



PURSUANT to Sections 28, 29, and 30 of the Civil Aviation Act 1990

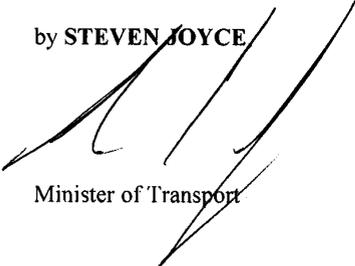
I, STEVEN JOYCE, Minister of Transport,

HEREBY MAKE the following ordinary rules.

SIGNED AT Wellington

This *20th* day of *September* 2010

by **STEVEN JOYCE**


Minister of Transport

Civil Aviation Rules

Part 121, Amendment 21

Air Operations - Large Aeroplanes

EDTO - Docket 0/CAR/1354

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Rule objective

The objective of amendment 21 to Part 121 is to amend and update the rule requirements relating to the operation of twin-engine aeroplanes on extended range operations (ETOPS). In accordance with proposed ICAO standards, the terminology is changed to extended diversion time operations (EDTO) and the standards that have previously been applied by means of Advisory Circular AC121-1 have been updated and incorporated into the rule. In accordance with international standards, the requirement for an air operator to be authorised for EDTO before operating an aeroplane on extended diversion time operations has been expanded to include the operation of aeroplanes with more than 2 turbine engines but with an 8 year transition period for the 3 and 4 engine aeroplanes.

Other rules that are associated with amendment 21 to Part 121 are:

- Amendment 43 to Part 1
- Amendment 6 to Part 12
- Amendment 12 to Part 119
- Amendment 10 to Part 145

Extent of consultation

In 2002 the CAA commenced a project to review the ETOPS requirements for aeroplanes operating under Parts 121 (large aeroplanes), 125 (medium aeroplanes), and 135 (small aeroplanes) and to incorporate the standards contained in AC121-1 into the rules. Shortly thereafter the Federal Aviation Administration (FAA) of the United States signalled its intention to review the FAR requirements for ETOPS and so the CAA project was held over until the FAA intentions became clearer.

In 2005 the Civil Aviation Safety Authority of Australia (CASA) decided to review the Australian requirements for ETOPS and so a joint working group was established between the New Zealand CAA and CASA to develop common standards where possible for EDTO. Representatives from the major airlines in both Australia and New Zealand were also included in the working group.

A Notice of Proposed Rulemaking, NPRM 08/01, containing the proposed changes to Part 121 and the other associated rule parts was issued for public consultation under Docket 0/CAR/1354 on 17 January 2008.

The publication of this NPRM was notified in the Gazette on 17 January 2008 and advertised in the daily newspapers in the five main provincial centres on 19 January 2008. The NPRM was published on the CAA web site and mailed to identified stakeholders including representative organisations who were considered likely to have an interest in the proposal.

A period of 43 days was allowed for comment on the proposed rule.

Summary of submissions

Six written submissions were received on the NPRM. These submissions and comments have been considered and as a result some minor amendments have been made to the proposed rules. Following further CAA review the definitions for *adequate aerodrome* and *EDTO alternate aerodrome* have been significantly changed to more closely align the rules for EDTO with similar rules in Australia and the USA. These changes have not changed the overall intent of the EDTO rules. Transition provisions have also been included in the proposed rules for existing operators who are authorised for ETOPS and for the existing aeroplanes with more than 2 turbine engines that do not have an EDTO certification status. In addition, for consistency with the rule system concept that all definitions should be in Part 1 unless there is a specific meaning for a particular Part, all the definitions that were proposed for Part 121 have been moved into Part 1.

Additional consultation

During the original development of the EDTO rules it was proposed to extend the threshold time for operating a twin turbine powered aeroplane away from an adequate aerodrome from 60 minutes flying time with one engine inoperative to 90 minutes. This 90 minute threshold time was developed in conjunction with the Australian Civil Aviation Safety Authority (CASA) to enable the older non-ETOPS approved aeroplanes to be operated on routes across the Great Australian Bight.

However in August 2009 it became apparent that under the proposed 90 minute threshold time an air operator could theoretically plan an oceanic route or a long trans-continental route as a non-EDTO and would not need to meet the additional dispatch requirements for EDTO regarding en-route alternate aerodrome meteorological conditions and services and facilities, and the additional fuel requirements for EDTO.

Following further consultation with CASA, non-supportive comments from the aircraft manufacturers, and in accordance with ICAO recommendations, the CAA decided that the EDTO threshold time should be retained at 60 minutes flying time, with one engine inoperative, from an adequate aerodrome.

A Notice of Proposed Rule Making Supplement, NPRM 08-01 Supplement, containing the proposed changes to Parts 1 and 121 to change the requirements back to a 60 minute EDTO threshold time plus some changes to the maintenance requirements in Part 121 for some older aeroplanes, and a change to Part 145 to clarify maintenance procedures for EDTO aeroplanes was issued for public consultation under Docket 0/CAR/1354 on 4 February 2010.

The publication of this NPRM Supplement was notified in the Gazette on 4 February 2010 and advertised in the daily newspapers in the five main provincial centres on 5 February 2010. The NPRM Supplement was published on the CAA web site and mailed to the airline operators who were likely to have an interest in the proposal.

A period of 25 days was allowed for comment on the proposed changes to the rule.

Summary of additional submissions

Six written submissions were received on the NPRM Supplement. These submissions and comments have been considered and as a result some minor amendments have been made to the proposed rules including a change to the maintenance requirements which deletes the need for a special provision for older aeroplanes. However one submitter wanted assurance that continued operations under an existing 75 minute ETOPS approval for an aeroplane that is not type design certificated for extended range operations would be allowed under the new EDTO rules. As the rule amendments are intended to not have any adverse affect on

existing authorised ETOPS, an amendment was required to rule 121.955 to allow the Director to authorise EDTO for such non-certified aeroplanes but only up to a maximum diversion time of 75 minutes.

The rules as amended were then referred to the Minister of Transport for signing.

Examination of submissions

Submissions may be examined by application to the Docket Clerk at the Civil Aviation Authority between 8:30 am and 4:30 pm on weekdays, except statutory holidays.

Insertion of Amendments

The amendments to the rules in this Part are reflected by the revocation and replacement of existing rules and the insertion of new rules.

Effective date of rule

Amendment 21 to Part 121 comes into force on 1 November 2010.

Availability of rules

Civil Aviation Rules are available from–

CAA web site: <http://www.caa.govt.nz/>

Freephone: 0800 GET RULES (0800 438 785)

Part 121 Amendments

Subpart C — Operating Limitations and Weather Requirements

Rule 121.157 is revoked and replaced by the following new rule:

121.157 Meteorological conditions – IFR flight

(a) A pilot-in-command of an aeroplane performing an air operation must not commence an operation under IFR unless current meteorological reports, or a combination of current meteorological reports and forecasts, indicate that conditions will—

- (1) at the estimated time of arrival at the applicable destination aerodrome, be at or above the minima published in the applicable AIP for the instrument procedure likely to be used at that aerodrome; or
- (2) at the estimated time of use, at—
 - (i) one alternate aerodrome, meet the ceiling and visibility that are required by rule 91.405(a)(2); or
 - (ii) two alternate aerodromes, meet the ceiling and visibility that are required by rule 91.405(b).

(b) A pilot-in-command of an aeroplane must not commence an air operation under IFR unless at least one alternate aerodrome is available, that meets the ceiling and visibility that are required by rule 91.405(b), if—

- (1) the departure or destination aerodrome for the operation is outside New Zealand; and
- (2) the destination aerodrome has less than two separate runways suitable for use by the aeroplane being used.

Rule 121.165 is revoked and replaced by the following new rule:

121.165 Route distance limitations

(a) A holder of an air operator certificate must not operate a piston engine aeroplane on an air operation on a route that requires the aeroplane to be more than 60 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome.

(b) A holder of an air operator certificate must not operate an aeroplane with 2 turbine powered engines on an air operation on a route that requires the aeroplane to be more than 60 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome unless—

- (1) except as provided in rule 121.955(b), the aeroplane is certificated to type design specifications for operating more than 60 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome; and
- (2) the certificate holder is authorised in accordance with Subpart N to conduct EDTO; and
- (3) the aeroplane is operated in accordance with applicable EDTO requirements prescribed in this Part.

(c) Subject to paragraph (d), a holder of an air operator certificate must not operate an aeroplane with more than 2 turbine powered engines on an air operation on a route that requires the aeroplane to be more than 180 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome unless the certificate holder is authorised in accordance with Subpart N to conduct EDTO and the aeroplane is operated in accordance with applicable EDTO requirements prescribed in this Part.

(d) Paragraph (c) does not apply to a holder of an air operator certificate until 1 November 2018.

Rule 121.167 is revoked and the rule number is reserved:

121.167 Reserved

The following new rule 121.171 is inserted after rule 121.169:

121.171 Requirement for Air Operations in a Polar Area

(a) Subject to paragraph (b), a holder of an air operator certificate must not conduct an air operation within a polar area unless authorised by the Director.

(b) Paragraph (a) does not apply to a holder of an air operator certificate until 1 November 2011.

The following new rule 121.173 is inserted after new rule 121.171:

121.173 Application for Air Operations in a Polar Area

A holder of an air operator certificate applying for authorisation to conduct an air operation in a polar area must provide the Director with the following information at least 90 days before the intended air operation, or a lesser period acceptable to the Director:

- (1) details of the aerodromes in the polar area that meet the criteria for an EDTO alternate aerodrome and any special operational requirement that must be met at the time of a diversion to the aerodrome; and
- (2) a recovery plan at any aerodrome nominated under paragraph (1) as an alternate; and
- (3) a fuel freeze strategy and procedures for monitoring fuel freezing; and
- (4) a plan for ensuring that the communication capability required by rule 121.957(b)(2)(ii) is met during an air operation in a polar area; and
- (5) a training plan for an air operation in a polar area; and
- (6) a procedure for mitigating exposure of crew members to radiation during periods of solar flare activity; and

- (7) procedures for ensuring that at least 2 cold weather anti-exposure suits to protect crew members during outside activity at an aerodrome during severe climatic conditions are carried in any aeroplane operating in a polar area unless the Director determines that, due to seasonal weather conditions, anti-exposure suits are not required.

The following new rule 121.175 is inserted after new rule 121.173:

121.175 Authorisation for Air Operations in a Polar Area

The Director may amend the operations specifications required by rule 119.15 to authorise a holder of an air operator certificate to conduct an air operation in a polar area if the Director is satisfied that the details of the aerodromes and the information and procedures provided by the certificate holder under rule 121.173 are adequate for assuring the safety of the operation.

Subpart G — Maintenance

Rule 121.407 Reserved is revoked and replaced by the following new rule:

121.407 Maintenance elements for EDTO

- (a) Subject to paragraphs (b), (c), (d), and (e), a holder of an air operator certificate who is authorised to operate an aeroplane with 2 turbine powered engines on an EDTO must ensure that the maintenance programme required by rule 119.63 includes, for every aeroplane authorised for use on an EDTO—
 - (1) the inspection and maintenance requirements specified in the CMP or type design document for the airframe and engine combination; and
 - (2) an EDTO pre-departure service check that must be completed immediately before the aeroplane is dispatched on an EDTO to—
 - (i) verify the serviceable status of the aeroplane including every EDTO significant system; and

- (ii) verify that oil levels for each engine, and APU if an APU is required for an EDTO, are within the acceptable limits; and
 - (3) a schedule of maintenance activities that are required to be performed on an EDTO significant system on a scheduled basis; and
 - (4) procedures for performing maintenance on an EDTO significant system; and
 - (5) procedures for performing multiple identical system maintenance; and
 - (6) an engine condition monitoring programme; and
 - (7) an engine oil consumption monitoring programme for each engine, and APU if an APU is required for an EDTO, that includes an alert procedure if any individual uplift of oil for an engine or APU exceeds the manufacturer's recommendations; and
 - (8) if APU in-flight start capability is required for an EDTO, a cold soak in-flight APU start and run reliability programme; and
 - (9) an EDTO significant system list; and
 - (10) a parts control programme for ensuring—
 - (i) that the aeroplane continues to conform with the type certification standard; and
 - (ii) the proper identification of parts to maintain the airframe/engine configuration for the authorised EDTO.
- (b) The schedule of maintenance activities required by paragraph (a)(3) for the maintenance of EDTO significant systems must not schedule any multiple identical system maintenance to be performed on an aeroplane during any period of scheduled maintenance except where multiple identical system maintenance—

- (1) cannot be avoided; or
 - (2) is required for the performance of an EDTO pre-departure service check required by paragraph (a)(2).
- (c) The procedures required by paragraph (a)(4) for performing maintenance on an EDTO significant system must include—
- (1) a means for verifying that the aeroplane is serviceable for an EDTO after the performance of maintenance on an EDTO significant system; and
 - (2) if the requirements of paragraph (1) cannot be met with ground based test procedures, an EDTO verification flight.
- (d) If any maintenance performed on an aeroplane that is authorised for use on an EDTO requires the disturbance of a multiple identical system, that maintenance must be performed in accordance with the multiple identical system maintenance procedures required by paragraph (a)(5).
- (e) The procedures required by paragraph (a)(5) for multiple identical system maintenance must include requirements for—
- (1) a separate, appropriately authorised person to perform the maintenance action on each of the identical EDTO significant systems; and
 - (2) another appropriately authorised person to perform an independent physical check of the maintenance performed by the person required by paragraph (e)(1); and
 - (3) on completion of the maintenance,—
 - (i) testing of the systems in accordance with the maintenance manual and any applicable modification instructions; and
 - (ii) ground testing to verify that the aeroplane is serviceable for EDTO; and

- (iii) an EDTO verification flight to be completed if ground testing under paragraph (ii) cannot positively verify that the aeroplane is serviceable for EDTO.

The following new rule 121.417 is inserted after rule 121.415:

121.417 EDTO Quarterly report

A holder of an air operator certificate who is authorised to conduct an EDTO must, before the 21st day of the following quarter, provide a summary report to the Director of the following for the preceding 3 months of EDTO:

- (1) every operation and utilisation of an aeroplane authorised for use on an EDTO:
- (2) every engine operation and utilisation on an aeroplane conducting an EDTO:
- (3) every interruption, delay or cancellation of an EDTO due to a technical reason:
- (4) every unscheduled termination or diversion from an EDTO route caused by an actual or suspected technical malfunction:
- (5) IFSD rates and events:
- (6) every event where there is an inability to control the engine or obtain the desired power:
- (7) every event where there is a precautionary thrust reduction (except for normal troubleshooting as allowed in the flight manual):
- (8) every event where there is a degraded propulsion in-flight start capability:
- (9) every incident that is associated with an aeroplane authorised for use on an EDTO and is required by rule 12.55(e) to be notified to the Authority within 72 hours of the incident occurring:

- (10) any system defect summary report where the EDTO significant system defect rate exceeds the alert level established by the certificate holder:
- (11) every usage of a minimum equipment list for EDTO significant systems:
- (12) every unscheduled removal of an EDTO significant system component from an aeroplane.

The following new Subpart N is inserted after Subpart M:

Subpart N — EDTO Authorisation and Requirements

121.951 General

Except as provided in rule 121.165(d), a holder of an air operator certificate must not operate an aeroplane on an EDTO unless—

- (1) the certificate holder is authorised in accordance with this Subpart to conduct an EDTO; and
- (2) the certificate holder's operations specifications required by rule 119.15—
 - (i) permits the intended EDTO; and
 - (ii) authorises the use of the airframe and engine combination for the EDTO; and
- (3) procedures for meeting the requirements of this Subpart for EDTO are detailed in the certificate holder's exposition required by rule 119.81.

121.953 Requirements for EDTO up to 180 minutes maximum diversion time — twin-engine aeroplanes

(a) A holder of an air operator certificate may apply in writing to the Director for an EDTO authorisation to operate an aeroplane with 2 turbine powered engines on an EDTO up to 180 minutes maximum diversion time.

(b) A holder of an air operator certificate applying for an EDTO authorisation under paragraph (a) must provide the Director with the following information at least 90 days, or a lesser period acceptable to the Director, before the proposed commencement of the EDTO:

- (1) details of the particular airframe and engine combination of each aeroplane to be operated under the EDTO authorisation:
- (2) details, and evidence of the type design approval and the operating limitation of the airframe and engine combination, proposed under paragraph (1), for operating the aeroplane on an EDTO of more than 60 minutes flight time from an adequate aerodrome:
- (3) details of the CMP for the airframe and engine combination proposed under paragraph (1):
- (4) the maximum diversion time proposed for the EDTO which must be not more than 180 minutes:
- (5) the minimum altitudes applicable to the routes to be flown on the EDTO including any diversionary routes:
- (6) details of the fuel policy required to meet the requirements of rule 121.975:
- (7) details of the maintenance programme required to meet the requirements of rule 121.407:
- (8) details of the training programme required under Subpart I and applicable to the EDTO and the maximum diversion time proposed under paragraph (4):
- (9) details of the MEL relevant to the maximum diversion time proposed under paragraph (4):
- (10) evidence that the aeroplane conforms to the fire detection and suppression limitations for cargo and baggage compartments prescribed in paragraph D.5(a)(2) of Appendix D to Part 26, or an equivalent standard acceptable to the Director:

- (11) evidence that time limited system capability for the aeroplane plus a 15 minute allowance for holding, approach, and landing is not less than the maximum diversion time proposed under paragraph (4):
- (12) details of every EDTO alternate aerodrome that is required for the routes to be flown and the maximum diversion time proposed under paragraph (4):
- (13) details—
 - (i) to confirm that every EDTO alternate aerodrome that is detailed under paragraph (12) has facilities to ensure the safety of a full complement of passengers and crew members; or
 - (ii) of the recovery plan for diversion to an EDTO alternate aerodrome that ensures the safety of a full complement of passengers and crew members at the aerodrome or in the immediate area until they are transported to another place that can provide for their safety.

121.955 EDTO authorisation up to 180 minutes maximum diversion time — twin-engine aeroplanes

(a) The Director may amend the operations specifications required by rule 119.15 to authorise a holder of an air operator certificate to conduct air operations using an aeroplane with 2 turbine powered engines on EDTO up to 180 minutes maximum diversion time if the Director is satisfied that—

- (1) the airframe and engine combination is approved by the State of Design to operate to the maximum diversion time requested by the certificate holder; and
- (2) every applicable requirement of this Part is met.

(b) In spite of paragraph (a)(1), the Director may amend the operations specifications under paragraph (a) to authorise a holder of an air operator certificate to use an aeroplane on an EDTO to not more than 75 minutes maximum diversion time if the aeroplane has 2 turbojet or

turbofan powered engines and the Director considers that the proposed airframe/engine combination, although not approved by the State of Design to operate more than 60 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome, is suitable for the intended EDTO.

121.957 Requirements for EDTO up to 240 minutes maximum diversion time — twin-engine aeroplanes

(a) A holder of an air operator certificate who is authorised under rule 121.955 to operate an aeroplane with 2 turbine powered engines on an EDTO up to 180 minutes maximum diversion time may apply in writing to the Director for an EDTO authorisation to operate an aeroplane with 2 turbine powered engines on an EDTO up to 240 minutes maximum diversion time.

(b) A holder of an air operator certificate applying for an EDTO authorisation under paragraph (a) must provide the Director with—

- (1) the information required by rule 121.953(b) but applicable to the maximum diversion time proposed for EDTO which may not be more than 240 minutes; and
- (2) evidence that the aeroplane is equipped with a communications system that is—
 - (i) additional to the communications equipment required by rules 91.519 and 121.353; and
 - (ii) capable of providing direct communication of landline voice quality between the flight crew members and an appropriate ATS unit, and the flight crew members and the air operator.

121.959 EDTO authorisation up to 240 minutes maximum diversion time — twin-engine aeroplanes

The Director may amend the operations specifications required by rule 119.15 to authorise a holder of an air operator certificate to conduct air operations using an aeroplane with 2 turbine powered engines on EDTO up to 240 minutes maximum diversion time if the Director is satisfied that—

- (1) the certificate holder has a demonstrated capability conducting EDTOs under a 180 minute EDTO authorisation issued under rule 121.955; and
- (2) the airframe and engine combination of the aeroplane to be used for the EDTO is approved by the State of Design to operate to the maximum diversion time requested by the certificate holder; and
- (3) the requirements of rule 121.957(b) are met.

121.961 Requirements for EDTO more than 240 minutes maximum diversion time — twin-engine aeroplanes

(a) A holder of an air operator certificate may apply in writing to the Director for an EDTO authorisation to operate an aeroplane with 2 turbine powered engines on an EDTO more than 240 minutes maximum diversion time if, immediately before applying, the certificate holder has been—

- (1) conducting EDTO in accordance with an EDTO authorisation issued by the Director under rule 121.955 or 121.959 for at least 24 consecutive months; and
- (2) conducting EDTO of more than 180 minutes with the aeroplane airframe/engine combination to be used in accordance with an EDTO authorisation issued by the Director under rule 121.959 for at least 12 consecutive months.

(b) A holder of an air operator certificate applying for an EDTO authorisation under paragraph (a) must provide the Director with—

- (1) the information required by rule 121.953(b) but applicable to the maximum diversion time proposed for EDTO; and
- (2) evidence that the aeroplane is equipped with the communications system required by rule 121.957(b)(2).

121.963 EDTO authorisation more than 240 minutes maximum diversion time — twin-engine aeroplanes

The Director may amend the operations specifications required by rule 119.15 to authorise a holder of an air operator certificate to conduct air operations using an aeroplane with 2 turbine powered engines on EDTO more than 240 minutes maximum diversion time if the Director is satisfied that—

- (1) the certificate holder has a demonstrated capability conducting EDTOs as required by rule 121.961(a); and
- (2) the airframe and engine combination of the aeroplane to be used for the EDTO is approved by the State of Design to operate to the maximum diversion time requested by the certificate holder; and
- (3) the requirements of rule 121.961(b) are met.

121.965 EDTO requirements — aeroplanes with more than 2 engines

(a) A holder of an air operator certificate may apply in writing to the Director for an EDTO authorisation to operate an aeroplane with more than 2 turbine powered engines on a route that requires the aeroplane to be more than 180 minutes flight time (calculated at a one-engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome.

(b) Subject to rule 121.967(b), a holder of an air operator certificate applying for an EDTO authorisation under paragraph (a) must provide the Director with—

- (1) the information required by rule 121.953(b) but applicable to the airframe and engine combination of the aeroplane to be used for the EDTO and to the maximum diversion time proposed; and
- (2) evidence that the aeroplane is equipped with the communications system required by rule 121.957(b)(2).

121.967 EDTO authorisation — aeroplanes with more than 2 engines

(a) Subject to paragraph (b), the Director may amend the operations specifications required by rule 119.15 to authorise a holder of an air operator certificate to conduct air operations using an aeroplane with more than 2 turbine powered engines on EDTO more than 180 minutes maximum diversion time if the Director is satisfied that:

- (1) the requirements of rule 121.965(b) are met; and
- (2) the airframe and engine combination of the aeroplane to be used for the EDTO is approved by the State of Design to operate to the maximum diversion time requested by the certificate holder.

(b) The requirements in rule 121.953(b)(3) regarding CMP details of the airframe and engine combination, and in paragraph (a)(2) regarding EDTO approval by the State of Design for the airframe and engine combination do not apply to an aeroplane with more than 2 turbine powered engines that was manufactured before 1 November 2018 and is used for EDTO more than 180 minutes maximum diversion time if the holder of the air operator certificate provides the Director with evidence that the airframe and engine combination of the aeroplane is suitable for the aeroplane to operate on EDTO to the maximum diversion time requested by the certificate holder.

121.969 EDTO dispatch requirements — general

(a) A holder of an air operator certificate who is authorised in accordance with this Subpart to conduct EDTO must not allow an aeroplane to be dispatched on an EDTO unless—

- (1) the communications systems required by rules 91.519 and 121.353 are operable; and
- (2) subject to paragraph (b), every aerodrome that is required for the operation, including take-off and take-off alternate, destination and destination alternate, and en-route EDTO alternate aerodromes, is listed in the dispatch release provided to the pilot-in-command; and

- (3) for EDTO up to and including 180 minutes maximum diversion time, the flight time (at a one engine inoperative cruise speed in still air and ISA conditions) to the nearest en-route EDTO alternate aerodrome listed in the dispatch release does not exceed the time specified in the aeroplane flight manual for the capability of the most critical time limited system (including the most limiting fire suppression time for the cargo and baggage compartments) minus 15 minutes.
- (b) Except as provided in paragraph (c), an aerodrome may not be listed in the dispatch release under paragraph (a)(2) as an en-route EDTO alternate aerodrome unless—
- (1) the aerodrome is an EDTO alternate aerodrome and is listed in the certificate holder's operations specifications as required by rule 119.15(d)(3); and
 - (2) at least 1 suitable instrument approach procedure, published in the AIP of the State concerned, will be available at the aerodrome during the period from the earliest possible time of landing to the latest possible time of landing at the aerodrome; and
 - (3) the latest available meteorological forecast for the aerodrome indicates that, during the period from the earliest possible time of landing to the latest possible time of landing at the aerodrome,—
 - (i) the meteorological conditions at the aerodrome will be at or above the relevant aerodrome planning minima for an en-route EDTO alternate aerodrome prescribed in rule 121.977; and
 - (ii) the crosswind component, including gusts, for the landing runway expected to be used is not more than the maximum permitted crosswind in the aeroplane flight manual.
- (c) An aerodrome may be listed in a dispatch release as an en-route EDTO alternate aerodrome and the aeroplane dispatched on an EDTO if

the meteorological forecast required by paragraph (b)(3) is not available at the time of dispatch but the pilot-in-command must not proceed beyond the point of sole reliance on the aerodrome unless the pilot-in-command receives a valid meteorological forecast for the aerodrome prior to reaching that point of sole reliance and the requirements of paragraph (b)(3) are met.

(d) For the purpose of paragraph (b)(3), forecast probabilities of less than 40% may be disregarded, but TEMPO conditions, when forecasted, must be taken into account when calculating fuel requirements.

121.971 EDTO dispatch — additional requirements for EDTO more than 180 minutes maximum diversion time

A holder of an air operator certificate who is authorised in accordance with this Subpart to conduct an EDTO must not allow an aeroplane to be dispatched on an EDTO that requires the aeroplane to be more than 180 minutes flight time from an en-route EDTO alternate aerodrome listed in the dispatch release unless:

- (1) the requirements of rule 121.969 are complied with; and
- (2) the following systems on the aeroplane are operational:
 - (i) fuel quantity indicating systems:
 - (ii) the APU, including the electrical and pneumatic supplies operating at the APU's designed capability, if an operational APU is required for the aeroplane to be approved for EDTO:
 - (iii) auto throttle/auto thrust systems:
 - (iv) the communications system required by rule 121.957(b)(2); and
- (3) the aeroplane has a one-engine-inoperative auto-land capability if flight planning is predicated on that capability; and
- (4) the flight time (at the all engines operating cruise speed, correcting for wind and temperature) to the nearest en-route

EDTO alternate aerodrome listed in the dispatch release does not exceed the time specified in the aeroplane flight manual for the most limiting capability of the cargo and baggage compartment fire suppression system minus 15 minutes at any stage of the flight; and

- (5) the flight time (at a one engine inoperative cruise speed, correcting for wind and temperature) to the nearest en-route EDTO alternate aerodrome listed in the dispatch release does not exceed the time specified in the aeroplane flight manual for the capability of the most critical time limited system (not including cargo and baggage compartment fire suppression systems) minus 15 minutes.

121.973 EDTO en-route

(a) A holder of an air operator certificate who is authorised in accordance with this Subpart to conduct an EDTO must ensure that the pilot-in-command of an aeroplane conducting an EDTO under the authority of the certificate is notified of any significant change in the conditions at any en-route EDTO alternate aerodrome listed in the dispatch release for the flight—

- (1) before the aeroplane proceeds beyond the EDTO entry point; and
- (2) after the aeroplane has proceeded beyond the EDTO entry point.

(b) If the pilot-in-command of an aeroplane performing an EDTO is notified of a significant change in the conditions at an en-route EDTO alternate aerodrome listed in the dispatch release before the aeroplane proceeds beyond the EDTO entry point, the pilot-in-command must ensure that—

- (1) the change in the conditions at the aerodrome are evaluated; and
- (2) if any change in the conditions at the aerodrome may preclude a safe approach and landing at the aerodrome during the possible period of use referred to in paragraph (c)(1), an alternative and suitable en-route EDTO alternate

aerodrome is selected where a safe approach and landing can be made.

(c) The pilot-in-command of an aeroplane performing an EDTO must not proceed beyond the EDTO entry point unless, for each en-route EDTO alternate aerodrome listed in the dispatch release for the flight or selected under paragraph (b)(2),—

(1) the meteorological forecast for the aerodrome indicates that the meteorological conditions will be at or above the published aerodrome landing minima for the expected approach during the period of possible use; and

(2) the aerodrome qualifies as an en-route EDTO alternate aerodrome.

(d) The pilot-in-command of an aeroplane performing an EDTO must ensure that the aeroplane complies with the in-flight operational requirements of the CMP standards for an EDTO.

(e) If the pilot-in-command of an aeroplane performing an EDTO is advised of a significant change in the conditions at an en-route EDTO alternate aerodrome listed in the dispatch release after the aeroplane has proceeded beyond the EDTO entry point, and the change in conditions makes the aerodrome no longer usable as an en-route EDTO alternate aerodrome, the pilot-in-command may only continue the flight if the pilot-in-command is satisfied that doing so would be safer than an alternative course of action.

(f) For the purpose of paragraphs (a), (b) and (e), a significant change in the conditions at an en-route EDTO alternate aerodrome includes:

(i) a change in the meteorological aerodrome forecast for the aerodrome that indicates that the weather conditions at the time of expected use will be below the landing minima for the aerodrome:

(ii) a change in the condition of the aerodrome or services at the aerodrome that makes the aerodrome unsuitable as an EDTO alternate aerodrome.

121.975 EDTO fuel requirements

(a) A holder of an air operator certificate who is authorised in accordance with this Subpart to conduct an EDTO must not allow an aeroplane to be dispatched on an EDTO unless, in addition to the requirements of the certificate holder's fuel policy required by rule 121.75, the following requirements are met:

- (1) the aeroplane must carry the greater of the following—
 - (i) sufficient fuel to fly to an en-route EDTO alternate aerodrome listed in the dispatch release assuming a rapid decompression at the most critical point followed by a descent to a safe altitude in compliance with rule 91.423, and rule 91.209 relating to the use of oxygen equipment, or
 - (ii) sufficient fuel to fly to an en-route EDTO alternate aerodrome listed in the dispatch release at the approved one engine inoperative cruise speed assuming a rapid decompression and a simultaneous engine failure at the most critical point followed by a descent to a safe altitude in compliance with rule 91.423 and the oxygen requirements of rule 91.209; or
 - (iii) sufficient fuel to fly to an en-route EDTO alternate aerodrome listed in the dispatch release at the approved one engine inoperative cruise speed assuming an engine failure at the most critical point followed by a descent to the one engine inoperative cruise altitude:
- (2) the aeroplane, upon reaching the en-route EDTO alternate aerodrome must have sufficient fuel to hold for 15 minutes at 1,500 feet above the aerodrome elevation and then to conduct an instrument approach procedure and land.

(b) For the purposes of calculating the fuel required by paragraph (a), the certificate holder must take the following matters into account:

- (1) if the certificate holder is using a wind forecast model acceptable to the Director, a 5% wind speed factor (i.e. as an

increment to a headwind or as a decrement to a tailwind) must be added onto the actual or forecast wind used to calculate the fuel required by paragraph (a)(1) to account for errors in wind forecasting:

- (2) if the certificate holder is not using a wind forecast model acceptable to the Director, the aeroplane must carry an additional 5% of the fuel required by paragraph (a)(1) to allow for errors in wind forecasting:
- (3) if icing conditions are forecast for the planned EDTO, the fuel required by paragraph (a)(1) must compensate for the greater of—
 - (i) the effect of airframe icing during 10% of the time during which icing is forecast taking into account the fuel that would be used by the use of engine and wing anti-ice during the same period; or
 - (ii) the fuel used by use of engine anti-ice systems, and if appropriate the use of wing anti-ice systems for the entire time during which icing is forecast:
- (4) the fuel required by paragraph (a)(1) must include—
 - (i) additional fuel, calculated in accordance with the certificate holder's performance deterioration allowance monitoring programme to compensate for any increase in the aeroplane's fuel consumption; or
 - (ii) if a performance deterioration allowance monitoring programme is not used for the aeroplane's fuel consumption, an additional 5% of the fuel required by paragraph (a)(1) to account for the deterioration in cruise fuel burn performance:
- (5) if an APU is a required power source for operating the aeroplane on an EDTO, the fuel required by paragraph (a)(1) must include the APU fuel consumption during every phase of flight when the APU may be used:

- (6) the fuel required by paragraph (a)(1) must include any additional fuel consumption caused by the use of an MEL or configuration deviation list item for any applicable phases of flight.

121.977 En-route EDTO alternate aerodrome planning minima

- (a) Except as provided in rule 121.979, the applicable minima for an aerodrome to be listed as an en-route EDTO alternate aerodrome under rule 121.969 are specified in the following table:

<u>FACILITIES AVAILABLE AT EDTO EN-ROUTE ALTERNATE</u>	<u>CEILING</u>	<u>VISIBILITY</u>
Two or More Separate Precision Approach Procedure Equipped Runways <i>(Note: A single runway with reciprocal precision approach procedures does not meet this requirement)</i>	Cloud-base of 400 feet or a cloud-base of 200 feet above the lowest aerodrome landing minimum; whichever is higher.	A visibility of 1500 metres or a visibility of 800 metres more than the lowest aerodrome landing minimum; whichever is greater.
A Single Precision Approach Procedure	Cloud-base of 600 feet or a cloud-base of 400 feet above the lowest aerodrome landing minimum; whichever is higher.	A visibility of 3000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minimum; whichever is greater.
Non-precision Approach Procedure	Cloud-base of 800 feet or a cloud-base of 400 feet above the lowest aerodrome landing minimum; whichever is higher	A visibility of 4000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minimum; whichever is greater.

121.979 Lower en-route EDTO alternate aerodrome planning minima

In-spite of rule 121.977, at an aerodrome where a Category II or Category III precision approach procedure is permitted, planning minima lower than the en-route EDTO alternate aerodrome planning minima stated in rule 121.977 may be used if the precision approach is performed in accordance with the approved precision approach procedure manual required by rule 91.417.

121.981 Transition for existing ETOPS

For the purpose of this Part, a holder of an air operator certificate who, immediately before 1 November 2010, was authorised in the certificate holder's operations specifications to conduct extended-range twin-engine operations (ETOPS) using an aeroplane with 2 turbine powered engines is deemed to be authorised in accordance with Subpart N to conduct an EDTO using the same aeroplane airframe/engine combinations and on the same routes and to the same maximum diversion time as was authorised for ETOPS in the certificate holder's operations specifications.

Consultation Details

(This statement does not form part of the rules contained in Part 121. It provides details of the consultation undertaken in making the rules.)

A Notice of Proposed Rulemaking, NPRM 08/01 Extended Diversion Time Operations for large aeroplanes, containing the proposed rules was issued for public consultation under Docket 0/CAR/1354 on 17 January 2008.

A copy of the NPRM was sent to:

- Air New Zealand
- Airwork Ltd
- Jetconnect Ltd
- Pacific Blue
- Zeal 320

The NPRM was also published on the CAA website.

Six submissions were received on the NPRM, all of which were from organisations. Submissions were received from:

- Airbus
- Air Nelson Ltd
- Air New Zealand (incorporating comments from Air New Zealand Technical Operations, Jet Operations and Zeal 320)
- Aviation Industry Association of NZ (Inc)
- Boeing
- Jetconnect Ltd (incorporating comments from Jetconnect Flight Operations, Engineering and Safety System groups)

All of the submitters considered the proposal to be acceptable but would be improved with the changes they proposed.

Subject area

Advisory circulars

Two submitters noted that a number of changes in the rules will require supporting information on the acceptable means of compliance in an Advisory Circular. Examples would be guidance for pilot in flight diversion decisions and more detail on what is required for a recovery plan.

CAA Response

Agree. The CAA will draft an advisory circular which will be distributed for review.

Appropriate aerodrome

One submitter observed that the NPRM frequently uses the term 'appropriate aerodrome'. The submitter noted there is no definition of appropriate aerodrome in the existing Part 1 definitions or in the NPRM document, and the dictionary definition of 'appropriate' is *suitable or proper*. The submitter believed that the dictionary definition is too simplistic and fails to define the specific conditions that an aerodrome must meet in order to be considered adequate (suitable or proper) by the regulator.

[Note: see also the submission on the definition of EDTO for further comments on 'appropriate'].

Without a clear definition the submitter believes there is a very real risk of multiple interpretation by individual operators/crew and regulatory personnel. For example, some operators may interpret it to mean the meteorological conditions required are those applicable to alternates as stated in rule 91.405(b) whilst others may interpret it to mean the conditions stated in rule 121.157(a)(1). For the purpose of rule 121.165 Route distance limitations the submitter believed the meteorological requirements should be the conditions stated in rule 121.157(a)(1) without the **or** at the end of the paragraph.

The submitter maintained that the certification status required of the aerodrome also needs to be clearly stated, noting that the aerodrome need not be certificated when used to satisfy the requirements of rule 121.165 Route distance limitations, as alternates are not. The submitter recommended including the words ‘appropriate aerodrome’ after the words alternate aerodrome in 121.71(e) to avoid any confusion.

CAA Response

The CAA’s initial response to these comments was to insert the following definition for appropriate aerodrome:

Appropriate aerodrome means a departure or destination aerodrome where the applicable requirements of rule 121.71 are met for the particular aeroplane being used.

However after further consideration of the FAA and CASA rules for EDTO it was decided to that for commonality in the use of terms, “adequate aerodrome” should be the term used for the normal aerodromes where the applicable requirements of rule 121.71 are met for the particular aircraft being used.

This means that what was defined as an “adequate aerodrome” in the NPRM is now defined as an “EDTO alternate aerodrome” and the definition in the NPRM for “EDTO alternate aerodrome” is deleted. The operating rules now refer to an EDTO en-route alternate aerodrome that is listed in the dispatch release for a particular EDTO flight.

The submitter’s suggestion to refer to “appropriate aerodrome” in rule 121.71(e) is not accepted because it is only alternate aerodromes used for domestic operations that do not need to be certificated and domestic operations do not involve EDTO.

Compliance costs

One submitter proposed deleting the following wording in the compliance costs section:

An air operator certificate holder applying for an EDTO authorisation would have to ~~meet the additional requirements for maintenance~~, have recovery plans for the EDTO alternate aerodromes they wish to use...

as the subject of this paragraph is ‘aeroplanes with more than 2 turbine power engines’, however EDTO maintenance requirements under rule 121.407 only apply to 2-engine aeroplanes.

CAA Response

The NPRM has been published so we cannot change any wording in the preamble section. However the sentence that the submitter is referring to should have been printed as a separate paragraph to separate it from the first sentence that is dealing with aeroplanes with more than 2 turbine engines.

One submitter requested the following wording be included in the compliance costs section:

‘However, this notice of proposed rulemaking proposes that the EDTO authorisation and operating requirements do not apply to operators of aeroplanes with more than 2 turbine powered engines for a period of 8 years. Further, EDTO Type Design approval for the airframe and engine combination is not required for airplanes with more than two turbine engines manufactured prior to a period of 8 years following publication of this rule.’

The submitter noted that the grandfathering of existing airplanes with more than 2 engines (with regard to EDTO Type Design) is consistent with international standards and best practises.

CAA Response

Agree. Rule 121.165(g) provides an 8 year transition period before aeroplanes with more than 2 turbine engines operating more than 180 minutes from an adequate aerodrome are required to be operated under an EDTO approval. An additional paragraph (b) inserted in 121.967 provides an exception for the older aeroplanes with more than 2 turbine engines to have State of Design certification for the engine/airframe combination for EDTO approval beyond 180 minutes.

Manufacturing/retrofits

One submitter questioned whether the airplanes manufactured before XXX/2016 will need to incorporate the EDTO specific configuration or

maintenance standards identified during the ETOPS/LROPS certification exercise and reported in the CMP.

CAA Response

All twin-engine aircraft will need to comply with the requirements of the CMP as required by rule 121.165(c)(1) regardless of the date of manufacture. For the aircraft with more than two engines manufactured before the 8 year transition date, the additional paragraph (b) in rule 121.967 provides an exception regarding compliance with the CMP but the operator has to provide the Director with evidence that the airframe/engine combination of the aeroplane is suitable for the aeroplane to operate on EDTO to the maximum diversion time proposed by the operator.

One submitter questioned whether an EDTO retrofit package will be proposed to the NZ operators for their aircraft manufactured before XXX/2016 if they must be operated on EDTO routes.

The submitter stated that according to the FAA ETOPS principles, there is no retroactive requirement for an ETOPS certification of the airplanes with more than two engines manufactured before Feb 2015. The only retroactive requirement applies to the cargo fire suppression system (6 years grace delay). The submitter recommended that CAA certification expectations for airplane with more than two engines should be confirmed in the final rule.

CAA Response

The current CAA rule does not require retroactive ETOPS certification for airplanes with more than two engines. Refer to comments above and the additional paragraph (b) inserted into rule 121.967 to provide an exception for the aeroplanes manufactured before the 8 year transition date.

One submitter proposed adding the following wording in the summary of changes:

Aeroplanes that have three or more turbine-powered engines that are not EDTO certificated and are operating beyond 180 minutes from an EDTO adequate aerodrome, will be permitted to conduct the equivalent

EDTO operations for a period not exceeding 8 years following the publication of this rule. *Further, EDTO Type Design approval for the airframe and engine combination is not required for airplanes with more than two turbine engines manufactured prior to a period of 8 years following publication of this rule.*

The submitter noted that the grandfathering of existing airplanes with more than 2 engines (with regard to EDTO Type Design) is consistent with international standards and best practises.

CAA Response

Agree. Rule 121.165(g) provides an 8 year transition period and rule 121.967(b) provides an exception regarding CMP and airframe/engine certification for those aeroplanes manufactured before the 8 year transition date. However the operator will have to provide the Director with evidence that the airframe and engine combination is suitable for the EDTO maximum diversion time proposed.

Under rule 121.407 in this section, one submitter recommended removing the following wording:

This new rule specifies the elements of an EDTO maintenance programme for twin turbine powered aeroplanes, ~~when taking, or intending to take similar maintenance action on multiple identical systems.~~ The submitter stated that rule 121.407 addresses all EDTO maintenance requirements, not just dual maintenance, and that this revised text precludes the misunderstanding that rule 121.407 addresses only dual maintenance issues.

CAA Response

Agree that the NPRM wording could be a little confusing with the implication that the rule only applies to dual maintenance but as noted by the commenter the rule covers all EDTO maintenance requirements.

Rule Reference

Part 1 Definitions

Adequate aerodrome

Two submitters noted that under the definition of ‘adequate aerodrome’, an aerodrome control service or aerodrome flight information service needs to be provided from at least 30 minutes *before the estimated time of arrival of the aeroplane*, however the rescue fire fighting service must be available with at least 30 minutes *prior notice*. The submitters recommended that these two requirements be aligned to ‘at least 30 minutes *before the estimated time of arrival of the aeroplane*’. This would require an airport to be manned with Tower and Rescue Fire when nominated and the track is within 30 minutes of an en-route airport, but would allow a callout arrangement when the aeroplane track passes the en-route alternate by a distance exceeding one hour at single engine speed.

CAA Response

Disagree. The aerodrome ATS and the Rescue Fire Service do not need to be available at an adequate aerodrome (now an EDTO alternate aerodrome – refer comment above regarding “appropriate aerodrome”) just because the planned flight path may take the aeroplane to within 30 minutes of the aerodrome. An EDTO alternate aerodrome only becomes significant if the aerodrome is listed as an EDTO en-route alternate for a particular planned flight and then only if an in-flight situation necessitates a diversion to the aerodrome.

If the aerodrome needs to be used for a diversion due to an in-flight situation then ATS needs to be available 30 minutes prior to the expected time of use because ATS can provide the pilot with assistance to reach the aerodrome and make a safe landing. However the Rescue Fire Service is only of assistance at the actual time of use and needs to be available at that expected time of use with 30 minutes prior notice.

One submitter stated that a cost-benefit is required to confirm that a rescue fire service to category 4 is necessary. The submitter maintained that in principle the requirement should be no more restrictive than the existing rule 121.71(b).

CAA Response

The wording of rule 121.71(b)(1) states “rescue fire equipment that is appropriate to the aeroplane type and acceptable to the Director”. The category of rescue fire service that is required at an aerodrome is

determined by using a formula that is found in ICAO Annex 14 and in CAA Rule Part 139. The formula requires an aerodrome operator to determine the length and width of aeroplanes regularly using the aerodrome. Aeroplane types used on EDTO may not be regular users of the particular aerodrome, and therefore the established rescue fire service may be of a category less than category 4. By specifying that a minimum of category 4 is required we have established the minimum standard of rescue fire service that will be acceptable to the Director for EDTO. A category 4 rescue fire service is also the minimum standard required by CASA and EASA.

CMP

One submitter suggested the following changes to the definition of CMP:

Configuration, Maintenance and Procedures Standard (CMP) means: documents approved by the certification authority for the aeroplane that specify minimum requirements for an aeroplane's suitability to operate on extended diversion time operations including—

(1) *airframe and engine configuration requirements, airframe and engine combinations approved for EDTO, special inspection requirements, hardware life limits, and master minimum equipment list constraints:*

This is because the CMP provides the aircraft and engines configuration requirements (through S/B or aircraft modification numbers) as well as the list of airframe and engine combination approved for EDTO.

CAA Response

Agree with the intent of the submission. In order to make the definition similar to those used by the FAA, EASA and CASA, the definition will refer to an airplane-engine combination:

Configuration, Maintenance and Procedures Standard (CMP) means: *a document approved by the certification authority for the aeroplane specifying the minimum requirements for the aeroplane configuration, including any special inspections, hardware life limits, flight crew procedures, master minimum equipment list constraints, and*

maintenance practices necessary to establish the suitability of the aeroplane's airframe/engine combination for EDTO.

One submitter suggested amending the following wording in the definition of CMP:

Configuration, Maintenance and Procedures Standard (CMP) means: documents approved by the certification authority for the aeroplane that specify minimum requirements for an aeroplane's suitability to operate on extended diversion time operations including—

(1) airframe and engine combinations, special inspection requirements, *and* hardware life limits, ~~and master minimum equipment list constraints:~~

The submitter considered that it is more appropriate for a Flight Operations Evaluation Board or similar body to define the appropriate minimum equipment for EDTO and include those restrictions in the master minimum equipment list.

CAA Response

Disagree. The MEL does contain 'restrictions' for extended range operations. However, the basis for those restrictions can be from a requirement in the CMP. The MEL is also included in the FAA and CASA definitions for the CMP.

Extended Diversion Time Operations

One submitter proposed changing the wording from 'appropriate aerodrome' to 'adequate aerodrome' as 'appropriate' is not defined in New Zealand regulations and it could be interpreted to be something other than an adequate aerodrome.

CAA Response

The term "adequate aerodrome" is now used in the definition for EDTO but not for the reasons suggested by the submitter. Refer to the comment above regarding "appropriate aerodrome" and the new definitions for "adequate aerodrome" and "EDTO alternate aerodrome". An appropriate aerodrome (now adequate aerodrome) is

the standard departure and destination aerodromes required for a standard operation. If the planned flight path will take the aeroplane further than the threshold time from an adequate aerodrome (90 minutes for a turbine twin and 180 minutes for a turbine tri and quad) then the flight becomes an extended diversion time operation. Once a flight becomes an EDTO then there must be EDTO alternate aerodromes (as now defined) along the route that can be selected as EDTO en-route alternate aerodromes for the flight.

In-flight shutdown (IFSD)

One submitter proposed changing the wording of this definition to:

In-flight shutdown means when an engine ceases to function normally in flight or and is shutdown, whether self induced, crew initiated or caused by some other external influence including but not limited to flameout, internal failure, foreign object ingestion, icing, or the inability to obtain or control thrust necessary for normal operations, but excludes the airborne cessation of the functioning of an engine when immediately followed by an automatic engine relight:

The submitter explained that the events when the engines "cease to function normally" are all considered by the aircraft manufacturers as part of the continued airworthiness activities. These can also be considered as EDTO incidents as per rule 12.3 of the NPRM. But such events only enter in the calculation of the IFSD rate if they actually conduct to an engine shutdown. It is also for consistency with the EASA or FAA IFSD definition for ETOPS: IFSD are only counted when the engine is actually shutdown.

CAA Response

Agree. The CAA will standardise the IFSD definition with that used by the FAA and EASA in order to align with internationally accepted reporting standards. This will ensure that the IFSD data used in the operator EDTO quarterly reports etc is comparable with the international EDTO statistics reported by the aircraft manufacturers.

The FAA IFSD definition is expanded in FAA AC 120-42B, Appendix 1 and specifically 'excludes the airborne cessation of the functioning of an engine when immediately followed by an automatic engine relight and

when an engine does not achieve desired thrust or power but is not shut down’.

Similarly, the EASA IFSD definition requires that the engine is shut down: ‘In-flight Shutdown (IFSD) - When an engine ceases to function in flight and is shutdown, whether self-induced, crew initiated or caused by some other external influence (i.e., In Flight Shutdown (IFSD) for all causes; for example: due to flameout, internal failure, crew-initiated shutoff, foreign object ingestion, icing, inability to obtain and/or control desired thrust).’

The amendment to the IFSD definition proposed by the submitter is incorporated in the rules. However, the information required in the EDTO quarterly report under Rule 121.417 will be amended to specifically require the reporting of events where engines are unable to deliver commanded thrust etc. The following items are added to Rule 121.417:

In-flight shut down rates and events;

Inability to control the engine or obtain desired power;

Precautionary thrust reductions (except for normal troubleshooting as allowed in the aircraft flight manual);

Degraded propulsion in-flight start capability;

Another submitter requested the following change to this definition:

In-flight shutdown means when an engine ceases to function ~~normally~~ in flight ~~or~~ and is shutdown, whether self induced...:

The submitter commented that if every instance of an engine ceasing to **function normally** were to be considered an engine in-flight shutdown, then many or even most flights would incur IFSDs (e.g. increased vibration, or oil temperature or EGT [exhaust gas temperature], or decreased N2, etc.) The proposed language captures all shutdowns for all causes (except the brief ones that automatically relight).

CAA Response

See comment above.

Time Limited System

One submitter suggested the following addition to this definition:

Time limited system means any system on an aeroplane that can adversely affect the duration of the available flight time of the aeroplane if the system fails or does not function correctly *or whose capacity has a time limit.*

The submitter noted that the most common EDTO time limited system is the cargo fire suppression system. This system has a time limitation because of the capacity of the bottle(s) used: it does not fail or does not stop functioning correctly after a certain duration.

CAA Response

Agree. Another time limited system could include the oxygen system which would not be covered by the current definition. Time limited systems are intended to include systems that, through capacity or design, impose a time limitation on the operation. The CASA definition of a time limited system is one 'on whose availability the duration of the flight depends and whose capacity has a time limit' (refer CAO 82.0, Appendix 4, Paragraph 1). The definition will be amended (see below).

One submitter proposed the following amendments to this definition:

Time limited system means any *EDTO significant* system on an aeroplane *whose capacity has a time limit* that can adversely affect the duration of the available flight time of the aeroplane ~~if the system fails or does not function correctly:~~

The submitter posed that the definition, as originally written, was essentially that of an EDTO significant system, not a time limited system. Further, the revised wording is more appropriate and consistent with the examples of time limited systems provided in rules 121.971(3) & (4).

CAA Response

Agree. Any EDTO significant system that imposes a time limit on the aeroplane's operation is considered a time limited system whether it is

functioning correctly or not. The definition is amended as outlined above.

Part 12 Accidents, Incidents and Statistics

Rule 12.55 Notification of Incident

Three submitters noted that rule 12.55 requires notification of all incidents to be ‘as soon as practicable’ yet the new rule 12.55(e) makes an exception for EDTO whereby notification of an EDTO incident must be within 72 hours of the incident occurring. The submitters could not see the rationale for the difference in reporting requirements and believed that rule 12.55(e) should be deleted as rules 12.55(b) and (c) adequately cover the reporting requirements for EDTO.

CAA Response

Disagree. In relation to EDTO operations it was considered that information relating to incidents be available to CAA within a specified period. The 72 hour requirement aligns with that of Australia. Note that the NTSB in the USA require notification of incidents “immediately or by the most expeditious means available”. Therefore 72 hours is considered not to be unreasonable.

Rule 12.55 Appendix A(i)(12)

Two submitters commented that the number of persons on board an aeroplane involved in an EDTO incident should not be a reporting requirement unless it is relevant to the incident itself.

CAA Response

Disagree. It is a standard requirement for a person reporting an aircraft incident to include the number of persons on board. Refer Part 12 Appendix A paragraph (d).

Part 121 Air Operations — Large Aeroplanes

Rule 121.165(g)

One submitter suggested adding the following wording to paragraph (g):

(g) Paragraph (f) does not apply to a holder of an air operator certificate until [8 years after this rule comes into force]. Further, EDTO Type Design approval for the airframe and engine combination is not

required for airplanes with more than two turbine engines manufactured prior to a period of 8 years following publication of this rule.

The submitter noted that the grandfathering of existing airplanes with more than 2 engines (with regard to EDTO Type Design) is consistent with international standards and best practices.

CAA Response

As noted in the NPRM the proposed rule is intended to allow the continued use of aeroplanes with 3 and 4 turbine powered engines that do not have, and are not currently required to have, a certification by the State of Design regarding the permitted maximum diversion time for the airframe and engine combination for a period not exceeding 8 years following the publication of this rule.

This provision is similar to that provided in the CASA EDTO legislation. CASA CAO 82.0, Table A, Paragraph 5 provides that the amendments to CAO 82.0 (which includes the provisions of CAO 82.0, Appendix 4, Paragraph 7) do not apply to passenger-carrying aeroplanes until 1 July 2015. After this point, aeroplanes with more than two turbine engines will be required to be type design approved for at least the EDTO time requested as required by CAO 82.0, Appendix 4, Paragraphs 7(2)(a) and 4(2)(a). Beyond 1 July 2015, the CASA EDTO requirements for aeroplanes with more than two engines do not require a CMP standards document for the proposed airframe-engine combination.

FAR §121.162(d) provides that for an airplane with more than 2 engines manufactured on or after February 17, 2015, that model airplane-engine combination complies with the CMP document issued in accordance with §25.3(c). The FAA therefore requires EDTO type design approval for three and for engine turbine powered aircraft manufactured after 17 February 2015 but provides a grandfather clause for aircraft manufactured before that date.

Rule 121.967 is amended to provide an exception in paragraph (b) for operators of aeroplanes with more than two turbine engines manufactured before [8 years after the rule comes into force] to provide details of the CMP. This will have the effect of not requiring EDTO type design approval although the operator will still have to provide

evidence under Rule 121.953(b)(2) that the particular airframe-engine combination is suitable for EDTO operations.

Rule 121.173(7)

One submitter considered that the specification or standard for anti-exposure suits should be detailed by reference in the rule or an acceptable means of compliance added to an Advisory Circular (AC).

CAA Response

Disagree. The standard of the anti-exposure suit will be considered by the CAA during the approval process. Any suit must be suitable for its intended purpose. Specifying a particular type of suit in a rule would limit choice should technological advances in design become available. The desired attributes of acceptable anti-exposure suits will be included in the advisory circular.

One submitter proposed adding the following wording to this requirement:

(7) procedures for ensuring the carriage of at least 2 cold weather anti-exposure suits in any aeroplane operating in a polar area. *The Director may waive this requirement if the season of the year makes the equipment unnecessary.*

The submitter stated that the requirement for anti-exposure suits is primarily applicable to North Polar operations and should not be required therefore on Northern Hemisphere summer operations. In the South Polar area, the only available alternate airports are north of 55 degrees south latitude and do not typically experience weather conditions necessitating protection from extreme cold conditions.

CAA Response

Agree. The rule is amended to provide an exception for when the Director considers that, due to seasonal weather conditions, anti-exposure suits are not required.

Rule 121.407

Two submitters noted that the current AC 121-1 Appendix A 2.15 has a requirement for ETOPS training and 2 yearly refresher training before

authorisation. The submitters commented that while the training requirements could stay in an AC, the need for maintenance training focussing on the special nature of EDTO may need to be added to the rule.

CAA Response

Agree. However, as all maintenance for EDTO aircraft operated under Part 121 is required, in accordance with Rule 121.403(b)(2), to be carried out by a Part 145 certificated organisation or another organisation subject to a Technical Arrangement, this requirement is included in an amendment to Part 145.

Rule 121.407(a)(2)

One submitter explained that the pre-departure check required by this rule is performed by a training flight crew member in some cases. The submitter recommended that this process be clarified as an ‘acceptable means of compliance’ in a supporting AC.

CAA Response

Part 43 Appendix A.1(10) provides that flight crew can carry out ‘the performance of routine maintenance that is intended by the aircraft manufacturer to be performed by a pilot provided no special tooling or equipment is required’ provided that the person is appropriately trained and holds an appropriate authorisation, issued by the holder of the maintenance organisation certificate, to perform the maintenance on the aircraft type.

Under the present maintenance rules, flight crew can only carry out an EDTO dispatch if duly authorised by the Part 145 certificated maintenance organisation and it is intended by the aircraft manufacturer that the pre-departure check can be carried out by flight crew. No change to these requirements, which are already briefly covered in AC 43-1, is proposed.

Rule 121.407(a)(2)(ii)

Two submitters gave details of their oil consumption monitoring programme and sought clarification that using such a programme and checking oil quantity gauges prior to each flight would be an ‘acceptable means of compliance’ in a supporting AC.

CAA Response

Agree. This proposal is accepted provided that the engines utilize 'real-time' gauging systems. Clarification will be provided in the advisory circular.

Rule 121.407(a)(2)(iii)

For consistency with the other sub-paragraphs, one submitter proposed changing this rule to:

iii) determine oil levels and oil consumption rates for each engine and APU (*if an APU is required for EDTO*).

Similarly, another submitter suggested this wording for the same reason:

iii) determine oil levels and oil consumption rates for each engine, and *for the APU if it is required for EDTO*.

CAA Response

Agree. The rule is amended accordingly.

Rule 121.407(a)(3)

One submitter stated that their organisation has a single Maintenance Programme that does not identify separately the EDTO tasks from the non-EDTO tasks. The submitter sought clarification that this programme remains an 'acceptable means of compliance'.

CAA Response

EDTO tasks need to be specifically identified in the maintenance programme. This is essential to clearly identify to maintenance personnel which tasks require EDTO authorizations, dual maintenance procedures etc.

Rule 121.407(a) - additional

One submitter recommended adding the following sub-paragraphs to 121.407(a):

(10) EDTO Maintenance Document

- (11) Verification Program
- (12) Task Identification
- (13) Centralized Maintenance Control
- (14) Parts Control
- (15) Reliability Program
- (16) Propulsion System Monitoring
- (17) Procedural Changes

The submitter noted that these additional EDTO maintenance elements would align with other EDTO/ETOPS regulations. Alternatively, the submitter suggested that these additional EDTO maintenance elements could be described in advisory material.

CAA Response

A number of these items are already covered in other rules as they are not EDTO-specific requirements, e.g. procedural changes. Other tasks are already included in the proposed rule e.g. propulsion system monitoring is the same as ‘an engine condition monitoring programme’ as required in Rule 121.407(a)(6) or elsewhere in general maintenance requirements.

Not included in the proposed rule and included in the CASA equivalent, is a requirement for an EDTO parts control programme (refer CASA CAO 82.0, Appendix 5, Paragraph 9(2)(d)) that requires that the holder of an AOC must have a parts control programme that ensures:

- (a) the type certification standard is maintained; and*
- (b) the proper identification of parts to maintain the EDTO configuration.*

This requirement is included in the rule. In addition, clarification on what is required in an EDTO maintenance programme will be included in the advisory circular.

Rule 121.407(b)

One submitter maintained that this rule is unduly restrictive in that current practise allows for multiple system maintenance on heavy maintenance checks (e.g. C Check). The submitter noted that this rule also seems to be in conflict with rule 121.407(d) which permits multiple system maintenance provided the appropriate procedures that mitigate the associated risks are used.

CAA Response

Agree. Rule 121.407(b) is amended to:

The schedule of maintenance activities required under paragraph (a)(3) must not schedule any EDTO multiple identical system maintenance to be performed on an aeroplane during any one period of scheduled maintenance.

One submitter suggested adding the word 'identical' into this rule as it was the probably intent of the paragraph:

b) The schedule of maintenance activities required under paragraph (a)(3) must not schedule any EDTO multiple *identical* system maintenance to be performed on an aeroplane during any one period of scheduled maintenance.

CAA Response

Agree. Refer above.

Rules 121.407(b), (c), (d) and (e)

One submitter stated that these rules appear to be contradictory and are confusing. The submitter maintained that there must be a simpler way of conveying the intent of the rules.

CAA Response

Disagree. With the amendment to Rule 121.407(b) as outlined above, the contradiction has been removed. Paragraph (b) is referring to the schedule of maintenance activities required in the maintenance programme under paragraph (a)(3) and specifies that the maintenance programme must not schedule any maintenance activity on an EDTO

multiple identical system during any one period of maintenance. However paragraphs (d) and (e) recognize that there may be occasions when unscheduled maintenance may be required on an EDTO multiple identical system and in such cases the requirements of paragraph (e) must be applied.

Rule 121.407(c)

One submitter proposed the following amendments to this rule:

(c) the procedures required under paragraph (a)(4) must include an EDTO verification flight to be completed after the performance of maintenance on an EDTO significant system ~~unless the procedure includes an alternative means for verifying that the aeroplane is serviceable for EDTO~~ if the corrective action cannot be adequately verified on the ground.

The submitter noted that maintenance tasks are created with EDTO considerations, and validated during certification. The submitter believed that ground verification should be the goal and sufficient for verifying corrective action; verification flights should be used only as required.

CAA Response

The current wording of Rule 121.407(c) requires procedures for a verification flight only if the procedure does not include alternative means for verifying that the aeroplane is serviceable. The alternative means is most likely to include some form of test procedure that is carried out on the ground – before flight. The rule wording will be changed to reflect that the emphasis is on a ground based check with a verification flight to be carried out if ground based checks cannot verify that the aeroplane is serviceable for EDTO.

Rule 121.407(d)

One submitter commented that current practise and approvals permit certain EDTO maintenance at single-manned stations. The submitter sought assurance that this rule is not intended to eliminate the submitter's currently approved procedure for performing non-scheduled maintenance at single-manned stations.

CAA Response

The procedures required under Rule 121.407(a)(5) can include procedures for maintenance at 'single-manned stations'.

Rule 121.407(e)(1)

One submitter proposed amending the wording of this rule to:

(e) The procedures required under paragraph (a)(5) for multiple identical system maintenance must include requirements for—

(1) a separate, appropriately authorized person to perform the maintenance action on each of the identical EDTO significant systems;
and or

(2) another appropriately authorised person to—

The submitter proposed the change to allow the operator to either use two separate technicians *or* an inspection type of process where another qualified technician will oversee the work performed. The submitter also noted that this is consistent with other ETOPS regulations.

CAA Response

Disagree. The current rule reflects the intent of EDTO maintenance requirements for separate persons to perform the maintenance on multiple identical systems and another person to carry out a physical check of the work performed.

Rule 121.407(e)(2)(i) and (ii)

One submitter suggested amending the wording of this rule to:

(2) another appropriately authorised person to —

~~(i)~~ perform an independent physical check of the maintenance performed by the person required under paragraph (e)(1); and

~~(ii) certify the release to service for the maintenance performed; and~~

The submitter noted that the intent of the rule is to address dual maintenance processes. Release issues are independent of, and not unique to, EDTO multiple identical maintenance concerns addressed in 121.407(e).

CAA Response

Agree. Rule 121.407(e)(2)(ii) is deleted.

Rule 121.407(e)(3)(iii)

One submitter suggested amending the wording of this rule to:

(e) The procedures required under paragraph (a)(5) for multiple identical system maintenance must include requirements for—

(3) on completion of the maintenance,—

~~(iii) the maintenance to be clearly identified as multiple identical system maintenance in the maintenance logbook.~~

The submitter commented that any multiple system maintenance procedures, such as identifying the maintenance as multiple identical system maintenance in the logbook following completion of the maintenance, should be identified in an operator's individual EDTO Maintenance Program. Requirements such as these should be consistent with established and approved maintenance procedures.

CAA Response

Agree. General maintenance logbook entry/certification requirements are covered in Part 43. There is no safety benefit in requiring the maintenance entered in the logbook to be specifically identified as multiple system maintenance.

Rule 121.417 EDTO quarterly report

One submitter contended that the requirement to provide a summary report before the 21st day of the following quarter is too specific as any small delay would result in a breach of the rule. The submitter recommended that the wording should read '...shall provide a summary report to the Director, of EDTO data, each quarter...' or similar.

CAA Response

Disagree. A specific time period is required for submission of the quarterly report to ensure that there is sufficient time for the CAA to assess the information prior to the quarterly EDTO meeting. It is noted

that the CASA equivalent requirement requires the report to be received by CASA not later than 14 days after the end of each 3 month period (refer CASA CAO 82.0, Appendix 5, Paragraph 11(2)).

Rule 121.417(5)

Two submitters asserted that this rule needs to clarify whether the IFSD are intended to be quarterly, or a 12 month rolling average.

CAA Response

The IFSD rate should be reported as a 12 month rolling average. This will be clarified in the advisory circular.

Rule 121.417(6)

Two submitters stated that this requirement duplicates Part 12 requirements but the submitters would accept in summary form an overview of reportable defect and event.

CAA Response

Rule 121.417 requires that the EDTO quarterly report is a summary report provided to the Director. As such, a summary of reportable EDTO defect incidents would be required.

One submitter suggested the following change to rule 121.417(6):

A holder of an air operator certificate who is authorised to conduct an EDTO must, before the 21st day of the following quarter, provide a summary report to the Director of the following for the preceding 3 months of EDTO: ...

(6) every *EDTO incident as defined in 12.3.* ~~reportable defect and event:~~ ...

The submitter believed that the intent of the rule was not to require the certificate holder to provide a summary of every defect and event that is possible to report (every reportable defect and event). The definition of an *EDTO incident* is broad, well defined in 12.3 and an appropriate indication of events to report.

CAA Response

Agree. Rule 121.417(6) is amended to 'every reportable EDTO incident'.

Rule 121.417(7)

Two submitters stated that this requirement duplicates existing monthly reliability reporting and considered that a summary with reference to Significant EDTO system defect rates was sufficient. One of the submitters saw this item as being an excessively onerous reporting requirement.

CAA Response

Agree in part. While some aspects of this reporting requirement may be covered by monthly reliability reports, its inclusion in the EDTO quarterly report provides a means to identify EDTO significant systems that are exceeding the alert levels and to provide advice to the Director on what is being done to identify and address the issues.

Rule 121.417(7) will be amended to limit the extent of such reporting to EDTO significant systems.

Rule 121.417(8)

Three submitters asserted that reporting MEL usage of physicians' kits, oxygen bottles, cabin lighting, passenger seats, etc has nothing to do with enhancing EDTO. Two submitters maintained that this would drive unnecessary cost into the operation for no benefit. The submitters recommended that the reporting requirement only include MEL items related to EDTO significant systems.

CAA Response

Agree. Rule 121.417(8) is amended to require the reporting of the usage of the minimum equipment list for EDTO significant systems.

Rule 121.417(9)

Two submitters recommended adding the word 'rotable' to the rule so it states "EDTO significant system ROTABLE components". The

submitters considered that without the word ‘rotable’, it could be interpreted that every piece of consumable hardware would need to be reported.

CAA Response

Disagree. The EDTO quarterly report should highlight the unscheduled removal of all components in EDTO significant systems. As examples, failed hydraulic lines or chaffed wiring could create reliability issues for EDTO significant systems and as such the operator needs to identify trends, if any, and take appropriate action.

Rule 121.953(b)(7) Requirements for EDTO up to 180 minutes maximum diversion time — twin-engine aeroplanes

Two submitters sought assurance that their existing ETOPS 180 minute and B737-300/400 approved Maintenance Programmes will not need to be re-approved. One further submitter supported the view that current maintenance programmes should not need re-approval as it would contradict the CAA’s statement that the costs of implementing this rule will only largely involve the administrative costs associated with changing from the ETOPS regime to EDTO.

CAA Response

Existing ETOPS approved maintenance programmes for up to 180 minutes ETOPS operations will not need to be re-approved under EDTO requirements. Transition requirements are included in the rules.

One submitter sought clarification as to how the organisation will be approved for 120-minute EDTO and questioned whether that would be by amendment to the company’s operations specifications.

CAA Response

EDTO approval can be granted for any diversion time that fits within each range. Approval will be based on the applicant’s “demonstrated need and supporting documentation” and will not routinely be granted for the entire period available if that is unnecessary. For example the first range beyond 90 minutes is up to 180 minutes, but if an operator applies for a route over which 120 minute EDTO approval would suffice, the applicant will be approved for 120 minutes and not the

whole 180 minutes that is available in that step. Likewise if a 150 minute approval is required for a particular route then the approval will be for 150 minutes EDTO. The particular EDTO approval will be identified on the operator's Operations Specifications.

One submitter sought clarification that the engineering and aircraft capability requirements for the 180-minute threshold will not apply as they are currently approved to operate 120-minute ETOPS.

CAA Response

If an operator is currently approved for 120 minutes ETOPS operations, this provision will continue under the EDTO rules. The rule requirements are for operations up to 180 minutes maximum diversion time for twin engine turbine powered aeroplanes. As required in Rule 121.953(b)(4) the holder of an AOC must specify 'the maximum diversion time proposed for the EDTO which must not be more than 180 minutes'. This is largely an aircraft/equipment restriction due to the time limited systems. All other flight dispatch and maintenance requirements are the same for all EDTO operations up to 180 minutes maximum diversion time.

One submitter wanted confirmation that it will not be necessary to apply for a continuation of their current ETOPS approval.

CAA Response

A transition rule is included in 121.981 to deem an existing ETOPS approval to be an EDTO approval under the new rules operating the same ETOPS approved aeroplanes on the same ETOPS approved routes. Any change to an existing ETOPS approval will require a new EDTO approval under the new rules.

Rule 121.953(b)(11)

One submitter observed that this rule explains the time-limited system concept for EDTO up to 180 minutes maximum diversion time, yet the information provided in this paragraph is also applicable for EDTO beyond 180 minute operations, which consider different criteria for the time-limited systems as explained in 121.971.

The submitter therefore recommended less explicit wording in this bullet and to only refer to the applicable dispatch principles presented in 121.969(a)(3) for EDTO up to 180 min and in 121.971 for EDTO beyond 180 min as follows:

"evidence that time limited system capability for the aeroplane is adequate to allow compliance with the EDTO dispatch criteria ~~plus a 15 minute allowance for holding, approach, and landing is not less than the maximum diversion time proposed under paragraph (4):~~"

CAA Response

Disagree. Rule 121.953(b)(11) specifies the requirement for an operator to meet when applying for EDTO approval. The application of the rule in this case would be a relatively simple computation based on the one engine inoperative, ISA and still air requirements specified in the definition for "maximum diversion time". Rules 121.969 and 121.971 on the other hand are rules to be used on dispatch, and in the case of EDTO beyond 180 minutes rule 121.971 requires the forecast atmospheric conditions to be taken into account to ensure that the aeroplane can safely fly to an EDTO alternate aerodrome while en-route.

Rule 121.957(b)(1)

One submitter proposed changing the wording of these rules to:

(b) A holder of an air operator certificate applying for an EDTO authorisation under paragraph (a) must provide the Director with—

(1) the information required under rule 121.953(b) *except 121.953(b)(11)* but applicable to the maximum diversion time proposed for EDTO which may not be more than 240 minutes; and ...;

The submitter commented that 121.953 (b)(11) should not apply here because time limited systems for twin-engine airplanes operating beyond 180 minutes are governed by rules 121.971(3) and (4).

CAA Response

Disagree. The rules mentioned by the commenter cover two different scenarios. Rule 121.957 is to be considered by the applicant when

making application for EDTO. Rule 121.971 is an operating rule to be applied at dispatch of an approved EDTO flight. At dispatch the two operational failure scenarios must be considered using forecast wind and temperature to ensure that the diversion flight time to an EDTO alternate aerodrome does not exceed the capability of the most limited time limited system.

Rule 121.959(2) and 121.963(3)

One submitter proposed changing the wording of these rules to:

(2) the airframe and engine combination of the aeroplane to be used for the EDTO is approved by the State of Design to operate *on EDTO beyond 180min and has time-limited systems adequately sized to the maximum diversion time requested by the certificate holder;*

The submitter commented that as per the new ETOPS certification concepts developed by EASA and the FAA (e.g. refer to the draft FAA AC 25.1535 §9.i page 14), the aircraft TCDS and Flight Manual will show an "ETOPS beyond 180 min" capability and two time-limited systems values (likely the cargo fire system protection time and the other most limiting time-limited system). As such, for EDTO beyond 180 min operations, the airplane information will not show a maximum EDTO diversion time as commonly used by the operators (i.e. turned into distance in ISA, still air at the OEI approved speed).

CAA Response

Disagree. The suggested amendment is not necessary as rule 121.953(b)(11), which is a base requirement for any EDTO application, requires evidence that the most time limited system, minus 15 minutes, is not less than the maximum diversion time requested in the application.

Rule 121.961(a)(2)

One submitter proposed adding the following wording to the rule:

a) A holder of an air operator certificate may apply to the Director for an EDTO authorisation to operate a twin engine turbine powered aeroplane on EDTO more than 240 minutes maximum diversion time if, immediately before applying, the certificate holder has been— ...

(2) conducting EDTO of more than 180 minutes, *with the airframe/engine combination to be used*, in accordance with an EDTO authorisation issued by the Director under rule 121.959 for at least 12 consecutive months.

The submitter noted that, consistent with FAA and CASA regulations, rule 121.961(a)(1) requires 24 months of consecutive EDTO operation. For consistency with these regulations, the submitter requested the additional wording in rule 121.961(a)(2).

CAA Response

Agree. The rule will be amended to reflect the comment.

(2) conducting EDTO of more than 180 minutes, with the airframe/engine combination to be used, in accordance with an EDTO authorization issued by the Director under rule 121.595 for at least 12 consecutive months.

Rule 121.965(b)(1) and 121.967(2)

One submitter requested that the CAA consider modification of rule 121.965(b)(1): "the information required under rule 121.953(b) but applicable to the airframe and engine combination of the aeroplane to be used for the EDTO and to the maximum diversion time proposed."

The submitter gave the same reasons as for rules 121.959(2) and 121.963(3). Three or four-engine aircraft certified for ETOPS/LROPS as per EASA or FAA certification regulation will only provide in the aircraft TCDS and/or Flight Manual this ETOPS/LROPS certification status and the two time-limited systems values. A maximum EDTO diversion time as used by the operators (in ISA, still air at the OEI approved speed) will not be provided.

CAA Response

Disagree. The commenter has identified that the manufacturer will identify the two time limiting system values. As the applicant can only seek approval for EDTO to a diversion time that is not more than the time for the most time limited system minus 15 minutes, it would seem that sufficient information will be available for the operator to determine the effect on the proposed operation.

One submitter questioned whether airplanes with more than two engines that are manufactured before the term of the 8 years grace period (XXX/2016) and electing to operate on EDTO routes after the grace 8 year delay, will need to have a type design approved for ETOPS/LROPS, as that is not clear in the rule.

CAA Response

As previously noted, the transition provisions for 3 and 4 engine aeroplanes are amended. A transition provision is inserted in rule 121.967(b) to provide an exception for operators of aeroplanes with more than two turbine engines manufactured before [date 8 years after the rule comes into force] to provide details of the CMP. This will have the effect of not requiring EDTO type design approval although the operator will still have to provide evidence under Rule 121.953(b)(2) that the particular airframe-engine combination is suitable for EDTO operations.

One submitter proposed adding the following wording to the rule **121.967(2)**:

The Director may authorise a holder of an air operator certificate to conduct air operations using aeroplanes with more than 2 turbine powered engines on EDTO more than 180 minutes maximum diversion time if the Director is satisfied that:

(2) the airframe and engine combination of the aeroplane to be used for the EDTO is approved by the State of Design to operate to the maximum diversion time requested by the certificate holder. *Further, EDTO Type Design approval for the airframe and engine combination is not required for airplanes with more than two turbine engines manufactured prior to a period of 8 years following publication of this rule.*

The submitter noted that the grandfathering of existing airplanes with more than 2 engines (with regard to EDTO Type Design) is consistent with international standards and best practices.

CAA Response

As previously noted, the transition provisions for 3 and 4 engine aeroplanes are amended. A transition provision is inserted in rule

121.971(b) to provide an exception for operators of aeroplanes with more than two turbine engines manufactured before [8 years after the rule comes into force] to provide details of the CMP. This will have the effect of not requiring EDTO type design approval although the operator will still have to provide evidence under Rule 121.953(b)(2) that the particular airframe-engine combination is suitable for EDTO operations.

Rule 121.969(b)(3)(ii)

One submitter proposed the following change:

(ii) the crosswind component, including gusts, for the landing runway expected to be used is not more than the maximum permitted crosswind in the aeroplane's flight manual ~~for a one engine inoperative landing.~~

The submitter observed that generally commercial airplanes do not have a demonstrated one-engine inoperative crosswind capability listed in its Airplane Flight Manual. It is not considered to be a significant issue in the determination of the airplanes crosswind capability.

CAA Response

Agree. The rule is amended to reflect the comment.

(ii) the crosswind component, including gusts, for the landing runway expected to be used is not more than the maximum permitted crosswind in the aeroplane flight manual.

Rule 121.973(a)

For simplicity and clarity, one submitter requested the following change to the rule:

(a) A holder of an air operator certificate who is authorised in accordance with this subpart to conduct EDTO must ensure that the pilot-in-command of an aeroplane conducting an EDTO under the authority of the certificate is notified of any significant change in the conditions at ~~an~~ any EDTO alternate aerodrome designated for the flight *throughout the duration of the EDTO flight.* —

~~(1) before the aeroplane proceeds beyond the EDTO entry point; and~~

~~(2) after the aeroplane has proceeded beyond the EDTO entry point.~~

CAA Response

Disagree. The rule is worded to emphasise the 2 significant stages of an EDTO – before the aeroplane reaches the EDTO entry point, and after the aeroplane has passed the EDTO entry point.

Rule 121.975

One submitter proposed adding the following sub-paragraph to rule 121.975:

(7) When an EDTO alternate meets the criteria specified in 121.977, but is forecast to deteriorate intermittently (INTER) or temporarily (TEMPO) below the landing minima, it may be nominated as a required EDTO alternate provided the critical fuel reserves have been calculated to include 30 or 60 minutes holding, as necessary. When a forecast provides for a probability (PROB) of less than 40% for a condition to occur, the condition need not be taken into account.

The submitter believed that this guidance is required by 121.969(d) and noted that the suggested wording was taken from the CASA Final EDTO Advisory Circular CAAP 82-1(0), paragraph A.C1.

CAA Response

Disagree. It is not considered necessary for the above to be taken into account en-route as the flight fuel should provide for the necessary reserves to hold as suggested if required. The only point along the route where fuel should become a critical factor is when considering an alternate for the destination. Rule 121.75 already provides requirements for alternate planning. It should be noted that a destination alternate aerodrome is not the same as an EDTO en-route alternate aerodrome. The purpose of an EDTO en-route alternate aerodrome is to ensure that an EDTO alternate aerodrome at which the aeroplane may land is available within the aeroplane's time limited system capability should a diversion become necessary along the route.

Rule 121.975(b)(3)(i)

For consistency with the CASA EDTO regulation and other ETOPS regulations, one submitter proposed changing the wording of this rule to:

(i) the effect of airframe icing during 10% of the time during which icing is forecast (taking into account the fuel that would be used by the use of engine and wing anti-ice during the same period);

CAA Response

Agree. The rule wording is amended to reflect the submitter's comment.

Rules 121.977 and 121.979 Alternate aerodrome planning minima

Three submitters suggested that for clarity the requirements of rule 121.979 be incorporated into the table of rule 121.977 as follows:

<u>FACILITIES AVAILABLE AT EDTO ALTERNATE</u>	<u>CEILING</u>	<u>VISIBILITY</u>
A Single Non-precision Approach Procedure	Cloud-base of 800 feet or a cloud-base of 400 feet above the lowest aerodrome landing minima; whichever is higher	A visibility of 4000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minima; whichever is greater.
A Single Precision Approach Procedure	Cloud-base of 600 feet or a cloud-base of 400 feet above the lowest aerodrome landing minima; whichever is higher.	A visibility of 3000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minima; whichever is greater.
Two or More Separate Straight-in Approach Procedure Equipped Runways	Cloud-base of 400 feet or a cloud-base of 200 feet above the lowest aerodrome landing minima; whichever is higher.	A visibility of 1500 metres or a visibility of 800 metres more than the lowest aerodrome landing minima; whichever is greater.
One or More Category II Precision Approach Procedure(s)¹	Cloud-base of 300 feet.	1200m visibility or RVR 1200m.

One or More Category III Precision Approach Procedure(s)¹	Cloud-base of 200 feet.	800m visibility or RVR 550m.
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¹ The minima may be used if the precision approach is performed in accordance with the approved precision approach procedure manual required by rule 91.417.

CAA Response

Disagree. If the above table was to be adopted as suggested by the submitter, the New Zealand requirements would differ from those of CASA. The CAA does not see any benefit in making such a change and therefore the table as originally proposed will be retained to maintain the commonality between the New Zealand and Australian rules. However, an amendment will be inserted to ensure that a reciprocal runway is not considered to be a separate second runway.

<u>FACILITIES AVAILABLE AT EDTO ALTERNATE</u>	<u>CEILING</u>	<u>VISIBILITY</u>
Two or More Separate Precision Approach Procedure Equipped Runways Note: One runway and its reciprocal does not satisfy this requirement	Cloud-base of 400 feet or a cloud-base of 200 feet above the lowest aerodrome landing minima; whichever is higher.	A visibility of 1500 metres or a visibility of 800 metres more than the lowest aerodrome landing minima; whichever is greater.
A Single Precision Approach Procedure	Cloud-base of 600 feet or a cloud-base of 400 feet above the lowest aerodrome landing minima; whichever is higher.	A visibility of 3000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minima; whichever is greater.

Non-precision Approach Procedure	Cloud-base of 800 feet or a cloud-base of 400 feet above the lowest aerodrome landing minima; whichever is higher	A visibility of 4000 metres or a visibility of 1500 metres more than the lowest aerodrome landing minima; whichever is greater.
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Additional consultation details on NPRM Supplement

General

Notice of Proposed Rule Making (NPRM) 08-01 Supplement was issued for public consultation on 4 February 2010, with a submission close-off of 1 March 2010. The purpose of NPRM 08-01 Supplement was to amend the threshold time for extended diversion time operations (EDTO) for twin turbine-engine aeroplanes operating on extended range operations. The amendment was required to:

- reinstate the existing 60 minute threshold time for EDTO instead of the 90 minutes that was originally proposed for the new rules on EDTO
- amend some of the proposed maintenance programme requirements regarding the scheduling of maintenance activities on multiple identical systems for specified approved aeroplane types.

A copy of the NPRM was sent to all of the holders of an airline air operator certificate operating under Part 121 who were likely to be affected by the proposed rule changes.

The NPRM was also published on the CAA website.

Summary of Submissions

A total of 6 submissions were received from:

- NZALPA
- Air New Zealand
- Pacific Blue
- Jetconnect
- Airwork Flight Operations
- Boeing

Subject Area

NZALPA agreed with the NPRM Supplement and the change back to 60 minutes EDTO threshold time for twin turbine-engine aeroplanes.

Rule Reference

The submissions were received on the following rule proposals:

Rule 121.407(a)(2)(i)

“verify the serviceable condition of every EDTO significant system before dispatch on EDTO”

Air New Zealand, Pacific Blue, and Jetconnect consider that rule could be read to require functional or operational check of every EDTO significant system before every EDTO flight.

ANZ and Jetconnect suggest words be added to clarify that this could be done by a review of the aircraft technical log.

Pacific Blue suggest words be changed to “verify the serviceable status of every EDTO significant system” which would allow a review of the maintenance logbook to verify the serviceable status.

CAA Response

The CAA accepts the submitters views that reference to “serviceable condition of every EDTO significant system” could imply more than what is intended for a pre-departure ramp check. The rule will be amended to require a verification of the serviceable “status” of every EDTO significant system. (Refer to next comment for amended rule wording). However the rule will not include a reference to the Technical Log or the maintenance logbook. The rule needs to specify a requirement to be met and the Advisory Circular will include guidance on how to meet the requirement such as a check of the Technical Log or maintenance documents.

Rule 121.407(a)(2)(ii)

“verify the overall serviceable status of the aeroplane by an interior and exterior check and a review of the maintenance logbook before dispatch on EDTO”

Air New Zealand and Jetconnect are unclear what an “interior and exterior check” might be. Submitters suggest that there is already a requirement for a General Visual Inspection of the interior and exterior condition before every flight.

ANZ suggests that rule should read “carry out a General Visual Inspection of the interior and exterior condition”.

Jetconnect suggest that rule should read – “verify the overall serviceable status of the aeroplane by a review of the Technical Log”.

CAA Response

The CAA accepts the submitters comments regarding the interior and exterior checks that these are standard practice anyway for any aircraft dispatch. The requirement to review the maintenance logbook is also probably not a reasonable requirement because the maintenance logbook is unlikely to be available at the ramp for a pre departure check. The document that is available is the Technical Log. However as stated above the rules should not specify how a rule outcome requirement needs to be met unless such detail is absolutely necessary. In this case the means of determining the serviceable status of the aeroplane should be provided as guidance information in the AC. The CAA also reconsidered the need for this rule and concluded that the requirement to verify the overall serviceable status of the aeroplane could be combined into rule 121.407(a)(2)(i).

Rule 121.407(a)(2)(i) will be amended to read

[“verify the overall serviceable status of the aeroplane including every EDTO significant system.”](#)

Rule 121.407(a)(2)(iii)

“determine oil levels and oil consumption rates for each engine, and APU if the APU is required for EDTO”

Pacific Blue does not accept the requirement to determine oil consumption rates before each EDTO dispatch. Submitter suggests that reference to “oil consumption rates” should be removed and wording amended to read - “(iii) determine oil levels for each engine, and APU (if the APU is required for EDTO and does not have automatic oil level monitoring). If engine or APU oil uplift is abnormal, check oil consumption rates.”

Jetconnect suggests that the rule implies that engine oil consumption rates are determined as part of the pre-departure check. Submitter says

that most operators check oil consumption rates as a stand-alone process away from the ramp. The submitter considers that some tasks, such as determining oil consumption rates, should not be forced into the pre-departure check and instead should be built into the operator's maintenance programme. Submitter suggests that requirement to "determine oil consumption rates" be deleted from this pre-departure check and instead the requirement in 121.407(a)(7) regarding engine oil consumption programme (and APU if needed) be enhanced with additional words that would require the oil consumption monitoring programme to include any oil added during the pre-departure service check and to provide an alert to the operator prior to an EDTO flight if the oil consumption monitoring programme revealed an adverse trend. Submitter also suggested that 121.407(a)(7) include an additional para to require APU oil level to be determined before every flight if the APU is required for EDTO.

CAA Response

The CAA agrees with the submitters comments that the determination of oil consumption rates is not a function to be carried out on a pre-departure ramp check. The primary focus here is to check that the oil levels are within the acceptable limits. The rule will be amended to: "verify that oil levels for each engine, and APU if the APU is required for EDTO, are within the acceptable limits."

The CAA also considers that to ensure that the need to determine the engine oil consumption rates is not omitted, rule 121.407(a)(7) will be amended to read: "an engine oil consumption monitoring programme for each engine, and APU if the APU is required for EDTO, that includes an alert function if any individual uplift of oil for an engine or the APU exceeds the manufacturers recommendations."

The submitter's suggestion that rule 121.407(a)(7) needs to include an additional paragraph regarding checking oil levels before flight is not required as this requirement to determine APU oil level is already included in paragraph (a)(2)(iii).

Rule 121.407(b)

"schedule of maintenance activities under para (a)(3) must not schedule any EDTO multiple identical system maintenance to be performed on an aeroplane during any period of scheduled maintenance"

Pacific Blue considers that the rule is too restrictive. Submitter does not agree with the 2 year transition period provided in 121.407(f) for B737 and considers that the rule should instead provide an ability to carry out multiple identical systems maintenance (where operationally difficult to avoid) with the appropriate additional levels of safety. Submitter suggests that the word “**must**” in the rule should be changed to read “**should**”.

Boeing considers that it is not always possible to avoid performing dual maintenance activities during a heavy maintenance visit. Submitter says operators need to have a programme in place that protects for dual maintenance errors. Such a programme would use separate technicians or inspector oversight and include a proper verification process to ensure successful corrective action before dispatch. The submitter suggests rule be amended to read – “(b) The schedule of maintenance activities required under paragraph (a)(3) must **avoid scheduling wherever possible** any EDTO multiple identical system maintenance to be performed during any period of scheduled maintenance.”

CAA Response

The CAA has had further discussions with one of the operators regarding the maintenance requirements for EDTO aeroplanes and has also considered the equivalent provisions in the Australian and USA rules. The CAA acknowledges that there can be instances when the scheduling of multiple identical system maintenance cannot be avoided because it is part of the manufacturer’s maintenance schedule particularly for heavy maintenance.

The rule will be amended to provide an exception for when multiple identical system maintenance cannot be avoided and for the EDTO pre-departure service checks.

Rule 121.407(e)(1) & (2)

“Procedures for multiple identical system maintenance must include–
(1) a separate, appropriately authorised person to perform the maintenance action on each of the identical EDTO significant systems; and
(2) another appropriately authorised person to perform an independent physical check of the maintenance performed by the person required under para (e)(1)”

Boeing considers that operators should be able to use either separate technicians OR a technician with an inspector to meet the requirement of the regulation and that both options would require proper ground verification processes in place prior to dispatch. Submitter suggests that the requirements in paragraphs (1) and (2) should be alternatives with “or” connecting the paragraphs instead of the consecutive requirement as is written with the “and”.

CAA Response

The CAA does not accept the submitter’s comment and suggested change to the rule.

The CAA considers that at least 3 appropriately qualified persons are required to ensure the airworthiness integrity of the aeroplane after any “multiple identical system maintenance”. Two separate appropriately qualified persons (engineers) are required to perform the actual maintenance work on each of the EDTO significant systems, and another 3rd person (appropriately qualified) to perform the independent check of the maintenance work carried out by each of the engineers.

Rule 121.407(f)

Rule provides a 2 year transition period for operators of B737 and A320 aeroplanes to update the maintenance programme for the aircraft to remove any scheduling of multiple identical system maintenance during any period of scheduled maintenance.

Air New Zealand and Jetconnect request a permanent exception for B737 aeroplanes from the requirement in 121.407(b).

The submitters advise that the MPD drives operators to schedule EDTO multiple system maintenance during “heavy” maintenance visits. They say that current published data from the OEM does not point to any other way of maintaining the aeroplanes and that it would be very difficult and costly not to perform scheduled EDTO multiple identical system maintenance during “heavy” maintenance visits.

The submitters suggest that B737 aeroplanes should be excluded from the requirement in 121.407(b) for a scheduled “C” check or higher (scheduled maintenance visit of 3 days or more (Jetconnect)) provided the maintenance performed in accordance with 121.407(e).

CAA Response

The CAA accepts the submitters comments regarding the problems that would be involved in trying to amend the maintenance schedules for the “heavy” maintenance visits for the B737 aeroplanes.

However with the inclusion of an exception provision in rule 121.407(b) as detailed above, the exception for B737 aeroplanes is no longer required.

Rule 121.407(f) is deleted.

Rule 121.407(f)

Air New Zealand requests that the transition period for the operator to amend the scheduled maintenance programmes for A320 aeroplanes be extended to 5 years instead of the proposed 2 years.

Submitter says the change will require a large investment to change the maintenance programme for the A320 and carry out bridging maintenance to transition over to the new programme. A 5 year period instead of 2 years would allow operator to accommodate the transition effort and costs over a reasonable time frame.

CAA Response

As detailed above, rule 121.407(b) will be amended and there will be no need to provide a transition period for the A320 aeroplanes.

Rule 121.407(f) is deleted.

Rule 145.60(c)(2) and (3)

“(c) Person may be authorised to certify a component for release-to-service after maintenance if the person has –

(2) 36 months of practical aviation related experience with the procedures, practices, materials, tools, machine tools.....etc; and

(3) 6 months of supervised experience directly relevant to the component for which authorisation is sought.”

Boeing recommends that the amount of required practical aviation experience and the amount of supervised experience be reduced as long as it is replaced with sufficient training and on-the-job training for proficiency. Submitter considers that the current requirement would restrict the hire of new personnel who may not have some of the practical experience on the aeroplane but may bring knowledge of new technology to the team. Also requirement could cause difficulties for new aeroplane programmes where persons do not have specific aeroplane experience.

CAA Response

The submitter's comments are noted but amendments to this part of the rule are not being considered as part of the consequential amendments specifically required for the EDTO rule proposals.

145.60(e)(1)(i) and (ii)

“(e) A person must not be authorised to –

(1) certify an aircraft or component for release-to-service after maintenance unless the person –

(i) has been examined by an appropriate senior person for familiarity... etc; and

(ii) has been examined by an appropriate senior person for technical competence ... etc.”

Boeing suggests that the term “senior person” be replaced with the term “qualified person”. Submitter suggests that the term senior person is vague and appears irrelevant as there is no qualification mentioned.

CAA Response

The term “senior person” used in these rules refers to the senior persons required under rule 145.51 which prescribes the personnel requirements for an Aircraft Maintenance Organisation certificated in accordance with Part 145. One of the persons required under rule 145.51(a)(2)(ii) is a senior person responsible for personnel authorisations.

Rule 121.951(a)

Boeing noted a typographical error in the cross reference to 121.165.

CAA Response

Error corrected

Rule 121.951(b)

“For the purpose of this Part, a holder of an air operator certificate, who immediately before [date rules come into force], was authorised to conduct extended-range twin-engine operations (ETOPS) using an aeroplane with 2 turbine powered engines is deemed to be authorised in accordance with this Subpart to conduct EDTO using the same aeroplane airframe/engine combinations and on the same routes and to the same maximum diversion time as was authorised for ETOPS.

Airwork Flight Operations commented that Airwork currently holds a 75 minute ETOPS approval to operate 3 B737 freighter aeroplanes in Australia Perth to Melbourne. Submitter seeks assurance that this 75 minute ETOPS approval will not be affected by the rule amendments.

CAA Response

*Rule 121.951(b), which has been moved to the end of Subpart N provide more transparency to be rule **121.981 Transition for existing ETOPS**, provides for any existing ETOPS authorisation using a twin turbine aeroplane to be deemed to be an EDTO authorisation under the new rules using the same aeroplane airframe/engine combination on the same routes and to the same maximum diversion time as was authorised for ETOPS. These existing ETOPS operations will have to be conducted in accordance with the applicable EDTO operating rules prescribed in Subpart N.*

However this would become a problem for an existing 75 minute ETOPS authorisation for an aeroplane that is not certificated for extended range operations beyond 60 minutes. Such an operator would not be able to seek authorisation for a new 75 minute route under their existing ETOPS authorisation and the operator’s extended range authorisation could not be renewed for a non-certified aeroplane when the air operator certificate expired at the end of the 5 yearly certification period.

In developing the EDTO rules for Part 121, the CAA has stated that the new rules must not have any adverse affect on any existing ETOPS approvals.

This means the Director must be able to authorise extended range operations (EDTO) up to 75 minutes maximum diversion time for turbojet and turbofan powered aeroplanes that are not certificated for operations beyond 60 minutes from an adequate aerodrome, provided all the other applicable EDTO requirements are met.

Rule 121.955 will be amended to include the following provision in a new paragraph (b):

“In spite of paragraph (a)(1), the Director may amend the operations specifications under paragraph (a) to authorise a holder of an air operator certificate to use an aeroplane on EDTO to not more than 75 minutes maximum diversion time if the aeroplane has 2 turbojet or turbofan powered engines and is not approved by the State of design to operate more than 60 minutes flight time (calculated at a one engine inoperative cruise speed in still air and ISA conditions) from an adequate aerodrome.”