

GM2 SPA.EDTO.100(b) EDTO operational approval

REFERENCE SPEEDS

As part of an EDTO application by the operator of a two-engined aeroplane, the operator may propose an OEI speed that is different from the speed selected to determine the threshold distance as required in CAT.OP.MPA.140(c).

For an operator holding an EDTO operational approval, the OEI approved speed always refers to the speed that is used to determine the EDTO area of operations.

The possible use of different reference speeds is summarised in the following table:

Table 1: EDTO cruise speeds

	EDTO threshold distance	EDTO maximum diversion distance	Critical fuel – all engine depressurisation	Critical fuel – engine inoperative depressurisation	Critical fuel – engine failure only
Two-engined aeroplanes	Any selected OEI speed	Approved OEI speed	Any selected AEO speed	Approved OEI speed	Approved OEI speed

Rationale

The new GM has been introduced to provide information about the possibility to have two different OEI speeds and their acceptable use.

GM1 SPA.ETOPS.105 ETOPS operational approval

AMC 20-6

AMC 20-6 provides further criteria for the operational approval of ETOPS.

Rationale

This GM has been deleted as all OPS elements of AMC 20-6B have been transferred to AMC to SPA.EDTO.

**AMC1 SPA.EDTO.105(b) EDTO initial and continuing airworthiness
CONTINUING AIRWORTHINESS CRITERIA**

Specific continuing airworthiness criteria for EDTO, ensuring compliance with Regulation (EU) No 1321/2014, are included in AMC 20-6B.

Rationale

As continuing airworthiness provisions are temporarily remaining in AMC 20-6B, a reference at AMC level needed to be created.

**AMC1 SPA.EDTO.105(c) EDTO initial and continuing airworthiness
15 % INCREASE OF THE OPERATOR APPROVED DIVERSION TIME FOR TWO-ENGINED
AEROPLANES**

To demonstrate that the resulting routing does not reduce the overall safety of the operation, including the consideration of time-limited systems capability, an operator requesting a 15 % increase of their approved diversion time should:

- (a) demonstrate that the increased diversion time sought does not exceed:
 - (1) 115 % of the aeroplane maximum diversion time; and
 - (2) the capabilities of the EDTO time-limited systems, minus 15 minutes;
- (b) demonstrate that the aeroplane fuel carriage supports the increased diversion time sought;
- (c) develop an appropriate MEL related to the diversion time sought.

Rationale

This new AMC has been introduced to provide means to comply with the requirement to demonstrate that the overall safety of the operation is not reduced in case of a 15% increase of the operator approved diversion time. The proposed content is stemming from AMC 20-6B.

GM1 SPA.EDTO.105(c) EDTO initial and continuing airworthiness 15 % INCREASE OF THE OPERATOR APPROVED DIVERSION TIME FOR TWO-ENGINE AEROPLANES

The following are considered relevant reasons that may prevent the availability of EDTO ERA within the operator's approved diversion time:

- (a) political or military concerns;
- (b) volcanic activity;
- (c) temporary airport conditions;
- (d) aerodrome weather conditions below dispatch minima
- (e) other weather-related events.

Rationale

This new GM has been introduced to provide guidance on the acceptable reasons that may be used by an operator to justify the non-availability of EDTO ERAs.

AMC1 SPA.EDTO.110 EDTO training EDTO TRAINING

- (a) The syllabus for EDTO initial and recurrent training for flight crew should include the following items:
 - (1) Introduction to EDTO requirements

- (i) Brief overview of the history of EDTO;
- (ii) SPA.EDTO content;
- (iii) Definitions;
- (iv) Approved one-engine-inoperative (OEI) speed for two-engined aeroplanes;
- (v) EDTO type design approval — a brief synopsis;
- (vi) Aeroplane maximum diversion times and time-limited systems capability;
- (vii) Operator's approved diversion time;
- (viii) Routes and aerodromes intended to be used in the EDTO area of operations;
- (ix) EDTO operational approval;
- (x) EDTO area and routes;
- (xi) EDTO ERA aerodromes including all available let-down aids;
- (xii) Navigation systems accuracy, limitations and operating procedures;
- (xiii) Meteorological facilities and availability of information;
- (xiv) In-flight monitoring procedures;
- (xv) Operational flight plan;
- (xvi) Orientation charts, including low-level planning charts and flight progress charts usage (including position plotting);
- (xvii) Equal time point;
- (xviii) Critical fuel for two-engined aeroplanes.

(2) EDTO normal procedures

- (i) Flight planning and dispatch
 - (A) EDTO fuel requirements
 - (B) Route alternate selection — weather minima
 - (C) Minimum equipment list
 - (D) EDTO service check and tech log for two-engined aeroplanes
 - (E) Pre-flight FMS set-up
- (ii) Flight performance progress monitoring
 - (A) Flight management, navigation and communication systems
 - (B) Aeroplane system monitoring

- (C) Weather monitoring
- (D) In-flight fuel management — to include independent cross checking of fuel quantity, tracking of actual versus planned fuel burn and minimum en-route fuel policy

(3) EDTO abnormal and contingency procedures

- (i) Diversion procedures and diversion decision-making
- (ii) Navigation and communication systems, including appropriate flight management devices in degraded modes
- (iii) Fuel management with degraded systems
- (iv) Initial and recurrent training which emphasises abnormal and emergency procedures to be followed in the event of foreseeable failures for each area of operation, including:
 - (A) procedures for single and multiple failures in flight affecting EDTO sector entry and diversion decisions; if standby sources of electrical power significantly degrade the cockpit instrumentation to the pilots, then training for approaches with the standby generator as the sole power source should be conducted during initial and recurrent training;
 - (B) operational restrictions associated with these system failures including any applicable MEL considerations.

(4) EDTO practical training

Practical training should consist of line flying under supervision (LIFUS).

During the introduction into service of a new EDTO type, or conversion of pilots not previously EDTO-qualified where EDTO operational approval is sought, a minimum of two EDTO sectors should be completed including an EDTO line check.

Alternatively, the practical training may consist of a line-oriented flight training (LOFT) exercise conducted in a flight simulator to demonstrate both normal and abnormal EDTO procedures.

In both cases, the practical training should cover at least the following:

- (i) Pre-flight briefing
- (ii) EDTO flight release
- (iii) Cockpit preparation
- (iv) En-route (normal)
 - (A) Entering EDTO sector
 - (B) En-route monitoring procedures
 - (C) FMS procedures (as applicable)
 - (D) Navigation and communication
- (v) En-route (non-normal)
 - (A) Contingency procedures

- (B) Selected non-normal conditions and checklists
- (C) Diversion decision-making
- (D) FMS procedures (as applicable)
- (E) En-route diversion

(vi) Post-flight procedures

- (b) The operator should ensure that flight crew members are not assigned to operate EDTO routes for which they have not been briefed.
- (c) The operator should define an initial and refresher training programme for operations personnel other than flight crew involved in EDTO (e.g. operational control personnel), covering the following items:
 - (1) EDTO regulations/operations approval
 - (2) Aeroplane performance/diversion procedures
 - (3) Area of operation
 - (4) Fuel requirements
 - (5) Dispatch considerations MEL, CDL, weather minima, and alternate aerodromes
 - (6) Documentation

Rationale

This new AMC is a direct transposition of the AMC 20-6B provisions on training.

AMC1 SPA.EDTO.115(a) Operating procedures
MINIMUM EQUIPMENT LIST

- (a) The operator's MEL should be developed/revised to address the equipment provisions for EDTO.
- (b) The operator's MEL should also consider the specificities of the EDTO area of operation:
 - (1) the operator's approved diversion time;
 - (2) the availability of EDTO ERA aerodromes and available facilities and equipment;
 - (3) the navigation and communication means; and
 - (4) the prevailing meteorological conditions.
- (c) All restrictions that are specific to EDTO should be clearly identified in the operator's MEL, such as restrictions related to:
 - (1) the operator's approved diversion time; this includes restrictions related to the number of items of equipment or systems required to be operative at dispatch for a flight with a given diversion time;

- (2) the capability of the time-limited systems; this includes restrictions related to the serviceability of components or equipment of the EDTO time-limited systems, which may reduce the time capability of the system when they are degraded or inoperative (e.g. the cargo fire suppression system);
 - (3) the applicable weather minima; this includes restrictions related to components or equipment necessary in the conduct of satellite-based or ground-based instrument approaches, which will affect the selection of EDTO ERA aerodromes.
- (d) In the specific case of EDTO operational approvals for two-engined aeroplanes, of up to 90 minutes, the MEL restrictions for 120-minute EDTO should be used unless there are specific restrictions for 90 minutes or less.

Rationale

This new AMC has been introduced to provide some specific criteria related to the MEL in the context of EDTOs. It is based on provisions from ICAO Doc 10085.

GM1 SPA.EDTO.115(a) Operating procedures

MINIMUM EQUIPMENT LIST

Systems and equipment that should be considered in the context of EDTO, include, but are not limited to, the following:

- (a) electrical;
- (b) hydraulic;
- (c) pneumatic;
- (d) flight instrumentation, including warning and caution systems;
- (e) fuel;
- (f) flight control;
- (g) ice protection;
- (h) engine start and ignition;
- (i) propulsion system instruments;
- (j) navigation and communications, including any route-specific long-range navigation and communication equipment;
- (k) auxiliary power unit;
- (l) air conditioning and pressurisation;
- (m) cargo fire suppression;
- (n) engine fire protection;
- (o) emergency equipment;

- (p) systems and equipment required for engine condition monitoring.

Rationale

This new GM is a direct transposition of the AMC 20-6B guidance on the equipment considered to have a fundamental influence on safety in the context of EDTO.

AMC1 SPA.EDTO.115(b) Operating procedures

FUEL SUPPLY

(a) General

To release an aeroplane for an EDTO flight, the operator should ensure that it carries sufficient fuel and oil to meet the applicable operational requirements and any additional fuel that may be determined in accordance with the EDTO critical fuel scenario.

(b) Operations manual

The operator should ensure that the operations manual contains sufficient data to support the critical fuel reserve and area of operations calculation.

(c) EDTO critical fuel reserve

The operator should determine the EDTO critical fuel reserve, which is the fuel necessary to fly to the most critical point (at normal cruise speed and altitude, taking into account the anticipated meteorological conditions for the flight) and execute a diversion to an EDTO ERA aerodrome under the conditions outlined in the critical fuel scenario described below.

The EDTO critical fuel reserve should be compared to the normal applicable operational requirements for the flight, which should be in all cases complied with. If it is determined by this comparison that the fuel to complete the EDTO critical fuel scenario exceeds the fuel that would be on board at the most critical point, as determined by applicable operational requirements, additional fuel should be included to the extent necessary to safely complete the EDTO critical fuel scenario. When considering the potential diversion distance flown, account should be taken of the anticipated routing and approach procedures, in particular any constraints caused by airspace restrictions or terrain.

(d) EDTO critical fuel scenario

The operator should ensure compliance with this scenario when calculating the EDTO critical fuel reserves necessary.

Note 1: If an APU is one of the required power sources, then its fuel consumption should be accounted for during the appropriate phases of flight.

Note 2: Additional fuel consumptions due to any MEL or CDL items should be accounted for during the appropriate phases of flight, when applicable.

Note 3: Advantage may be taken of drift down computed at the applicable speed

The aeroplane should carry sufficient fuel taking into account the forecast wind and weather to fly to an EDTO route alternate assuming the greater of the following scenarios:

(1) All-engine depressurisation

Rapid decompression at the most critical point followed by descent to 10 000 ft or a higher altitude if sufficient oxygen is provided in accordance with the applicable operational requirements.

(2) One-engine inoperative depressurisation

Rapid decompression and a simultaneous engine failure at the most critical point followed by descent to 10 000 ft or a higher altitude if sufficient oxygen is provided in accordance with the applicable operational requirements. For two-engined aeroplanes, the diversion should be flown at the approved OEI speed.

(3) Engine failure only (two-engined aeroplanes only)

Flight at the approved OEI speed assuming an engine failure at the most critical point followed by descent to the one-engine-inoperative cruise altitude.

The fuel computation should consider a 15-minute hold at 1 500 ft above field elevation upon reaching the alternate and then an instrument approach and landing.

An additional 5 % wind speed factor (i.e. an increment to headwind or a decrement to tailwind) on the actual forecast wind should be used to calculate fuel in the greater of (1), (2) or (3) above to account for any potential errors in wind forecasting. If an operator does not use the actual forecast wind based on a wind model acceptable to the CAA, an increment of fuel representing 5 % of the fuel required to fly to an EDTO route alternate assuming the greater of scenarios (1), (2) or (3) above, should be added as reserve fuel to allow for errors in wind data.

A wind aloft forecasting distributed worldwide by the World Area Forecast System (WAFS) is an example of a wind model acceptable to the CAA.

(e) Icing

The amount of fuel calculated in accordance with the EDTO critical fuel scenario should be corrected taking into account the greater of:

- (1) the effect of airframe icing during 10 % of the time during which icing is forecast, including ice accumulation on unprotected surfaces, and the fuel used by engine and wing anti-ice during this period;
- (2) fuel for engine anti-ice, and if appropriate wing anti-ice, for the entire time during which icing is forecast.

Note: Unless a reliable icing forecast is available, icing may be presumed to occur when the total air temperature (TAT) at the approved OEI speed is less than +10°C, or if the outside air temperature is between 0°C and -20°C with a relative humidity (RH) of 55 % or greater.

- (f) The operator should establish a programme to monitor aeroplane in-service deterioration in cruise fuel burn performance and include in the fuel supply calculations sufficient fuel to compensate for any such deterioration. If there is no data available for such a programme, the amount of fuel calculated in accordance with the EDTO critical fuel scenario should be increased by 5 % to account for deterioration in cruise fuel burn performance.

(g) Auxiliary power unit (APU)

If the APU is a required power source for the EDTO critical fuel diversion scenarios, the additional fuel consumption required to operate the APU should be included in the relevant diversion scenarios.

Rationale

This new AMC is directly transposed from the AMC 20-6B provisions on fuel supply.

AMC2 SPA.EDTO.115(b) Operating procedures**FLIGHT PLANNING AND DISPATCH****(a) Alternate aerodrome selection**

The operator should describe the process for the selection of EDTO ERA aerodromes in its operations manual.

(b) Information on other aerodromes

In addition to the selected EDTO ERA aerodromes, the operator should provide flight crew with information on adequate aerodromes on the route to be flown which are not forecast to meet the EDTO ERA aerodrome weather minima. Before commencing a flight, the flight crew should receive information relevant to be used when executing a diversion. Such information should cover aerodrome facilities and other appropriate planning data concerning those aerodromes.

(c) EDTO area of operations

The EDTO area of operations is established during the flight preparation process based on the designated EDTO ERA aerodromes and the maximum diversion distance corresponding to the operator's approved diversion time and speed.

For two-engined aeroplanes, credit for the drift down may be taken when establishing the EDTO area of operations.

The operator should identify, for each individual EDTO flight, the EDTO entry and exit points for all EDTO sectors and also the corresponding EDTO equal time points (ETPs).

(d) Operational flight plan

The type of operation (i.e. EDTO, including the diversion time used to establish the plan), the EDTO entry point(s), the EDTO exit point(s), and the EDTO ETP(s) should be listed on the operational flight plan.

(e) Dispatch**(1) Minimum equipment requirements pertaining to EDTO**

The flight crew should review technical logs and forms to determine the condition of equipment required for EDTO and ensure that maintenance action has been performed to correct defects to the required equipment.

(2) EDTO ERA aerodromes

The expected meteorological conditions at the selected EDTO ERA aerodrome should be assessed in accordance with the applicable EDTO ERA aerodrome dispatch minima.

(3) Communication and navigation facilities

To release an aeroplane for an EDTO flight, the operator should ensure that:

- (i) communication facilities are available to provide, under normal conditions of propagation at all planned altitudes of the intended flight and the diversion scenarios, reliable two-way voice and/or data link communications;
- (ii) visual and non-visual aids are available at the specified alternates for the anticipated types of approaches and operating minima.

(4) Communication equipment

For all routes where voice communication facilities are available, the communication equipment should include at least one voice-based system. Where voice communication facilities are not available and where voice communication is not possible or is of poor quality, communications using alternative systems should be ensured.

(5) Consideration of time-limited systems (TLS) capability

The operator should ensure at flight planning stage that any diversion to an EDTO ERA aerodrome will not exceed:

- (i) the time capability specified in the AFM (or other relevant aeroplane manufacturer documentation) minus 15 minutes for the aeroplane's cargo fire suppression system, considering a diversion at the all-engines-operating (AEO) speed;
- (ii) the time capability specified in the AFM for the aeroplane's most limiting TLS (other than cargo fire suppression), if any, minus 15 minutes. For two-engined aeroplanes the diversion should be flown at the approved OEI speed.

(f) Specific considerations for approvals beyond 180 minutes

- (1) Operators should minimise the diversion time along the preferred track. Increases in diversion time, for example by disregarding EDTO adequate aerodromes along the route, should only be planned in the interest of the overall safety of the operation.
- (2) In view of the long diversion time involved, the operator should conduct the verification that the time capabilities of the TLS would not be exceeded during any diversion to an EDTO ERA aerodrome as specified in point (e)(5) above considering for the given day the forecast conditions, such as prevailing winds, temperature and applicable diversion procedures.
- (3) The following systems are required to be operative for dispatch for EDTO flights with diversion times beyond 180 minutes:
 - (i) two reliable communication system(s), either voice-based or data link;

- (ii) the following additional equipment:
 - (a) fuel quantity indicating system (FQIS);
 - (b) APU (including electrical and pneumatic supply to its designed capability), if necessary to comply with EDTO requirements;
 - (c) automatic engine or propeller control system.
- (4) Operators should use any or all of the following forms of communications to ensure communications capability when operating EDTO beyond 180 minutes:
 - (i) HF,
 - (ii) Data link,
 - (iii) Satellite-based communications.

Rationale

This new AMC provides criteria for the flight planning and dispatch process. It is based mostly on the transposed related content of AMC 20-6B, adapted to consider the recently adopted new standard 4.7.2.3 of ICAO Annex 6.

GM1 SPA.EDTO.115(b) Operating procedures TIME-LIMITED SYSTEMS (TLS) CONSIDERATIONS

- (a) There are two kinds of TLS:
 - (1) the systems limited by their capacity, e.g. the cargo fire extinguishers, which per design cease to function once exhausted; and
 - (2) the systems for which time capability is determined by their endurance or reliability.
- (b) Diversion time to ERA aerodrome calculation

In the case of EDTO up to 180 minutes, a margin of 15 minutes (ISA, still air) is deemed to be sufficient to account for operational variances such as winds over the diversion. This is why the verification that the diversion times to ERAs do not exceed the capability of the TLS(s) may be performed considering ISA and still air conditions.

However, for EDTOs beyond 180 minutes, maximum diversion time, wind effects for these higher diversion times can be more significant and therefore the 15-minute margin may not be sufficient in all cases. This is the reason why the verification that the diversion times to ERAs need to be performed considering the actual forecast wind and temperature.

In both cases, the speed to be considered for the verification that the capability of the TLSs would not be exceeded, should be:

- (1) a selected AEO speed for the cargo fire suppression system;

- (2) For the TLS other than cargo fire suppression system, the approved OEI speed for two-engined aeroplanes and the selected AEO speed for aeroplanes with more than two engines..

Regarding the verification that the time capability of the cargo fire suppression system would not be exceeded, it is considered, based on the review of the rates of cargo fire occurrences and of the engine failures, that the probability of a simultaneous failure would be extremely improbable. This is the reason why the diversion time to EDTO ERA aerodromes should be calculated using the selected AEO speed.

- (c) Aeroplanes ETOPS certified after 2009 or EDTO certified
For these aeroplanes, the time capability of the cargo fire suppression and of the other most limiting TLSs, identified during the ETOPS/EDTO type design, and reliability approval of the aeroplane are listed in the AFM and/or the ETOPS/EDTO CMP document.

Consequently, the verification that the diversion times to ERAs do not exceed the relevant capability of both the cargo fire suppression system and of the TLSs other than the cargo fire suppression system with a 15-minute margin, is applicable and should be performed as detailed in point (b) above.

- (d) Aeroplanes certified under the initial ETOPS principles

When the ETOPS rules were first published in 1985, it was required to consider only the time capability of the cargo fire suppression system. Under the new ETOPS requirements introduced in 2009 and EDTO, the aircraft manufacturer should also identify the capability of the other most limiting EDTO significant system. The corresponding limitations are to be identified in the relevant aeroplane documentation (e.g. in the EDTO CMP document, as well as in the AFM).

Consequently, in the case of aeroplanes engaged in EDTO certified under the initial rules, the verification that the diversion times to ERAs do not exceed the capability of the TLSs other than cargo fire suppression system with a 15-minute margin, is not applicable.

Rationale

This new GM has been introduced to provide guidance regarding the consideration of time-limited systems. It addresses:

- (2) *the relationship between TLS capability and the approved diversion time; and*
(3) *the specific case of aeroplanes certified under the initial ETOPS rules and those certified after 2009.*

AMC1 SPA.EDTO.115(c) Operating procedures

PROCEDURES

- (a) In-flight replanning

An aeroplane, whether or not dispatched as an EDTO flight, may not re-route post dispatch without meeting the applicable requirements of CAT.OP.MPA.181 and the operator having ensured with the use of an established procedure that dispatch criteria have been met.

In this context, a re-route is any change to the route requiring a change to the ATS flight plan (e.g. new destination, change of flight status EDTO/non-EDTO, change of EDTO alternate).

The operator should have a system in place to facilitate such re-routes.

(b) Post-dispatch weather minima

Post dispatch and when no in-flight replanning has taken place, the weather conditions at the EDTO ERA aerodrome should be equal to or better than the normal landing minima for the available instrument approach.

(c) Delayed dispatch

If the dispatch of a flight is delayed by more than 1 hour, the operator should monitor the weather forecasts and airport status at the nominated EDTO ERA aerodromes to ensure that they stay within the specified planning minima requirements until dispatch.

(d) Diversion decision-making

The operator should establish procedures for flight crew, outlining the criteria that indicate when a diversion or change of routing is recommended whilst conducting an EDTO flight. For an EDTO flight by a two-engined aeroplane in the event of the shutdown of an engine, these procedures should include, flying to and landing at the nearest available aerodrome where a safe landing can be made.

Factors to be considered when deciding upon the appropriate course of action and suitability of an aerodrome for diversion may include but are not limited to:

- (1) Aircraft configuration/mass/systems status;
- (2) Wind and meteorological conditions en route at the diversion altitude;
- (3) Minimum altitudes en route to the diversion aerodrome;
- (4) Fuel required for the diversion;
- (5) Aerodrome condition, terrain, weather and wind;
- (6) Runways available and runway surface condition;
- (7) Approach aids and lighting;
- (8) RFFS capability at the diversion aerodrome;
- (9) Facilities for aircraft occupants — disembarkation & shelter;
- (10) Medical facilities;
- (11) Pilot's familiarity with the aerodrome;
- (12) Information about the aerodrome available to the flight crew.

Contingency procedures should not be interpreted in any way that prejudices the final authority and responsibility of the pilot-in-command for the safe operation of the aeroplane.

(e) Flight monitoring

During the flight, the operator should ensure that the flight crew remain informed of any relevant safety information that may affect the safety of the flight, including any significant changes in conditions at designated EDTO ERA aerodromes.

Prior to the EDTO entry point, the flight crew should evaluate the forecast weather, established aeroplane status, fuel remaining, and where possible field conditions and aerodrome services and facilities at designated EDTO ERA aerodromes. If any conditions are identified which could preclude safe approach and landing on a designated EDTO ERA aerodrome (such as forecast weather at an EDTO ERA aerodrome below the landing minima), then the flight crew should take

appropriate action, such as re-routing or selection of the nearest EDTO alternate aerodrome meeting the landing minima requirements, to remain within the operator's approved diversion time from an EDTO ERA aerodrome with forecast weather to be at or above landing minima.

The operator should develop appropriate en-route procedures for flight crews to track actual versus planned fuel burn and appropriate contingency procedures in the event that the fuel state of the aeroplane becomes unacceptable to complete the intended flight.

In addition, the operator should develop a minimum en-route fuel policy to be used by the flight crew as the basis to determine whether the fuel remaining on the aeroplane is sufficient to complete the flight.

Once the flight has entered the EDTO area of operation, if the forecast for any of the designated EDTO alternate aerodromes is revised to below the landing limits or the EDTO alternate aerodrome becomes inadequate, the EDTO flight may continue at the commander's discretion.

Rationale

This new AMC is a direct transposition of most of the AMC 20-6B provisions on the EDTO procedures to be defined by the operator. The note related to the RFFS category was considered unnecessary and has not been transposed.

GM1 SPA.EDTO.115(c) Operating procedures IN-FLIGHT FUEL MONITORING

As with any flight, it is important for the flight crew to monitor and maintain awareness of the fuel state of the aeroplane. This is potentially even more important for an EDTO flight, given the potential for a long diversion to the nearest EDTO alternate aerodromes.

The EDTO critical fuel calculation discussed in AMC1 SPA.EDTO.115(b) – Fuel Supply is intended to ensure that the planned fuel load is sufficient to support an en-route diversion from the most critical point in the event of an engine failure, a depressurisation, or both, with appropriate planning allowances. This does not preclude the importance of en-route fuel progress monitoring, which is complementary to the flight preparation process.

The EDTO critical fuel calculation is strictly a flight preparation consideration and does not apply once en route, as operational variances such as more adverse winds than forecast may result in actual fuel burns which differ from the assumptions used to determine the EDTO critical fuel in the operational flight plan.

It is therefore not necessary for the calculated EDTO critical fuel to be on board when passing the EDTO equal time points (ETPs), including the critical point, provided the operator's minimum en-route fuel policy is complied with.

Rationale

This new GM is a direct transposition of the AMC 20-6B provisions on fuel supply.

AMC1 SPA.EDTO.120 EDTO en-route alternate EDTO ERA

The operator should identify EDTO ERA aerodromes to which an aeroplane may proceed if a diversion becomes necessary while en-route, where the necessary services and facilities are available, where aircraft performance requirements can be met, and which are expected to be operational if required. Take-off and/or destination aerodromes may also be designated as EDTO ERA aerodromes.

The selected EDTO ERA aerodromes should be identified and listed in the flight planning documentation for all cases where the planned route to be flown contains an EDTO point.

To select an aerodrome as an EDTO ERA aerodrome, the following criteria should be met.

(a) The operator's general criteria for the determination of the adequacy of the aerodromes are met, and in particular, the criteria below.

(1) The landing distances required as specified in the AFM for the altitude of the aerodrome, for the runway expected to be used, taking into account wind conditions, runway surface conditions, and aeroplane handling characteristics, permit the aeroplane to be stopped within the landing distance available as declared by the aerodrome authorities and computed in accordance with the applicable operational requirements.

For aeroplanes equipped with fuel jettison systems, the possibility to dump fuel can be considered to reduce the expected landing mass provided that the operator can demonstrate that flight crews are properly trained and that diversion fuel requirements are still complied with.

(2) The aerodrome services and facilities are adequate to permit an instrument approach procedure to the runway expected to be used while complying with the applicable aerodrome operating minima.

(b) For the time window considered, the appropriate weather reports or forecasts, or any combination thereof, indicate that conditions will exist at or above the applicable EDTO planning minima. In addition, for the same period, the forecast crosswind component plus any gusts should be within the operating limits and within the operator's maximum crosswind limitations taking into account the runway condition (dry, wet or contaminated) plus any reduced visibility limits.

Conditional forecast elements need not be considered, except that a PROB 40 or TEMPO condition below the lowest applicable operating minima should be taken into account.

Note: The time window is the period during which a designated EDTO ERA aerodrome should be assessed for EDTO dispatch purposes to have the necessary conditions to allow a safe approach and landing in the event of an en-route EDTO diversion. The applicable time window should consider the earliest to latest expected arrival times for each EDTO ERA aerodrome based on the planned departure time. The time window for a given EDTO ERA aerodrome is typically determined based on a diversion from the first and last EDTO ETPs for this alternate. As specified in AMC3 CAT.OP.MPA.182, the time window should include

an additional margin of 1 hour after the latest arrival time. The earliest to latest estimated arrival times may consider different diversion flight profiles, for example, high-speed versus low-speed cruise, or may be standardised on a specific EDTO diversion flight profile, such as an engine failure or decompression, depending on operational flight planning system implementation. Additional guidance for the determination of the time windows may be found in ICAO Doc 10085.

Rationale

This new AMC, related to the selection of EDTO ERA, is based on content transposed from AMC 20-6B with some additional considerations based on ICAO Doc 10085.

GM2 SPA.EDTO.120(b)(1) EDTO en-route alternate RFFS LEVEL AT EDTO ERA AERODROME

In accordance with AMC1 CAT.OP.MPA.107 and as part of its management system, the operator should assess the level of RFFS protection available at the aerodrome intended to be specified in the operational flight plan to ensure that an acceptable level of protection is available for the intended operation.

However, in the specific case of EDTO ERA aerodrome, the operator is recommended to select aerodromes with a published RFFS category of at least ICAO category 4, available at 30-minute notice.

Rationale

This new GM has been introduced to provide guidance related to the consideration of the RFFS level at EDTO ERA. It relies on the already applicable considerations contained in AMC1 CAT.OP.MPA.107, with some additional recommendations.

GM3 SPA.EDTO.120(b)(2) EDTO en-route alternate EDTO ERA AERODROME DISPATCH MINIMA

- (a) In principle the operator's EDTO ERA aerodrome dispatch minima should be at least as conservative as the dispatch minima used for other types of operations. In particular, if an operator uses several variations to its basic fuel scheme related to dispatch minima for different operations, it is expected that the most conservative dispatch minima should be used for EDTO.
- (b) The method for determining the aerodrome operating minima for the EDTO ERA aerodrome should be contained in the operations manual as required by CAT.OP.MPA.110.

Rationale

This new GM has been introduced to provide clarifications related to the use, in the context of EDTO, of basic fuel schemes with variations or individual fuel schemes addressing operating minima. Furthermore, it clarifies that in the context of EDTO, the flight planning minima should be part of the overall method for determining the aerodrome operating minima.

AMC 20-6B

AMC 20-6B Extended Range Operation with Two-Engine Aeroplanes ETOPS Certification ~~and Operation~~

- (i) Chapter III 'Operational approval considerations' is proposed to be deleted in its entirety.
- (ii) Appendices 3, 4, 5, 6 and 7 are proposed to be deleted.
- (iii) Appendix 8 is renumbered as Appendix 3.

Rationale

The content of AMC 20-6B related to the operations domain is proposed to be deleted and transferred to AMC to the Air OPS Regulation.