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**ADVISORY CIRCULAR
AC 121-11 v1.0**

Part 121 alternate aerodromes

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Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- aeroplane pilots and operators conducting Part 121 operations
- aeroplane pilots and operators conducting Part 135 operations who elect to comply with the Part 121 alternate aerodrome and fuel rules
- personnel responsible for developing alternate aerodrome policies and procedures for such operators
- persons interested in understanding the differences between Part 91 and Part 121 alternate aerodrome requirements.

Purpose

This AC provides information about when a Part 121 operation must plan, and carry appropriate fuel for, a destination alternate aerodrome, and what must be satisfied for an aerodrome to be used as an alternate aerodrome.

For further information

For further information or to provide feedback on this AC, visit CASA's [contact us](#) page.

Status

This version of the AC is approved by the National Manager, Flight Standards Branch.

Table 1: Status

Version	Date	Details
v1.0	June 2026	Initial AC.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

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1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Table 2: Acronyms

Acronym	Description
AC	advisory circular
ADF	automatic direction-finding equipment
AEC	aeroplane engine combination
AEO	all engines operating
AFM	aircraft flight manual
AIM	aeronautical information manual
AIP	aeronautical information publication
ALTN	alternate
ARFFS	Aerodrome Rescue and Fire Fighting Services
ATC	air traffic control
ATS	air traffic service
AWIS	Aerodrome Weather Information Service
BECMG	becoming
BKN	broken
BOM	Bureau of Meteorology
CAR	<i>Civil Aviation Regulations 1988</i>
CASA	Civil Aviation Safety Authority
CASR	<i>Civil Aviation Safety Regulations 1998</i>
CAT II	category II
CAT III	category III
CFSS	cargo fire suppression system
CP	critical point
DA	decision altitude
DAP	departure and arrival procedures
DH	decision height
EDTO	extended diversion time operations

Acronym	Description
EMERG	emergency
ERA	en-route alternate
ERSA	En-route Supplement Australia
ETA	estimated time of arrival
ETOU	estimated time of use
FMS	flight management system
GAF	graphical area forecast
GNSS	global navigation satellite system
H24	continuous day and night service
HJ	sunrise to sunset
IAP	instrument approach procedure
ICAO	international civil aviation organization
IFLD	in-flight landing distance
ILS	instrument landing system
INTER	intermittent
ISA	international standard atmosphere
LDA	landing distance available
LMC	last-minute change
LNAV	lateral navigation
LNAV/VNAV	lateral navigation/vertical navigation
LVO	low visibility operations
MAP	minimum missed approach climb gradient
MAPt	missed approach point
MDA	minimum descent altitude
MDH	minimum descent height
MDT	maximum diversion time
MEL	minimum equipment list
MOS	manual of standards
NAA	National Aviation Authority
NDB	non-directional beacon
OEI	one engine inoperative

Acronym	Description
OFFP	operational flight plan
OVC	overcast
PAL	pilot activated lighting
PAL+AA	PAL with Audio Acknowledgement
PCN	pavement classification number
PCR	pavement classification rating
PIC	pilot in command
POIRP	point of in-flight replanning
PPW	protocol, principle and worksheet
QNH	altimeter sub-scale setting to obtain elevation when on the ground
RFFS	Rescue and Fire Fighting Services
RNAV	area navigation
RNP	required navigation performance
RNP-AR	required navigation performance – approval required
RV	runway visibility
RVR	runway visual range
RWC	relevant weather conditions
RWY	runway
SARPs	standards and recommended practices
S-I	straight-in
SCT	scattered
TAF	aerodrome forecast
TAF3	aerodrome forecast (3 hourly)
TDZ	touchdown zone
TEMPO	temporary
TS	thunderstorm
USA	United States of America
VASIS	visual approach slope indication system
VOR	VHF omnidirectional radio range

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by grey shading. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Table 3: Definitions

Term	Definition
above determining minima	<p>The circumstance at a destination aerodrome where all of the applicable legislative requirements that would otherwise require a destination alternate aerodrome to be planned have been satisfied (e.g. no destination alternate aerodrome required). Can be selectively applied to ceiling and visibility minima values only.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. The requirements may include cloud ceiling, visibility, wind, thunderstorm or severe turbulence, aerodrome lighting and runways. 2. The term 'above' is interchangeable with other terms conveying similar meaning, such as 'better than' or 'greater than'. This is a general way of describing conditions, as some minima expressions can include 'at or above'.
above qualifying minima	<p>The circumstance at a destination alternate aerodrome, an en-route alternate (ERA) aerodrome or an isolated destination aerodrome where all of the applicable legislative requirements that would otherwise <u>not permit</u> the aerodrome to be used as a destination alternate aerodrome, an en-route alternate (ERA) aerodrome or an isolated destination aerodrome have been satisfied (e.g. the aerodrome is qualified for its intended use).</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. The requirements may include cloud ceiling, visibility, wind, thunderstorm or severe turbulence, aerodrome lighting and runways. 2. The term 'above' is interchangeable with other terms conveying similar meaning, such as 'better than' or 'greater than'.
adequate aerodrome	<p>in relation to a flight of an aeroplane, means an aerodrome that complies with the following:</p> <ol style="list-style-type: none"> a. an authorised weather forecast for the aerodrome must be available for the aeroplane's estimated time of use of the aerodrome; b. the aerodrome's services and facilities must be operational for at least the estimated time of use; c. the landing distance available for the aeroplane must be at least the landing distance required under these Regulations for the aeroplane's landing at the aerodrome; d. for an IFR flight—at least one authorised instrument approach procedure that is suitable for use by the aeroplane must be operational for at least the estimated time of use.
aerodrome approach facility configuration	<p>Means the availability of one or more instrument approach procedures (IAP) and the usability of one or more runways at an aerodrome (influenced by wind and other factors) to which Table 4.11 of the Part 121 MOS applies.</p>
alternate aerodrome	<p>has the same meaning as in Annex 2 to the Chicago Convention.</p> <p>Note: At the commencement of this instrument, Chapter 1 of Annex 2 to the Chicago Convention included the following definition:</p>

Term	Definition
	<p>“<i>Alternate aerodrome</i>. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at an aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:</p> <p><i>Take-off alternate</i>: An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.</p> <p><i>En-route alternate</i>: An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route.</p> <p><i>Destination alternate</i>: An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.”</p>
<p>below determining minima</p>	<p>The circumstance at a destination aerodrome where at least one (one or more) of the applicable legislative requirements require a destination alternate aerodrome to be planned (e.g. one or more destination alternate aerodromes are required).</p> <p>Notes:</p> <ol style="list-style-type: none"> The requirements may include cloud ceiling, visibility, wind, thunderstorm or severe turbulence, aerodrome lighting and runways. The term ‘below’ is interchangeable with other terms conveying similar meaning, such as ‘worse than’ or ‘less than’. When a destination aerodrome is below determining minima, the operationally limiting requirement may also be referenced to enhance situational awareness (e.g. below determining minima – wind, or below determining minima – ceiling).
<p>below qualifying minima</p>	<p>The circumstance at a destination alternate aerodrome, an en-route alternate (ERA) aerodrome or an isolated destination aerodrome where at least one (one or more) of the applicable legislative requirements do <u>not permit</u> the aerodrome to be used as a destination alternate aerodrome, an en-route alternate (ERA) aerodrome or an isolated destination aerodrome (e.g. the aerodrome is not qualified for its intended use).</p> <p>Notes:</p> <ol style="list-style-type: none"> The requirements may include cloud ceiling, visibility, wind, thunderstorm or severe turbulence, aerodrome lighting and runways. The term ‘below’ is interchangeable with other terms conveying similar meaning, such as ‘worse than’ or ‘less than’.
<p>capable of conducting</p>	<p>Throughout this AC, to aid in explaining the applicable legislation without adding excessive qualifying statements, the term or phrase ‘capable of conducting’ (in reference to IAP or EDTO or other matters), when preceded by ‘airplane’, ‘operator’, or ‘crew’, should be taken to encapsulate all of the matters required to permit the activity.</p> <p>Example: The phrase “the operator is capable of conducting the RNP-AR IAP” is intended to convey that the operator, the airplane, the flight crew etc., are able to do the activity discussed, unless specifically stated otherwise.</p>
<p>destination aerodrome</p>	<p>means a destination aerodrome that is not an isolated destination aerodrome.</p>
<p>destination alternate aerodrome</p>	<p>means an alternate aerodrome that is a destination alternate (within the meaning of Annex 2 to the Chicago Convention).</p>

Term	Definition
determining minima	The relevant minima and other matters assessed at a destination aerodrome to determine whether the destination aerodrome requires a destination alternate aerodrome be planned for the flight.
different runways	Different runways are 2 or more runways at an aerodrome with a different runway number. Notes: 1. Different runways may be the two ends of one 'physical' runway. 2. To aid understanding and correct application of this definition it may be helpful to refer to 'different runway ends'.
different suitable runways	The subset combination of different runways and where at least 2 are suitable runways.
en-route alternate aerodrome	means an alternate aerodrome that is an en-route alternate (within the meaning of Annex 2 to the Chicago Convention). Note: In this AC, where reference is made to an en-route alternate aerodrome, it is to be taken to be an en-route alternate (ERA) aerodrome that is <u>not</u> an EDTO ERA.
estimated time of use	See section 4.05 of the Part 121 MOS.
flight manual	for an aircraft: see clause 37 of Part 2 of this Dictionary.
flight preparation (Part 121 alternate aerodromes) requirements	see subregulation 121.170(1).
flight preparation (weather assessments) requirements	see subregulation 91.230(1).
isolated destination aerodrome	See section 4.03 of the Part 121 MOS.
normal cruising speed	for an aeroplane or rotorcraft, means the speed stated in the flight manual for the aeroplane or rotorcraft as a normal cruising speed in International Standard Atmosphere conditions with all engines operating.
NOTAM	A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operation.
one-engine-inoperative cruising speed	for an aeroplane, means any speed stated in the aeroplane's flight manual as a cruising speed with one engine inoperative.
plan/planned	In this AC, any description of the requirements for an aerodrome to be planned, or to plan for an aerodrome, also includes, unless subject to specific conditions, that the planned aerodrome must be retained for that purpose in-flight unless some form of alleviation to that requirement commences or can be applied.
point of in-flight replanning	means a point en-route during a flight of an aeroplane, determined by the operator for the flight before the flight commences, at which the aeroplane can: a. if it arrives at the point with adequate fuel to complete the flight to the planned destination aerodrome while maintaining the fuel required by

Term	Definition
	<p>subsection 7.05(2)—continue to that aerodrome</p> <p>b. otherwise—divert to an en-route alternate aerodrome while maintaining the fuel required by subsection 7.05(3).</p> <p>Note: This definition is the same as the definition for Critical Point (CP).</p>
qualifying minima	The relevant minima and other matters assessed to qualify an aerodrome as an alternate aerodrome or as an isolated destination aerodrome.
relevant weather conditions	See section 4.04 of the Part 121 MOS.
separate runways	Separate runways are runways at the same aerodrome that would be usable if they are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane, with the limitation that separate runways cannot be at the opposite ends of the same runway.
single runway	<p>The runway at an aerodrome that has only one landing direction available.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. This may be one end of a runway that would be different runways were circumstances that reduce landing options to one end do not prevail. 2. To aid understanding and correct application of this definition it may be helpful to refer to 'single runway end'.
take-off alternate aerodrome	means an alternate aerodrome that is a take-off alternate (within the meaning of Annex 2 to the Chicago Convention).

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website <https://www.legislation.gov.au/>

Table 4: Legislation references

Document	Title
CA Act	Civil Aviation Act 1988
Part 91 of CASR	Part 91—General operating and flight rules
Part 119 of CASR	Part 119—Australian air transport operators—certification and management
Part 121 of CASR	Part 121—Australian air transport operations—larger aeroplanes
Part 91 MOS	Part 91 (General Operating and Flight Rules) Manual of Standards 2020
Part 121 MOS	Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020
Part 139H MOS	Standards Applicable to the Provision of Aerodrome Rescue and Fire Fighting Services
Part 173 MOS	Standards Applicable to Instrument Flight Procedure Design
CASA 68/24	Terminal Instrument Flight Procedures (Military Aerodromes) Instrument 2024

Document	Title
	Note: This instrument should not be confused with CASA EX68/24 (emphasis on the “EX” added to highlight the difference in identifier number).
CASA EX69/24	Part 121 and Part 91 of CASR – Supplementary Exemptions and Directions Instrument 2024

Advisory material

CASA's advisory materials are available at <https://www.casa.gov.au/publications-and-resources/guidance-materials>

Table 5: Advisory material references

Document	Title
AC 1-02 Annex D	Exposition and operations manual fuel policy guidance
AC 11-04	Approvals under CASR Parts 91, 103, 119, 121, 129, 131, 132, 133, 135, 138 and 149 (including MOS)
AC 121-07	Extended Diversion Time Operations (EDTO) Note: At the time of publishing v1.0 of this AC, AC 121-07 has not yet been published.
OPS.06 PPW	Extended diversion time operations (OPS.06) - protocol suite
OPS.121 PPW	Australian air transport operations - larger aeroplanes (OPS.121) - protocol suite

International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from <http://store1.icao.int/>

Many ICAO documents are also available for reading, but not purchase or downloading, from the ICAO eLibrary (<https://elibrary.icao.int/home>).

Table 6: ICAO references

Document	Title
Annex 2	Rules of the Air
Annex 3	Meteorological Service for International Air Navigation
Annex 6	Operation of Aircraft Part I, International Commercial Air Transport — Aeroplanes
Annex 14	Aerodromes – Volume 1 - Aerodrome Design and Operations
Annex 19	Safety Management
Doc 4444	Procedures for Air Navigation Services — Air Traffic Management (PANS ATM)
Doc 8168	Procedures for Air Navigation Services — Aircraft Operations, Volume I — Flight Procedures (PANS OPS Vol 1)
Doc 8168	Procedures for Air Navigation Services — Aircraft Operations, Volume III — Aircraft Operating Procedures (PANS OPS Vol 3)

Document	Title
Doc 8400	Procedures for Air Navigation Services —ICAO Abbreviations and Codes (PANS ABC)
Doc 8896	Manual of Aeronautical Meteorological Practice
Doc 9137	Airports Service Manual, Part 1, Rescue and Fire Fighting
Doc 9328	Manual of Runway Visual Range Observing and Reporting Practices
Doc 9365	Manual of All-Weather Operations
Doc 9613	Performance-based Navigation (PBN) Manual
Doc 9849	Global Navigation Satellite System (GNSS) Manual
Doc 9859	Safety Management Manual (SMM)
Doc 9976	Flight Planning and Fuel Management (FPFM) Manual
Doc 10064	Aeroplane Performance Manual
Doc 10066	Procedures for Air Navigation Services — Aeronautical Information Management (PANS AIM)
Doc 10085	Extended Diversion Time Operations (EDTO) Manual
Doc 10106	Manual on Flight Operations Officers/Flight Dispatchers Competency-based Training and Assessment
Doc 10153	Guidance on the Preparation of an Operations Manual

Other material

Table 7: Other material references

Document	Title
FAA AC 120-42B	Extended Operations (ETOPS and Polar Operations)

1.4 Forms

CASA's forms are available at <http://www.casa.gov.au/forms>

Table 8: Forms

Form number	Title
	Application - Air Operator's Certificate / Associated approvals (CASR Part 119)
	Note: This hyperlink goes to the combined single form which is designed as a one-stop-shop for an initial AOC application, however as most of the content does not need to be filled in for an operator using it to apply for a significant change or a single Part 121 approval, CASA has also made the form available on its website in individual components, thereby enabling operators to just fill in the form components needed for their application.
977	Extended Diversion Time Operations (EDTO) Approval (form available in myCASA portal)

2 Introduction

2.1 Background

2.1.1 The Part 121 alternate aerodromes requirements were developed to contemporise Australia's alternate aerodrome requirements for air transport operations using larger aeroplanes. These requirements are aligned, as far as practicable and accounting for Australia's operating environment, with relevant ICAO standards and recommended practices (SARPs).

2.1.2 This AC provides guidance:

- enabling practical application of the interrelated rules in Parts 91, 119 and 121 of CASR and associated Manuals of Standards (MOS) which in combination set out the flight preparation (Part 121 alternate aerodromes) requirements¹ (colloquially referred to as the 'Part 121 alternates policy')
- on satisfying the requirement² that a Part 121 operator's exposition must contain the procedures for use by the operator's personnel that ensure compliance with the flight preparation (weather assessments) requirements³ and the flight preparation (Part 121 alternate aerodromes) requirements.

Note: Whilst the contents of this AC are intended to be explanatory and informative, operational personnel are reminded that they are to comply with their operator's exposition in relation to Part 121 alternate aerodromes requirements, procedures and policies.

2.2 Part 121 alternate aerodrome policy intent

2.2.1 The baseline Part 121 alternates policy is intended to ensure that a flight conducted as a Part 121 operation plans for, and retains, the ability to safely land at two suitable landing locations until the missed approach point (MAPt) of the likely instrument approach procedure (IAP) at the destination aerodrome.

2.2.2 The required safety margin provided by retaining two landing locations can then be reduced to only one landing option (e.g. an aerodrome/runway of sole reliance) if the first landing could not be conducted at the destination aerodrome for reasons that could not be foreseen when planning the flight or conducting the flight to that destination aerodrome runway.

2.2.3 There are two generally applicable foreseeable circumstances built into the Part 121 alternates policy which enable a flight to stop retaining two landing locations at a point in flight earlier than the destination aerodrome MAPt. These two circumstances are:

The in-flight destination alternate aerodrome alleviation⁴ (see section 4.4.12.1 of this AC)

For flights to destination aerodromes within Australian territory, the in-flight alleviation removes the requirement to plan for (and hold) a destination alternate aerodrome during the flight only after the flight has commenced with the requirement satisfied and then with certain other criteria met.

¹ 'Flight preparation (Part 121 alternate aerodromes) requirements' is a defined term.

² Regulation 121.165 of CASR

³ 'Flight preparation (weather assessments) requirements' is a defined term.

⁴ subsection 4.08(4) of the Part 121 MOS

The two landing options of the destination aerodrome and the destination alternate aerodrome are retained until the in-flight criteria are met, permitting the destination to become the aerodrome of sole reliance.

The isolated destination aerodrome case (see section 4.5 of this AC)

In the isolated destination aerodrome case, two landing options (the isolated destination aerodrome and the en-route alternate (ERA) aerodrome) are retained until the critical point (CP).

From the CP, subject to satisfying the weather assessment, the isolated destination aerodrome becomes the aerodrome of sole reliance, albeit this risk is mitigated to an acceptable extent by the carriage of isolated destination aerodrome alternate fuel.

Note: The two landing locations referred to above can include many variations, however the most likely routine combination would be one landing location being the destination aerodrome and the other being at the destination alternate aerodrome.

Similarly, the two landing options may be separate suitable runways at the destination aerodrome.

- 2.2.4 In addition, for aerodromes within Australian territory, there are two further circumstances built into the Part 121 alternates policy where a flight can be planned and conducted without the safety margin provided by two landing location options described in paragraph 2.2.3 of this AC. These 2 circumstances are:
- where the destination aerodrome is within Australian territory and the weather assessment is such that no destination alternate aerodrome need be planned.
 - where the destination aerodrome requires two destination alternate aerodromes but the weather assessment for one destination alternate aerodrome within Australian territory meets the requirements for a destination aerodrome that does not require an alternate to be planned.

2.3 Unexpected circumstances

- 2.3.1 It is not reasonable for the risks associated with every theoretically possible circumstance to be controlled by the safety control actions prescribed in legislation.
- 2.3.2 There may be circumstances where conditions vary from the forecast or planned conditions so rapidly, and to such an extent, that the flight's continuation cannot occur in compliance with the rules.
- 2.3.3 In such circumstances, legislative provisions such as section 30 of the Act may be used to establish unavoidable causes as a defence to operating in contravention of relevant rules.

IMPORTANT

This should not be taken to excuse the absence of conducting appropriate ongoing flight status monitoring and taking appropriate precautionary actions where a reasonable ability exists to execute an alternate course of action in compliance with the rules.

2.4 Use of defined terms

- 2.4.1 The CASR and MOS use terms that are defined in the CASR Dictionary, relevant CASR Part or Subpart, or respective MOS. Definitions can be complicated.

- 2.4.2 Affected persons are strongly recommended to carefully consider how the different aspects of a definition apply to each occasion the defined term is used. This AC explains known interpretational issues where they arise.

Example

Relevant weather condition is a key concept in the determination of alternate aerodrome requirements.

This defined term is in full use in some provisions and is in partial use in others.

The nuances of these differences are explained in relation to each applicable circumstance in subsequent sections of this AC, with relevant weather conditions being discussed in detail in section 3.3 of this AC.

2.5 Relevant Part 91 provisions

Note: Several Part 91 rules are transcribed into relevant sections of the Aeronautical Information Publication (AIP) Book.

Care should be taken when applying provisions from the AIP Book as the differences between Part 91 and Part 121 requirements are not clearly articulated in the AIP Book in order to keep the AIP content as simple as possible.

- 2.5.1 Parts 91 and 121 of CASR work together to ensure that Part 121 operations are conducted with sufficient destination and alternate aerodrome safety margins in relation to cloud ceiling, visibility, wind, aerodrome lighting, instrument approach procedure options and runway availability.
- 2.5.2 Although most Part 91 rules are applicable to Part 121 operations, there are some Part 91 provisions which are disapplied for Part 121 operations, usually where Part 121 has a provision relating to a similar matter or where the Part 91 provision is constructed in a way that is incompatible with Part 121 operations.
- 2.5.3 When applying the Part 121 alternate aerodromes requirements, the following Part 91 rules still apply:
- the Part 91 flight preparation (weather assessments) requirements contained in Chapter 7 of the Part 91 MOS
 - the landing minima requirements contained in Chapter 15 of the Part 91 MOS, specifically section 15.10 for those operators that are not approved to conduct low-visibility operations (LVO).

2.6 Disapplied Part 91 provisions

- 2.6.1 The Part 91 flight preparation (alternate aerodromes) requirements⁵ are wholly replaced by the flight preparation (Part 121 alternate aerodromes) requirements⁶.

KEY POINT

The general alternate minima and special alternate minima published in AIP Departure and Arrival Procedures (DAP) for Australian aerodromes do not apply to Part 121 operations.

- 2.6.2 Additionally, some of the requirements within Chapter 7 of the Part 91 MOS (weather assessment requirements) are specifically disapplied for Part 121 operations⁷.

EXPLANATION

Subsections 7.02(4) and 7.02(5) of the Part 91 MOS (forecasts for flight planning) are disapplied for Part 121 operations whilst the remainder of section 7.02 and chapter 7 of the Part 91 MOS remain applicable.

2.7 Aerodrome use types

- 2.7.1 When reading the Part 121 alternate aerodrome rules, it is important to recognise and understand the different aerodrome use types.
- 2.7.2 The seven aerodrome use types used in Chapter 4 of the Part 121 MOS and described in this AC are:
- departure aerodromes
 - take-off alternate aerodromes
 - destination aerodromes (other than isolated destination)
 - isolated destination aerodromes
 - destination alternate aerodromes
 - en-route alternate (ERA) aerodrome (non-EDTO)
 - EDTO en-route alternate (ERA) aerodrome.
- 2.7.3 There may be instances where an aerodrome serves more than one use type for a flight.

Example

It is foreseeable that a flight could be planned in a manner that requires the departure aerodrome to also be the destination alternate aerodrome. A flight from Sydney to Melbourne may plan Sydney as the destination alternate aerodrome.

⁵ 'Flight preparation (alternate aerodromes) requirements' is a defined term.

⁶ 'Flight preparation (Part 121 alternate aerodromes) requirements' is a defined term.

⁷ Subsection 7.02(5A) of the Part 911 MOS

2.8 Application of flight preparation (Part 121 alternate aerodromes) requirements

- 2.8.1 Although the title of regulation 121.170 of CASR, which empowers Chapter 4 of the Part 121 MOS, contains the words 'flight preparation', these words should not be interpreted to mean the Chapter 4 requirements only apply in pre-flight circumstances.
- 2.8.2 The Part 121 alternate aerodrome requirements specifically identify when provisions apply during a flight, as well as pre-flight.
- 2.8.3 There may be provisions that are silent on when they apply, so they must be taken to apply in the full context established in the relevant chapter or chapters.
- 2.8.4 Additionally, although the Part 121 alternate aerodrome requirements prescribe matters such as cloud ceiling and visibility requirements but do not prescribe the application of surface wind or turbulence requirements in a similar manner, operators and pilots are reminded that there are underlying and enduring requirements to operate your aeroplane in accordance with AFM limitations and landing performance requirements.
- 2.8.5 Therefore, the alternate aerodrome rules do not need to re-state those requirements, but they remain relevant and applicable to your operations.

TIP

It is recommended an operator's exposition specify wind limitations in circumstances where the alternate aerodrome rules are silent, in order to ensure compliance with other legislative provisions (such as compliance with flight manual limitations).

- 2.8.6 The titles of sections 4.08 and 4.11 of the Part 121 MOS (respectively 'Destination alternate aerodromes' and 'Additional requirements —certain alternate and isolated destination aerodromes') have been misunderstood or misapplied by some industry participants in the transition to Part 121 operations.
- 2.8.7 For the avoidance of doubt:
- section 4.08 of the Part 121 MOS contains the requirements applicable to the destination aerodrome which determine whether a destination alternate aerodrome is required for, or during, a flight, or when the requirement to plan/hold a destination alternate aerodrome(s) can be alleviated

Note: This is the basis for how Part 121 MOS subsection 4.08(1) is constructed.

- section 4.11 of the Part 121 MOS contains the requirements for an aerodrome to qualify as a destination alternate aerodrome, en-route alternate aerodrome or isolated destination aerodrome, the most common of which is the destination alternate aerodrome which is discussed in detail in section 4.6 of this AC.

2.9 Parts 91 and 121 of CASR and foreign alternate aerodrome rules

- 2.9.1 Differences can occur between Part 91 and 121 alternate aerodrome requirements when operating to aerodromes outside Australian territory.

- 2.9.2 Part 91 of CASR applies in relation to the operation of an Australian aeroplane in a foreign country⁸, except that specific Part 91 rules disapplied during a Part 121 operation remain disapplied. It is also a requirement that if a law of a foreign country applies to the operation of the aeroplane in that country, the law of the foreign country prevails over Part 91 to the extent of any inconsistency⁹. Further, the operator and PIC of an Australian aeroplane for a flight in a foreign country must ensure that the aeroplane is operated in a way that complies with the requirements of the law of the foreign country that applies in relation to the flight.¹⁰
- 2.9.3 Part 121 of CASR applies globally, however as Part 121 does not contain an equivalent to subregulation 91.010(2) making it clear that if a law of a foreign country applies to the operation in that country, the law of the foreign country prevails over Part 121 to the extent of any inconsistency, CASA issued the exemption contained in section 5 of CASA EX69/24.
- 2.9.4 It is the responsibility of an operator to establish which foreign national aviation authority (NAA) operational rules apply to their operation and then determine which, if any, differences to the applicable provisions in Part 91 and Part 121 of CASR must be complied with.

Example

An Australian Part 121 operator that is conducting non-scheduled (on-call) operations to an aerodrome in the United States of America (USA) would not be subject to US FAA 14 CFR Part 121 rules. They may be subject to the provisions of US FAA CFR Part 129 – Foreign Air Carriers.

- 2.9.5 Where differences in the rules that apply to an operation to an aerodrome in a foreign territory exist, the most restrictive of the CASR provisions and the applicable NAA provisions are required to be applied.
- 2.9.6 There are several foreign NAA operational rules that require operations by foreign air carriers to be conducted in accordance with ICAO Annex 6 Part 1 and other ICAO documents.

Example

An operation conducted under Part 121 of CASR to an aerodrome in the USA, where the operator is subject to US FAA 14 CFR Part 91 and Part 129 rules.

The applicable USA rules for determining the need for a destination alternate aerodrome would likely prevail as those rules are more restrictive than their equivalent in Part 121 of CASR.

A relatively simple difference is illustrated by the time period applicable the assessment of weather conditions being the ETA at the destination aerodrome +/- 1 hour¹¹, whereas the applicable CASR period is +/- 30 min¹².

⁸ Subregulation 91.010(1) of CASR.

⁹ Subregulation 91.010(2) of CASR.

¹⁰ Subregulation 91.140(1) of CASR.

¹¹ US FAA 14 CFR 91.169 and 14 CFR 121.621(1).

¹² section 4.05 of the Part 121 MOS.

Key points

A Part 121 operator conducting operations in a foreign country must comply with applicable Australian civil aviation law, including CASR Part 121 and any relevant approvals, and must also comply with applicable foreign law.

A contravention of foreign law is primarily a matter for the foreign State and its regulator. However, compliance with CASR does not remove the operator's obligation to comply with applicable foreign law. In some cases, the same conduct may also engage Australian regulatory consequences if it contravenes CASR, an approval, or a condition of an exemption.

For operations that rely on an approval under regulation 121.010, if the foreign State imposes a requirement that is more restrictive than the Australian approval, the operator should comply with the more restrictive applicable requirement unless the foreign State has granted lawful relief that permits an alternative approach.

3 General requirements – departure, destination and alternate aerodromes

3.1 Valid forecast requirements

- 3.1.1 Chapter 7 of the Part 91 MOS contains the flight preparation weather assessment requirements regarding which weather forecasts and reports need to be reviewed, for which aerodromes and when. The Part 121 MOS sets the alternate aerodrome requirements, requiring the operator and pilot in command (PIC) to determine whether *relevant weather conditions* (see definition) exist at the departure aerodrome, the planned destination aerodrome, and any planned alternate aerodromes.

Note: Some elements of Chapter 7 of the Part 91 MOS are disapplied for Part 121 operations. These are identified and discussed in the relevant sections of this guidance material.

- 3.1.2 Before commencing a flight, the pilot in command (PIC) must study the authorised weather forecasts and authorised weather reports for the route to be flown and the departure aerodrome, the planned destination aerodrome, and any planned alternate aerodromes. If this study occurs more than 1 hour before the flight commences, the PIC must obtain and review an update to the information before the flight begins.¹³
- 3.1.3 The authorised weather forecasts studied to satisfy the route to be flown requirement must cover the whole period of the flight¹⁴.
- 3.1.4 The authorised weather forecasts studied to satisfy the departure aerodrome, the planned destination aerodrome and any planned alternate aerodromes requirement must be valid for at least 30 min before, and 60 min after the planned estimated time of arrival (ETA) for the relevant aerodrome¹⁵.

Note: This is not always the same as the definition or requirements of estimated time of use (ETOU) for the aerodrome¹⁶. (See section 3.2 of this AC for further explanation.)

- 3.1.5 There are circumstances where a flight can commence or continue without some or all of the authorised weather forecasts subject to specific conditions¹⁷.

Example (unavailable required authorised weather forecast)

Part 121 flights are permitted to be planned to a destination aerodrome that does not routinely have an aerodrome forecast (TAF) provided by the Bureau of Meteorology (BOM).

¹³ section 7.02 of the Part 91 MOS.

¹⁴ section 7.02 of the Part 91 MOS.

¹⁵ section 7.02 of the Part 91 MOS.

¹⁶ section 4.05 of the Part 121 MOS.

¹⁷ section 7.03 of the Part 91 MOS.

In this instance, the routinely available authorised weather forecast used to determine whether relevant weather conditions exist at the aerodrome would be the graphical area forecast (GAF).

If the relevant GAF was not available, the flight may still be planned to the destination aerodrome without an authorised weather forecast (neither GAF nor TAF) provided that two destination alternate aerodromes are planned.

However, the following 2 operational conditions must be met:

- the flight can only be commenced provided that the PIC reasonably considers that the weather conditions at the departure aerodrome will permit the aeroplane to return and land safely at the departure aerodrome within 1 hr after take-off¹⁸
- the flight must return to the departure aerodrome if the GAF (being the required authorised weather forecast in this instance) is not obtained within 30 min after take-off¹⁹.

Note: The Part 91 MOS requirements for return to the departure aerodrome if the relevant authorised weather forecast is not obtained within 30 minutes after take-off are different for Part 121 operations compared to other operations.

3.2 Time of use at an aerodrome

3.2.1 Section 4.05 of the Part 121 MOS specifies the estimated time of use (ETOU) that applies for the various aerodrome use types.

3.2.2 The ETOU is the period within which it must be determined if relevant weather conditions are present or forecast to be present. But remember that ETOU is not always the same as the weather forecast validity requirements (see section 3.1 of this AC).

Example (ETOU versus weather forecast validity period)

The ETOU for a destination aerodrome (other than an isolated destination aerodrome) is ETA +/- 30 min²⁰, whereas the period of validity for an authorised weather forecast for an aerodrome must be at least 30 min before, and 60 min after, the planned ETA²¹.

3.2.3 Using ETOU for Part 121 operations, instead of applying time buffers to the commencement or cessation of weather phenomena as is done for other operations, has the benefit of increased precision.

3.3 Relevant minima and relevant alternate minima

3.3.1 This AC uses the term *relevant minima* to mean the applicable values of minimum height (expressed as MDA/MDH or DA/DH) and minimum visibility that apply for the circumstances. These might be the published values on an IAP chart or a higher minima due to operator preference, AFM constraints or another reason.

¹⁸ subsection 7.03(2) of the Part 91 MOS.

¹⁹ subsection 7.03(3) of the Part 91 MOS.

²⁰ section 4.05 of the Part 121 MOS.

²¹ subsection 7.02(6) of the Part 91 MOS.

- 3.3.2 In this AC, for the purpose of explaining application of landing minima at aerodromes, the relevant minima will be the published IAP minima including any of the QNH and weather forecast adjustments.

Example

Determining minima

For determining if a destination aerodrome requires a destination alternate aerodrome, the relevant minima to be assessed at the destination aerodrome would be the cloud ceiling and visibility values of the landing minima for the IAP likely to be used on arrival **PLUS** the ceiling and visibility additives required by the Part 121 MOS subsection 4.08(3) which are, in turn, those expressed in subsections 4.08(5) and 4.08(6).

Qualifying minima

For a destination alternate aerodrome to be planned to be used (i.e. for it to be qualified as a destination alternate aerodrome), the relevant minima to be assessed would be the cloud ceiling and visibility values mentioned in the Part 121 MOS Table 4.11 (see paragraph 3.3.3.3 of this AC below).

Special Alternate Minima – not to be used for Part 121 operations

Part 121 operations are not permitted to use the special alternate minima published on IAP procedures in AIP DAP.

These minima are authorised by regulation 91.235 of CASR and its subordinate Chapter 8 of the Part 91 MOS, which are not applicable to Part 121 operations²².

3.3.3 Correctly applying qualifying minima (MOS section 4.11)

- 3.3.3.1 If the authorised weather forecast for a destination alternate aerodrome or en-route alternate aerodrome is a GAF, then the relevant minima expressed in Table 4.11 of the Part 121 MOS does not apply and the relevant minima specified in subsection 4.11(2) of the Part 121 MOS must instead be used.
- 3.3.3.2 The rest of the content in this section is intended to clarify some of the differences contained within the text and values written into Table 4.11.
- 3.3.3.3 Part 121 MOS Table 4.11 is reproduced below:

²² Subregulation 91.035(1) Item 5

Table 4.11—Ceiling and visibility minima for destination alternate aerodromes or en-route alternate aerodromes or isolated destination aerodromes

Item	Column 1 Aerodrome approach facility configuration	Column 2 Cloud ceiling	Column 3 Visibility
1	The aerodrome has at least 2 operational authorised instrument approach procedures, each of which provides a straight-in approach procedure to different suitable runways, and where at least one approach procedure has an available CAT II or CAT III minima	N/A	The greatest visibility or RVR for the published CAT I minima for the approach procedures
2	The aerodrome has at least 2 operational authorised instrument approach procedures, each of which provides a straight-in approach procedure to different suitable runways	A height of 200 ft above the height required by the instrument approach procedure with the second lowest: (a) MDA or MDH, or (b) DA or DH	Visibility of 800 m above the visibility required by the instrument approach procedure with the second lowest: (a) MDA or MDH; or (b) DA or DH
2A	The aerodrome has at least 2 operational authorised instrument approach procedures, each of which provides a straight-in approach procedure to a single runway	A height of 400 ft above the height required by the instrument approach procedure with the second lowest: (a) MDA or MDH, or (b) DA or DH	Visibility of 1 500 m above the visibility required by the instrument approach procedure with the second lowest: (a) MDA or MDH; or (b) DA or DH
3	The aerodrome has a single runway and at least one operational authorised instrument approach procedure	A height of 400 ft above the higher of the following: (a) the height required by the instrument approach procedure with the second lowest: (i) MDA or MDH, or (ii) DA or DH; (b) the circling height	Visibility of 1 500 m above the greater of the following: (a) the visibility required by the instrument approach procedure with the second lowest: (i) MDA or MDH; or (ii) DA or DH; (b) the visibility required for a circling manoeuvre
4	The aerodrome has no operational authorised instrument approach procedure	The lowest safe altitude for the last route segment to the aerodrome, plus 500 ft	8 km

Note: A different runway is any runway at the aerodrome with a different runway number. Separate runways are runways at the same aerodrome that would be usable if they are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane. Separate runways cannot be at the opposite ends of the same runway.

Figure 1: Table 4.11 of the Part 121 Manual of Standards

Note: *Different runways* are where 2 or more runways at the aerodrome with different runway numbers, whereas *separate runways* are runways at the same aerodrome that would be usable if they are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane and cannot be opposite ends of the same runway.

Second lowest minima (MDA/H or DA/H) or circling

- 3.3.3.4 Table 4.11 accounts for the variations in aerodrome approach configurations that are comprised of runway availability (number of suitable landing options) considerations and IAP redundancy considerations.
- 3.3.3.5 The determination of what minima constitutes the second lowest relies on the independence of the nav aids and the degree to which an IAP relies or doesn't rely on those nav aids.

Examples - lack of IAP independence

An ILS IAP that has both ILS minima and localiser only minima does not establish independence sufficient to permit the localiser minima as the second lowest minima.

A VOR/DME IAP that has both VOR/DME minima and VOR only minima does not establish independence sufficient to permit the VOR only minima as the second lowest minima.

An RNP APCH that has LNAV minima and LNAV/VNAV minima does not establish independence sufficient to permit the LNAV minima as the second lowest minima.

In each instance the absence of independent nav aid assurances renders the second lowest IAP minima not being permitted for those cases.

- 3.3.3.6 Items 2, 2A and 3 of Table 4.11 use the phrase 'instrument approach procedure with the second lowest'. This phrase does not mean the second lowest unique value. The intent is that the risk of one of the two lowest approach minima not being available at the time of use is partially mitigated, thereby ensuring the remaining available IAP minima is valid, even in the case where two approaches share the same minima.
- 3.3.3.7 Some combinations of aeroplane navigation system capabilities may enable certain IAP 'pairings' to be considered independent. E.g. RNP AR procedures for RNP values less than RNP 0.3nm require the aircraft to include an approved inertial navigation system integrated with the aircraft's RNP system to serve as a contingency backup to GNSS. These specifications expect the RNP system to revert to inertial coasting when GNSS is lost for any reason. Approved inertial navigation systems meeting FAA 14 Code of Federal Regulations (CFR), Part 121, Appendix G, or an equivalent standard, may assume an initial drift rate of 4 NM/hour for the first 30 minutes (95 per cent).

Example - second lowest

An aerodrome has 3 operational authorised instrument approach procedures with MDAs of 300 ft, 300 ft and 400 ft.

The second lowest MDA is intended to be the second instance of 300 ft, not 400 ft as the second lowest unique value.

Reasonable limit of qualifying minima

- 3.3.3.8 Subsection 4.11(3) was inserted in 2025 to ensure the ceiling and visibility minima that apply for the planning of a destination alternate aerodrome, an ERA or an isolated destination aerodrome do not exceed the minima that would apply if those aerodrome types were planned as a destination aerodrome without a destination alternate.
- 3.3.3.9 This prevents unintended operational penalties where alternate aerodrome requirements become disproportionately restrictive compared to destination aerodrome requirements. For example, an aerodrome with multiple straight-in instrument approaches may still be treated as a single-runway aerodrome for alternate planning, triggering higher ceiling and visibility additives

(e.g. 400 ft and 1.5 km). Capping these values avoids unnecessary conservatism while maintaining safety.

- 3.3.3.10 The change aligns alternate aerodrome planning with the operational reality that the alternate aerodrome is a contingency option, not the primary landing point, and should not impose stricter requirements than those applied to the destination aerodrome. CASA has assessed that this maintains an equivalent level of safety by preserving the principle that 2 safe landing options must be available while removing unnecessary operational constraints.

Suitable runways

- 3.3.3.11 Table 4.11 Items 1 and 2 each refer to 'different suitable runways'. *Suitable runway* is not a defined term. Instead, it relates to the requirement that an aerodrome must be suitable for an aeroplane to land at during the ETOU.
- 3.3.3.12 The Table 4.11 use of *suitable runway* incorporates several requirements not specifically identified in Chapter 4 of the Part 121 MOS, such as, but not limited to, the following:
- a. aeroplane crosswind and tailwind limits
 - b. runway length (as pertains to landing performance requirements - dry/wet/contaminated)
 - c. runway width (as pertains to narrow runway operations)
 - d. runway slope
 - e. runway strength (PCN/PCR)
 - f. runway lighting
 - g. visual approach slope indicator system (if required).
- 3.3.3.13 Table 4.11 Items 1 and 2 are applicable at aerodromes where at the ETOU there are at least two runway landing options (*different runways*), each of which has at least one IAP option. They both essentially provide mitigation to the risks of runway unavailability or IAP unavailability.

Note: The runway availability risk is not intended to include mitigation of the weather variability risk in relation to wind for a runway being out of limits for a given aeroplane.

The numerous possible variations to aerodrome runway configurations means it is likely that multiple runways with different alignments usually alleviate the risk of wind forecasting inaccuracy. This is not however always the case.

- 3.3.3.14 Table 4.11 Items 2A and 3 do not control the runway availability risk as per Items 1 and 2. Further, Item 2A requires at least two operational straight-in IAP. Item 3 only requires a single IAP and a single runway, hence the necessary inclusion of circling minima as the IAP minima to which the weather uncertainty additive is applied. The single runways in Item 2A and 3 are required to be suitable despite the column 1 description being silent on that as a requirement.

Example

It would be unreasonable to ignore the unsuitability of a single runway due to forecast or actual wind during the estimated time of use for the aerodrome.

- 3.3.3.15 Table 4.11 Item 3 does not require that the IAP is a straight-in (S-I) runway aligned IAP to the single runway. Item 3 incorporates circumstances such as only one runway being suitable where the IAP is not runway aligned and requires a circling approach, and also the single suitable runway has a S-I runway aligned IAP which does not permit circling.

- 3.3.3.16 The underlying safety intent, noting the circumstances outlined above, led to the Table 4.11 Item 3 requirement that the qualifying minima of cloud ceiling and visibility values are calculated by adding 400 ft to the height of, and adding 1500 m to the visibility of, the higher of:
- the second lowest MDA/MDH or DA/DH
 - the circling height.

Note: In most cases, for Australian IAP published in AIP DAP, it will be the circling minima height and not the second lowest MDA/MDH that will be the prevailing minima for Table 4.11 Item 3 to which the additive values must then be applied.

- 3.3.3.17 The Table 4.11 Item 3 additives for height and visibility (400 ft and 1500 m to the circling minima values) are less than the additives (500 ft and 2000 m) required for the calculation of general alternate minima under the Part 173 MOS which are used in non-Part 121 operations²³.
- 3.3.3.18 Consequently, for most Part 121 operations, the general alternate minima published for each IAP in AIP DAP (not the special alternate minima), when used as qualifying minima at a destination alternate aerodrome, will exceed the values required to comply with Table 4.11 Item 3 (and Items 1 and 2). This can be used to provide a useful means of gross error checking the reasonableness of any qualifying minima calculated for Part 121 operations.

Note: Some operators do not permit circling approaches be conducted by their flight crew. The requirements prescribed in Table 4.11 Item 3 in relation to additives to circling minima are not disappplied in those circumstances. The use of circling minima as a basis for calculating qualifying minima must be applied where appropriate, irrespective of the intent to conduct circling.

Accurate QNH

- 3.3.3.19 The shaded background included in the approach minima MDA box for certain Australian IAP charts indicates that a reduction of 100 ft to the MDA can be made if local QNH is available from an approved source²⁴.
- 3.3.3.20 For the purposes of determining the applicable values of MDA taken to comply with column 2 of Table 4.11 relating to the IAP minima, when local QNH is expected to be available during the ETOU for an aerodrome, the 100ft reduction can be used. Where accurate QNH is not likely to be available during the ETOU then the 100ft reduction cannot be applied to the minima.

Example

Where an Aerodrome Weather Information Service (AWIS) that is normally expected to provide the accurate QNH for an aerodrome has a NOTAM issued indicating that the AWIS will be unserviceable for a part of the estimated time of use, then the MDA used for the determination of minima under Table 4.11 cannot include a 100 ft reduction.

Different vs separate runways

- 3.3.3.21 Separate runways exist at the same aerodrome where the aeroplane can land on either runway if the other was closed. The simplest example of separate runways are parallel runways, such

²³ Part 173 MOS subparagraph 8.1.9.1

²⁴ Part 173 MOS sub subparagraph 8.1.5.1(b)

as Sydney (YSSY) runways 16R/34L and runway 16L/34R, where each remains usable if the other is closed.

- 3.3.3.22 Separate runways reduce the risk of a runway closure on one runway rendering the aerodrome wholly unusable, particularly in the circumstances where a flight may be conducted without a destination alternate aerodrome.
- 3.3.3.23 The legislation is silent in relation to an explanation of the terms *different runways* and *separate runways*. Despite Table 4.11 of the Part 121 MOS not using the term separate runways any minima item, the note that follows Table 4.11 is intended to make clear the distinction between different runways and separate runways that would apply at the same aerodrome. In the simplest form, different runways are where runways have different runway designation numbers.

Example

Avalon (YMAV) runway 18 is a different runway than runway 36 (the opposite end). There are no separate runways at Avalon.

- 3.3.3.24 The determination of separate runways in the circumstances where runways intersect is more challenging and will vary among other things on aeroplane landing performance capabilities. Firstly, an aeroplane must be able to land within the shortened landing distance available (LDA) remaining²⁵, when a crossing runway is closed. The requirement also only contemplates the whole of each runway being unavailable (closed), not partially. The commonly applied logical fallacy in relation to likelihood of the 'whole runway' including the intersection being closed as an alleviation to the requirement relating to separate runways is not acceptable, without clearly determining whether a completely closed intersecting runway can still have operations conducted to the remaining runway's interrupted length. Where such operations are contemplated, the operator's exposition must detail how such operations are conducted.
- 3.3.3.25 For making clearer the significance of runway closures on other runways at an aerodrome it is more helpful to refer to the runways individually by runway number than to contemplate the effects of the combined ends. Whichever means of runway reference is used, consistency in an operator's exposition is crucial to avoid ambiguity.

Example

Melbourne (YMML) runways 16 and 34 intersect with runways 09 and 27.

When runways 09 and 27 are both closed (full length indicated here), most aeroplanes can still operate within the LDA of runway 34 and many can operate within the LDA of a displaced threshold for runway 16, South of the runway intersection, if such a displaced threshold was established and LDA published or able to be calculated.

However, when runways 16 and 34 are both closed (full length), given how runways 09 and 27 would be dissected, it is unlikely that many aeroplanes could operate within the remaining LDA of either runway 09 or runway 27.

Therefore, for most Part 121 operations, YMML cannot be taken to have separate runways.

- 3.3.3.26 For the purposes of applying the provisions of Part 121 MOS Table 4.11, only different runways are considered. The explanation here is to assist in general understanding of the terminology.

²⁵ Part 121 MOS Chapter 9, Division 2—*Landing performance requirements*,

- 3.3.3.27 The circumstances where separate runways are required are where the destination aerodrome is located outside of Australian territory²⁶. The separate runway requirement does not apply to destination aerodromes located within Australian territory. The application and rationale of the policy is explained paragraphs 4.4.10.1 and 4.4.10.2 of this AC.

3.4 Relevant weather conditions – Part 121 definition

- 3.4.1 The term *relevant weather conditions* is defined in both the Part 91 MOS²⁷ and the Part 121 MOS²⁸. These definitions are not identical. It is imperative that the correct definition is applied according to the operation. The fundamental difference being the Part 91 definition includes reference to alternate minima which is not in use in Part 121 and is not included in the Part 121 definition.

Note: The Part 121 definition of *relevant weather conditions* is not the same as the Part 91 definition.

3.4.2 Relevant weather condition elements

- 3.4.2.1 The definition of *relevant weather conditions* in the Part 121 MOS²⁹ contains four elements:
- cloud ceiling
 - visibility
 - wind
 - thunderstorm or its associated severe turbulence.

The four elements have criteria that must be applied to the specified circumstances of each aerodrome use type to assess if relevant weather conditions exist and if they would represent an operationally limiting condition for a flight in those circumstances.

3.4.3 Cloud

- 3.4.3.1 Of the four elements of relevant weather conditions that are prescribed in the Part 121 MOS, cloud is subject to further specified assessment assumptions in relation to what constitutes more than scattered (SCT)³⁰:
- forecast amounts of cloud below the cloud ceiling values relevant to a flight of an aeroplane or the relevant minima (as the case may be) are cumulative:
 - FEW plus FEW is equivalent to SCT
 - FEW plus SCT is equivalent to BKN
 - SCT plus SCT is equivalent to BKN or OVC.

²⁶ Part 121 MOS paragraph 4.08(3)(d)

²⁷ Part 91 MOS subsection 8.02(1)

²⁸ Part 121 MOS subsection 4.04(1)

²⁹ Part 121 MOS subsection 4.04(1)

³⁰ Part 121 MOS subsection 4.06(2)

3.4.4 Visibility

- 3.4.4.1 Visibility is the ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.

Note: It must be remembered that the visibility values for IAP minima expressed for landing minima may be required to be adjusted to accommodate any of the circumstances expressed in the Part 91 MOS section 15.10 as pertains to IAP visibility requirements.

3.4.5 Wind

- 3.4.5.1 As mentioned in paragraph 2.8.4, wind is not expressed in the Part 121 MOS in relation to relevant weather conditions as having a specific numerical value to be assessed, rather by reference to the maximum for the aeroplane³¹. The operator must therefore assess the degree to which wind imposes or does not impose operationally limiting conditions as part of the assessment of relevant weather conditions.
- 3.4.5.2 Whilst the MOS is silent on the numerical value of wind that would impose or not impose operationally limiting conditions, it is highly dependent upon the aeroplane in use and any additional constraints imposed by the operator.
- 3.4.5.3 Without additional operator-imposed constraints, the normal value of wind taken to be relevant weather conditions would be where the wind (including gusts) is forecast to exceed the wind limits prescribed in the aeroplane's AFM³² or where a particular wind value is required for the aeroplane to be able to satisfy the planned and in-flight landing distance (IFLD) requirements specified in Part 121 MOS chapter 9³³.
- 3.4.5.4 Aeroplane wind limits may be further reduced by aeroplane system degradation under MEL or AFM or by environmental matters such as runway friction decrement. Finally, operators may choose to reduce the maximum values of wind allowed to be used by operational crew to some value lower than aeroplane limits. This can preserve some safety margin between forecast wind and actual wind encountered on arrival so that forecast wind plus a margin for forecast inaccuracy does not exceed aeroplane capability in actual conditions.

Note: There may be circumstances where forecast wind conditions at an aerodrome are assessed to be at or close to an aeroplane's AFM wind limits for crosswind or tailwind. Given the desired accuracy standard applicable to aerodrome forecast wind (direction and strength), there may be occasions where forecast wind that is within limits may exceed those limits at the time of approach and landing.

3.4.6 Thunderstorms

- 3.4.6.1 The fourth element of relevant weather conditions; thunderstorm or its associated severe turbulence, also requires some further explanation.

³¹ Part 121 MOS paragraph 4.04(1)(c)

³² Part 121 MOS paragraph 4.04(1)(c), subregulation 91.095(2) and subregulation 121.095(1)

³³ Part 121 MOS sections 9.11, 9.12 and 9.13

Note: The presence of thunderstorms in Part 121 relevant weather condition assessment is not the same as it is in Part 91.

3.4.6.2 There are some circumstances where thunderstorms themselves do not impose an operational limitation. Some of the aerodrome use type weather assessments only specifically identify cloud ceiling and visibility to be assessed for the purposes of determining if relevant weather conditions exist or are forecast to exist. Where this is the case, the cloud ceiling or the visibility that the thunderstorms are forecast to produce are relevant to the assessment. Whilst unstated, this however, still requires wind to be assessed.

3.4.6.3 The inclusion or otherwise of wind with the forecast of thunderstorms varies in some international locations. Not all international aerodromes with a TAF or ICAO landing forecast will specifically include in the forecast the expected wind, rather, rely on the implied presence as they would describe in their national AIP. It is the responsibility of the PIC and the operator to ensure that the manner in which an aerodrome forecast is presented is able to be adequately assessed to determine if relevant weather conditions exist, including wind, for each relevant aerodrome.

3.4.7 Change indicators

3.4.7.1 Authorised weather forecasts may contain the change indicators FM (from) and BECMG (becoming) which are used to specify significant changes (both deteriorations and improvements) from the preceding information that are more lasting in nature³⁴. FM is used when rapid changes are expected at the singular specified time. BECMG is used when the changes are expected to develop at a regular or irregular rate during the specified time period, indicated by the two times of the BECMG period. In both cases, the new conditions will continue until the end of the validity period of the authorised weather forecast, or until replaced by another FM or BECMG.

3.4.7.2 For the purpose of assessing if relevant weather conditions exist or are forecast to exist, the singular time specified for a rapid change (FM) is the effective time of the change. For changes indicated by the use of BECMG, the effective time of the change depends on whether the change is an improvement or deterioration in conditions³⁵.

- a. If the weather conditions within the BECMG period of the forecast represent a deterioration to the preceding elements of the forecast, the effective time of the change indication is to be applied from the start of the forecast BECMG period.
- b. If the weather conditions within the BECMG period of the forecast represent an improvement to the preceding elements of the forecast, the change indication is to be applied from the end of the forecast BECMG period.

3.4.7.3 Whilst the Part 121 MOS does not specifically identify FM indicators as needing to be considered when assessing certain weather forecast requirements, each of the sections that prescribe the requirements for aerodrome use types contain common requirements that relates to the assessment of an authorised weather forecast for an aerodrome to determine whether relevant weather conditions are forecast to exist. This is the mechanism that requires the forecast element FM in a weather forecast to be assessed. It cannot be the case that a TAF with a FM period can have the weather indicated by the FM indicator being ignored, as it is clearly the forecast weather conditions expected from that time.

³⁴ AIP GEN 3.5, 3.6.6

³⁵ Part 121 MOS subsection 4.06(3)]

- 3.4.7.4 Where the forecast contains weather conditions forecast to deteriorate from the prevailing conditions as INTER (intermittent) or TEMPO (temporary), those weather conditions are taken to be present³⁶:
- INTER—when variations from the forecast mean conditions are expected to last for periods less than 30 min in each instance and which, in the aggregate, are not expected to cover more than half the given period, i.e: the variations take place throughout the period sufficiently infrequently such that the mean conditions remain those of the preceding part of the forecast
 - TEMPO—when variations from the forecast mean conditions are expected to last for periods of 30 min or more but less than 60 min in each instance, and which in the aggregate are not expected to cover more than half the given period, i.e: the variations take place sufficiently infrequently such that the mean conditions remain those of the preceding part of the forecast
 - if the forecast contains multiple change indicators of INTER or TEMPO— the time period that is relevant to the most operationally limiting change indicator.

3.4.8 Period of overlap – INTER/TEMPO

- 3.4.8.1 As the estimated time of use effectively creates a ‘window’ where the forecast INTER or TEMPO weather deteriorations may be present for only a small period, a mitigation measure for those small periods may be appropriate. For that purpose, the Part 121 MOS provides that where an INTER or TEMPO deterioration to weather conditions is forecast that would otherwise impose an operationally limiting condition for a period within the estimated time of use, the operationally limiting condition can be alleviated by the carriage of fuel equivalent to or in excess of the period of the operationally limiting condition.
- 3.4.8.2 See section 4.8.7 for an explanation of the period of overlap applicable at an EDTO ERA.

Note: The overlap provisions only apply to change indicators for INTER or TEMPO, not for FM or BECMG. The overlap provision alleviation is not permitted to be used in all instances as there are circumstances that are time-limited and cannot be addressed by holding.

- 3.4.8.3 The Part 121 MOS permits an operator to alleviate the portion estimated time of use of the operationally limiting INTER or TEMPO forecast weather conditions if holding fuel for the period of overlap is carried up to the value of 30 min for INTER and 60 min for TEMPO.

Example

An ETA at a destination aerodrome of 0425Z gives an estimated time of use for ETA ± 30 min³⁷ of 0355Z to 0455Z. Where the authorised weather forecast for the aerodrome forecasts INTER for cloud ceiling below the relevant minima for the entire estimated time of use, 30 min of holding fuel to address INTER when carried would alleviate the presence of relevant weather conditions. Further if the INTER period ceased at 0415Z then the holding fuel required to mitigate the INTER period would only need to be the 20 min of overlap of the start of the estimated time of use (0355Z) until the end of the forecast INTER period (0415Z).

3.4.9 Period of overlap – FM/BECMG

- 3.4.9.1 Where an estimated time of use window has change indicators such as FM or BECMG that are not subject to the alleviation described in paragraphs 3.4.8.1 and 3.4.8.3, an operator may still

³⁶ Part 121 MOS subsection 4.06(4)

³⁷ Part 121 MOS Table 4.05 Item 1

be able in some circumstances to mitigate the effects of the presence of relevant weather conditions by the carriage of holding fuel. In the circumstance where the weather improves during an estimated time of use, delaying the ETA and subsequently the estimated time of use to no longer include the period of relevant weather being present is acceptable. This delay may be accomplished by a number of means. The carriage of holding fuel not otherwise required for the flight, would essentially allow the ETA and therefore the estimated time of use to be delayed such that the relevant weather conditions would no longer be present. This would obviously not be applicable in the circumstances where the weather is forecast to deteriorate in the estimated time of use, as the delayed ETA would not alter the presence of relevant weather conditions in the estimated time of use.

Note: The means of addressing the presence of relevant weather conditions described above, may not be permissible in all circumstances. Individual aerodrome use type subsections in chapter 4 of this AC will make clear when circumstances do not permit such.

3.4.9.2 See section 4.8.7 for an explanation of the period of overlap applicable at an EDTO ERA.

3.4.10 PROB indicators

3.4.10.1 Where a forecast contains probability indicators of PROB30 (30%) or PROB40 (40%) alone that weather conditions will be below the relevant minima at any time during the estimated time of use, the weather conditions are taken to be present in the time period associated with the probability indicator³⁸.

3.4.10.2 Where a forecast contains probability indicators PROB30 or PROB40 coupled with INTER or TEMPO deteriorations to weather conditions, then the alleviation provided by period of overlap is permitted.

3.4.11 TAF3 PROB indicators

3.4.11.1 Where the authorised weather forecast for an aerodrome is a TAF3 and the estimated time of use of the aerodrome is wholly contained within the first three hours of the validity of the (TAF3) forecast, the probability indicators PROB30 and PROB40 may be disregarded in determining if relevant weather conditions are forecast to prevail³⁹. Consecutive TAF3 forecasts may be considered when determining whether the estimated time of use is wholly contained with the first three hours of (one or more) TAF3 forecasts for the purposes of this provision.

Note: The TAF3 will still contain the forecast PROB elements, but where the criteria are satisfied, an operator is not required by the legislation to consider the relevant weather conditions present. It is the operator's prerogative however to decide to apply nor not apply the PROB forecast elements described in those circumstances.

3.4.12 MELs

3.4.12.1 If a flight of an aeroplane is conducted using an aeroplane with an inoperative piece of equipment permitted by a minimum equipment list (MEL) for the aeroplane, any limitation of the MEL specified or consequent to flight with the item inoperative, must be taken into consideration

³⁸ Part 121 MOS subsection 4.06(5)

³⁹ subsection 4.06(7) of the Part 121 MOS.

when determining the landing minima or the relevant weather conditions for the flight⁴⁰. Further discussion in relation to aeroplane equipment is contained in section 3.6.2 of this AC.

3.5 Aerodrome lighting requirements

3.5.1 General requirements

- 3.5.1.1 Aerodrome lighting requirements are prescribed in the Part 121 MOS sections 4.13 through 4.18. These requirements are not the only aerodrome lighting requirements that apply to Part 121 operations generally. The aerodrome lighting requirements starting premise is that when a Part 121 operation is conducted at an aerodrome outside of daylight hours, that the aerodrome, the movement areas, wind direction indicators, approach lighting and required obstacle lighting will be operational.
- 3.5.1.2 For Part 121 operations it is a requirement that an operator and a PIC must ensure that if an aeroplane takes-off from, or lands at, an aerodrome that the aerodrome must be suitable for the aeroplane to take-off or land at, as applies. It is implicit in this provision that an aerodrome used at night must have suitable lighting⁴¹.

Note: This is subtly different to the equivalent Part 91 provision, which requires an aerodrome only be used when an aircraft can land at, or take-off from, the place safely having regard to all of the circumstances of the proposed landing or take-off⁴².

- 3.5.1.3 AIP Australia ENR 1.1 Section 10.8 suitability of aerodromes prescribes procedures that are an acceptable means of compliance with the requirements of regulation 91.055 – Aircraft not to be operated in a manner that creates a hazard, in relation to the suitability of an aerodrome. Subparagraph 10.8.1.1(b) describes aerodrome lighting requirements that would be taken to satisfy safe operations.

Example

Lord Howe Island (YLHI) has its aerodrome operating hours published in AIP En-route Supplement Australia (ERSA) in remarks, number 7 Operating Hours: HJ, being daylight hours only (sunrise to sunset). Given the lack of suitable runway lighting, approach lighting, wind indicator lighting and obstacle lighting, the take-off or landing of an aeroplane at night at the aerodrome would not be taken to satisfy the requirements of operating without creating a hazard.

- 3.5.1.4 Where take-off or landing operations are conducted at a certified aerodrome, the aerodrome certification standards can be taken to address the lighting requirements, albeit only within the published operating hours of the aerodrome, not necessarily of ATC service hours. Variations to the aerodrome lighting provided would be the subject of NOTAM.

3.5.2 Reliable lighting arrangements with suitable aerodrome personnel

- 3.5.2.1 Several of the aerodrome lighting requirements permit as an acceptable alleviation to the necessity to plan for a destination alternate aerodrome or to plan for a different destination alternate aerodrome when reliable arrangements for the purposes of enabling a safe night

⁴⁰ subsection 4.06(8) of the Part 121 MOS.

⁴¹ paragraph 121.205(2)(a) of CASR.

⁴² paragraph 91.410(2)(b) of CASR.

landing have been made with a person at the aerodrome who is qualified and competent in setting out, activating, ensuring ongoing correct lighting functioning (as applicable) for the time periods specified.

- 3.5.2.2 In most circumstances the requirement is for the person to ensure that the required lighting is operational for the period from at least 30 min before the ETA until the aeroplane has completed landing and taxiing, or first light plus 10 min⁴³.
- 3.5.2.3 The question arises as to whether a destination alternate aerodrome that requires reliable arrangements in relation to aerodrome lighting with the presence of a suitable person for the period commencing 30 min before the ETA at the aerodrome applies when the destination alternate aerodrome is less than 30 min flight time from the destination aerodrome. Both scenarios expressed in section 4.15 of the Part 121 MOS for runway lighting with no standby power and section 4.17 Pilot-activated lighting (PAL) have attendance 30-min prior to ETA borne out of the reasonable necessity to be able to either deploy lighting or ensure activation within that time. It is possible where flight time to the destination alternate from the MAPt at the destination aerodrome is less than 30 min, the suitable person would be required to be in attendance prior to the aeroplane arriving at the destination aerodrome (and possibly landing) rendering the destination alternate aerodrome no longer necessary.

Example

For a flight at night that has Brisbane (YBBN) as the destination aerodrome and Brisbane West Wellcamp (YBWW) as the destination alternate aerodrome, given the runway lighting at YBWW is pilot activated lighting with audio acknowledgement (PAL+AA), a suitable person must be in attendance 30 min prior to the ETA at YBWW. The flight time to cover the 71 NM sector distance would for most Part 121 operations be less than 30 min. Therefore, the reliable person would need to be in attendance at YBWW prior to the aeroplane ETA at the destination aerodrome. To alleviate a 'call out for uncertain necessity' the flight planned destination alternate leg (and fuel) could be adjusted to be greater than 30 min, to permit the requirement and hence the subsequent attendance to be determined by the successful landing at the destination aerodrome occurring or not.

3.5.3 Portable runway lighting

- 3.5.3.1 Where an aerodrome only has portable runway lighting available the following requirements must be met:
- a. For a destination aerodrome (not-isolated), at least one destination alternate aerodrome must be planned for the flight.
 - b. For a destination alternate aerodrome, another destination alternate aerodrome must be planned for the flight.
 - c. Unless reliable lighting arrangements have been made as described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.
 - d. For an isolated destination aerodrome, that:
 - i. reliable lighting arrangements have been made as described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min
 - ii. the PIC must not continue the flight to the isolated destination aerodrome, past the critical point, unless reasonable certainty exists that the portable lighting and reliable

⁴³ Part 121 MOS subsection 4.13(3) and subsection 4.15(3)

lighting arrangements will be in place, or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.

3.5.4 Runway lighting with no standby power

3.5.4.1

Where an aerodrome is equipped with electric runway lighting, whether pilot-activated or otherwise, but does not have standby power for the runway lights, the following requirements must be met for each aerodrome use type:

- a. For a destination aerodrome (not-isolated) - at least one destination alternate aerodrome must be planned for the flight.
- b. For a destination alternate aerodrome – another destination alternate aerodrome must be planned for the flight.
- c. Unless portable runway lights are available at the aerodrome and reliable lighting arrangements have been made as described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC including deploying the portable runway lights in the event of a failure of the primary electric runway lighting or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.
- d. For an isolated destination aerodrome, that:
 - i. reliable lighting arrangements have been made as described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC including deploying the portable runway lights in the event of a failure of the primary electric runway lighting or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min
 - ii. the PIC must not continue the flight to the isolated destination aerodrome, past the critical point, unless reasonable certainty exists that the portable lighting and reliable lighting arrangements will be in place, or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.

3.5.5 Pilot-activated lighting (PAL) and standby power

3.5.5.1

Where an aerodrome is equipped with pilot-activated lighting and standby power for the runway lights, the following requirements must be met:

- a. For a destination aerodrome (not-isolated) - at least one destination alternate aerodrome must be planned for the flight.
- b. For a destination alternate aerodrome – another destination alternate aerodrome must be planned for the flight.
- c. As described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC, unless reliable lighting arrangements have been made, or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.
- d. For an isolated destination aerodrome, that:
 - i. reliable lighting arrangements have been made as described in paragraphs 3.5.2.1 and 3.5.2.2. of this AC or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.
 - ii. the PIC must not continue the flight to the isolated destination aerodrome, past the critical point, unless reasonable certainty exists that the reliable lighting arrangements will be in place, or the aeroplane carries sufficient holding fuel to enable holding until first light plus 10 min.

3.5.6 Emergency (EMERG) lighting

3.5.6.1

Where an aerodrome is equipped with emergency (EMERG) lighting only, it is not anticipated that Part 121 operations to that aerodrome would occur at night except in the circumstances

where an aeroplane has declared an inflight emergency. In the circumstances where a Part 121 operation is being conducted by or in support of an emergency service organisation or as part of an emergency service operation, those operations themselves do not warrant the lighting requirements be satisfied by EMERG lighting only in place of the lighting otherwise required by Chapter 4 of the Part 121 MOS.

3.5.7 Lighting required for IAP visibility minima (day or night)

3.5.7.1 Some IAP visibility minima rely on the provision of runway lighting and/or approach lighting irrespective of the time of use being day or night.

3.5.7.2 Where an operator assesses the relevant minima for an aerodrome where the aerodrome's IAP minima rely on runway lighting and/or approach lighting, operators should ensure that those required lights are sufficiently reliable for that the lower minima remain valid. The impact of aerodrome lighting degradation may further increase the visibility minima for some IAP.

Note: This paragraph is not intended to apply to visual approach slope indication system (VASIS) lights that are used to satisfy the subregulation 121.205(3) requirements for specified aeroplanes.

3.6 Nav aids, Instrument approaches and aeroplane equipment

3.6.1 General

3.6.1.1 When determining if a destination aerodrome requires a destination alternate aerodrome be planned, and if that destination alternate aerodrome is to be valid, the aeroplane equipment required to support such operations must be able to do so with an acceptably safe level of equipment redundancy.

3.6.1.2 It is a requirement that the aeroplane equipment must be such that the nav aids and instrument approach facilities to be used at an aerodrome for approach and landing must be capable of being used in the event of an aeroplane system failure.

3.6.1.3 The determining minima expressed in subsection 4.08 is applied in relation to the IAP likely to be flown at the destination aerodrome. In effect the redundancy of the aeroplane systems and aerodrome equipment is embedded as but one of the component parts of the additive ceiling and visibility values prescribed. The presumption made in planning as to which IAP can be taken to be the likely IAP also relies on the degree to which aeroplane equipment requirements are presumed to be satisfied and the required redundancy being retained and accommodated.

3.6.1.4 It follows that the redundancy of aeroplane equipment required to be considered to establish the likely IAP and therefore ensure the determining minima remain valid should any single equipment failure occur. This concept holds true for assessing which IAP has the lowest and consequently second lowest MDA/H or DA/H at a destination alternate aerodrome.

3.6.2 Aeroplane navigation equipment

3.6.2.1 Section 11.09 - Navigation equipment of the Part 121 MOS, prescribes the minimum permissible aeroplane navigation equipment as being either two approved GNSS, or one approved GNSS and at least one ADF or VOR.

3.6.2.2 For the purposes of assessing the aeroplane equipment redundancy required by the legislation, the interdependence of some equipment must be considered. The numerous variations in equipment configuration cannot be each addressed in this AC; however, the principles remain unchanged. The key principle expressed in the Part 121 MOS being that a failure of any single

unit required to navigate to an aerodrome and permit an IAP to landing be conducted, will not result in the failure of another unit required for those purposes.

Example

How does this principle relate to a dual GNSS equipment configuration which is controlled through a single flight management system (FMS) controller?

In this circumstance, the failure of the single unit FMS controller causes the navigation and IAP capability for both GNSS to also be functionally failed, and therefore another means of conducting an IAP would be required.

The necessity for another means also extends to assessing IAP minima for qualifying minima and, to a lesser extent, determining minima as applicable.

- 3.6.2.3 For the avoidance of doubt, the Part 121 MOS requires navigation capability be assessed and its remaining capability following a single equipment failure must be considered in the applicable assessment. This is borne out of the requirements expressed in the subsections 11.09(5) and 11.09(6) of the Part 121 MOS despite neither section 4.08 (determining minima) or section 4.11 (qualifying minima) of the Part 121 MOS specifically expressing the requirement.

4 Weather assessment for aerodrome use type

4.1 General

- 4.1.1 The following sections provide an explanation of how the assessment of relevant weather conditions is applied to the relevant minima for each of the seven aerodrome use types described in section **Error! Reference source not found.**

Note: The following sections do contain some duplicated information from the earlier general sections.

4.2 Departure aerodromes

- 4.2.1 The estimated time of use for a departure aerodrome is the period that commences 30 min before, and ceases 30 min after, the aeroplane's estimated time of departure at the aerodrome⁴⁴.
- 4.2.2 For the time period commencing 30 min prior to the estimated time of departure to 30 min after the estimated time of departure, the authorised weather forecast must be assessed for the departure aerodrome to determine if the relevant weather conditions are forecast to exist below the landing minima that are appropriately adjusted to account for an assumption that the landing at the departure aerodrome will be conducted with one engine inoperative⁴⁵.

Note: The weather assessment described above, is not the aerodrome take-off minima requirements and take-off minima that are expressed in sections 15.03, 15.04 and 15.05 of the Part 91 MOS.

- 4.2.3 Essentially, where the departure aerodrome has relevant weather conditions forecast to be below the applicable landing minima, then the return to land at the departure aerodrome capability required by Part 91 MOS take-off minima requirements⁴⁶ are satisfied by the planning of a take-off alternate aerodrome as described in section 4.3 of this AC.
- 4.2.4 Landing minima criteria are specified in section 15.10 of the Part 91 MOS. The landing minima criteria would routinely be those published on the applicable IAP DAP chart or foreign equivalent outside Australian territory.

Note: The visibility values for IAP minima expressed for landing minima may be required to be adjusted to accommodate any of the circumstances expressed in the Part 91 MOS section 15.10 as pertains to IAP visibility requirements.

- 4.2.5 For the purposes of assessing the authorised weather forecast, for the departure aerodrome there is no requirement specified in the legislation for a TAF or TAF3 (ICAO Landing forecast) to be used to satisfy the weather assessment requirement. In that respect, the PIC is permitted to

⁴⁴ subsection 4.07(2) of the Part 121 MOS

⁴⁵ subsections 4.07(1) - 4.07(3) of the Part 121 MOS

⁴⁶ Regulation 91.307 of CASR and subsection 15.03(b) of the Part 91 MOS.

use a GAF/GAMET area forecast for the weather assessment if a TAF for the aerodrome is not available.

- 4.2.6 It is also permitted, where a forecast is not able to be obtained for the flight, for the PIC to make a pilot assessment of the conditions present at the departure aerodrome and where the PIC reasonably considers that the weather conditions at the departure aerodrome will permit the aircraft to return and land safely at the departure aerodrome within 1 hour after take-off. It is also a requirement that where the weather forecasts required to satisfy the Chapter 4 of the Part 121 MOS - flight preparation requirements cannot be obtained within 30 min after take-off that the PIC must return to the departure aerodrome.⁴⁷ The 'no forecast available' departure provision does not alleviate the requirements relating to fuel planning and flight notification.
- 4.2.7 The requirement to obtain within 30 min from take-off the forecasts to satisfy the Part 121 MOS weather assessment requirements does not necessitate the obtaining of a forecast for the take-off aerodrome except where that aerodrome is also to be used to satisfy en-route alternate (ERA) aerodrome (non-EDTO) requirements⁴⁸.

4.3 Take-off alternate aerodromes

- 4.3.1 Take-off alternate aerodromes are a means of mitigating some of the risks that are present during the take-off and early en-route phase of flight for large air transport operations. Given the statistical representation of incidents that occur in the early flight phases, it has become commonplace for NAAs to require that an aeroplane must be able to return to land at the departure aerodrome or if not, an aerodrome at which a landing can be made, within a reasonable flight time (or distance) must be planned for the flight.

4.3.2 When a take-off alternate aerodrome must be planned

- 4.3.2.1 As described in section 4.2 of this AC, where relevant weather conditions are determined to be present below the landing minima for the departure aerodrome, a take-off alternate aerodrome must be planned for the flight⁴⁹.
- 4.3.2.2 Additionally, when it would not be possible for the aeroplane, after taking off from the departure aerodrome, to return to that aerodrome for reasons other than relevant weather conditions, a take-off alternate aerodrome must be selected for a flight⁵⁰.

Example

Reasons other than relevant weather conditions may include absence of aerodrome lighting, aerodrome closures (NOTAM) and so on.

- 4.3.3 A take-off alternate aerodrome that is planned for a flight must be available for use; and meet the requirements in Part 121 MOS subsections 4.07(5) to (8), which are explained in paragraphs 4.3.4.1 to 4.3.7.1 of this AC.

4.3.4 Qualifying minima for a take-off alternate aerodrome

- 4.3.4.1 For an aerodrome to be selected as a take-off alternate aerodrome an assessment of the authorised weather forecast for the estimated time of use that commences 30 min before, and

⁴⁷ subsections 7.03(1) and 7.03(3) of the Part 91 MOS

⁴⁸ paragraph 4.07(1)(a) and paragraph 4.11(1)(a) of the Part 121 MOS

⁴⁹ subsection 4.07(1) of the Part 121 MOS

⁵⁰ paragraph 4.07(1)(b) of the Part 121 MOS

ends 30 min after, the estimated time of arrival at the take-off alternate aerodrome must be conducted⁵¹.

- 4.3.4.2 The relevant weather conditions for a take-off alternate aerodrome are present when below the landing minima for the aerodrome adjusted to account for an assumption that the landing at that aerodrome will be conducted with one engine inoperative. An alleviation is provided where weather conditions forecast with INTER or TEMPO when coupled with a probability indicator PROB30 or PROB40 need not be taken into account in determining if relevant weather conditions exist for a take-off alternate aerodrome⁵².
- 4.3.4.3 The landing minima for the take-off alternate aerodrome must meet the landing minima criteria specified in section 15.10 of the Part 91 MOS, which also include, for the specific purposes of a Part 121 take-off alternate aerodrome, landing minima where the aerodrome does not have an IAP⁵³.
- 4.3.4.4 For the purposes of assessing the authorised weather forecast, for the take-off alternate aerodrome the assessment must be based on an authorised weather forecast, but there are no specific requirements for that forecast to be a TAF or TAF3 (ICAO Landing forecast) to satisfy the weather assessment requirement. In that respect, the PIC is permitted to use a GAF/GAMET area forecast for the assessment if a TAF is not available⁵⁴.
- 4.3.4.5 The estimated time of use for a take-off alternate aerodrome is given by Item 4 of Table 4.05 as the period of time that commences 30 min before, and ceases 30 min after, the aeroplane's estimated time of arrival at the aerodrome.

4.3.5 Permissible location of a take-off alternate aerodrome

- 4.3.5.1 The Part 121 MOS prescribes three different permissible flight-time based distance limitations for the location of the take-off alternate aerodrome determined by the aeroplane-engine combination (AEC) characteristics.
- a. 2-engine aeroplane: the take-off alternate aerodrome must be located no further than the distance covered in one hour of flight time, at a one-engine-inoperative (OEI) cruising speed for the aeroplane, calculated in ISA and still air conditions, at the take-off weight for the aeroplane.
 - b. 3- or 4-engine aeroplane: the take-off alternate aerodrome must be located no further than the distance covered in 2 hours of flight time, at a normal cruising speed or all engines operating speed (AEO) for the aeroplane, calculated in ISA and still air conditions, at the take-off weight for the aeroplane.
 - c. EDTO flight: for a flight where the flight time distance to a take-off alternate aerodrome applicable to a 2-engine or 3- or 4-engine aeroplane cannot be satisfied, provided the following matters are taken into account:
 - i. the safe operation of the aeroplane
 - ii. aerodrome meteorological conditions
 - iii. aeroplane operational limitations.
 - d. The take-off alternate aerodrome must be located within the distance of the maximum diversion time (MDT) approved for the operator for the aeroplane.

⁵¹ section 4.05 & Table 4.05 (Item 4) of the Part 121 MOS

⁵² subsection 4.07(8) of the Part 121 MOS

⁵³ subsection 15.10(7) and subsection 15.10(8) of the Part 91 MOS

⁵⁴ subsection 4.07(7) of the Part 121 MOS

Note: The location of the take-off alternate aerodrome based on EDTO approved MDT can only be used in the circumstances where a take-off alternate aerodrome cannot be planned to be located within the applicable non-EDTO flight time distance.

4.3.5.2 It is important to recognise that the location of the take-off alternate aerodrome is required to be within the applicable flight time distance. The location of the take-off alternate aerodrome within flight-time based distance limitations does not impose a requirement to land or be able to land within the time expressed in the calculation of the distance to the location of a take-off alternate aerodrome.

4.3.6 Holding fuel to alleviate relevant weather conditions

4.3.6.1 The Part 121 MOS permits relevant weather conditions that would be operationally limiting to not be taken to be present if an amount of holding fuel is carried in certain circumstances. That alleviation to the presence of relevant weather conditions through the carriage of holding fuel is also permitted for planning and qualifying a take-off alternate aerodrome⁵⁵.

4.3.6.2 Additionally, when assessing forecast weather to determine whether relevant weather conditions are forecast to exist, where an authorised weather forecast for a take-off alternate aerodrome includes TEMPO, those weather conditions are taken to be present for the entire time period that the forecast includes the change indicator of TEMPO, unless: 60 min of holding fuel is carried by the aeroplane for the flight⁵⁶.

4.3.6.3 It is accepted that despite the location of the take-off alternate aerodrome being within the required flight-time distance, the actual 'on the day' flight time to landing at the take-off alternate following the unlikely case of an engine failure or other reason requiring an immediate landing on or shortly after take-off, could exceed the flight-time distance time, of more than one hour.

Example

The exceedance of the one hour time could occur where a take-off alternate aerodrome is located at the extremity of the flight-time distance limitation and, on the day of operation, the wind and temperature at the planned level to the take-off alternate aerodrome are more penalising than nil-wind and ISA temperature and the take-off alternate aerodrome has a forecast of TEMPO for operationally limiting conditions, with holding fuel carried to alleviate the relevant weather conditions.

4.3.6.4 Many operators establish policies that impose a limit on the maximum planned flight interval to a take-off alternate aerodrome.

4.3.7 Take-off alternate aerodrome and the operational flight plan

4.3.7.1 The Part 121 MOS prescribes that where a take-off alternate aerodrome is required for a flight the operational flight plan must include the name, or other identifying information, of the take-off alternate aerodrome⁵⁷. Alleviation to the requirement is permitted in the circumstances where there are procedures in the aeroplane operator's exposition to ensure the PIC is notified of the name, or other identifying information, of the take-off alternate aerodrome before the aeroplane takes off for the flight⁵⁸.

⁵⁵ subsection 4.04(2) of the Part 121 MOS

⁵⁶ paragraph 4.06(4A)(a) of the Part 121 MOS

⁵⁷ subsection 5.01(3) of the Part 121 MOS.

⁵⁸ subsection 5.01(4) of the Part 121 MOS.

4.4 Destination aerodromes (other than isolated destinations)

- 4.4.1 It is worth restating that the manner in which flight preparation (Part 121 alternate aerodromes) requirements address destination alternate aerodrome requirements is distinctly different from the manner in which the Part 91 operations (and the other operations that are required to use the Part 91 flight preparation (alternate aerodromes) requirements) are required to do so.
- 4.4.2 Broadly speaking, the Part 91 flight preparation (alternate aerodromes) requirements use the same criteria for relevant weather conditions at the destination aerodrome and at any alternate aerodrome. The relevant minima that are to be assessed are the same for determining if an alternate aerodrome is required for the destination aerodrome and also to assess if the selected alternate can 'qualify' as an alternate aerodrome. This is effectively a continuation of the AIP described alternate aerodrome requirements that had been in place in Australia for many years.
- 4.4.3 The Part 121 alternate aerodrome policy can be broadly described as requiring a destination alternate aerodrome except where the rules allow for an alleviation of that destination alternate aerodrome requirement. Also, importantly, the criteria for the 'qualification' of an aerodrome as a destination alternate aerodrome are in most instances to lower minima than in the application the Part 91 requirements. Part 121 requirements take into consideration the aerodrome and aeroplane instrument approach (IAP) capabilities. This is expanded upon in the subsequent sections of this AC.
- 4.4.4 For a planned destination aerodrome, the weather assessment for determining if relevant weather conditions are forecast to exist must be conducted for the estimated time of use that commences 30 min before, and ends 30 min after, the estimated time of arrival at the aerodrome⁵⁹.
- 4.4.5 For the purposes of assessing the authorised weather forecast, for the destination aerodrome there is no requirement specified for a TAF or TAF3 (ICAO Landing forecast) to be used to satisfy the weather assessment requirement. In that respect, the PIC is permitted to use a GAF/GAMET area forecast for the assessment if a TAF is not available. Further, the destination aerodrome can be planned without a forecast being available, provided two destination alternate aerodromes are selected⁶⁰.
- 4.4.6 Whereas the Part 91 MOS requires the use of a TAF for the weather assessment at a destination aerodrome with an IAP and a TAF or GAF/GAMET area forecast at a destination aerodrome without an IAP, Part 121 operations do not require such, due to the construction of the alternate aerodrome philosophy. The relevant Part 91 MOS provisions requiring those forecasts are disapplied for Part 121 operations.
- 4.4.7 From a conceptual perspective, for Part 121 operations there are effectively three levels of ceiling and visibility at a destination aerodrome that determine if none, one or two destination alternate aerodromes are required for a flight.

4.4.8 Determining Minima – destination alternate aerodrome required or not

- 4.4.8.1 A destination alternate aerodrome is not required to be planned for a flight if all of the weather criteria and other conditions specified can be satisfied for the estimated time of use at the destination aerodrome⁶¹. The weather criteria are as follows:
- a. Cloud:

⁵⁹ section 4.05 and Table 4.05 (Item 1) of the Part 121 MOS.

⁶⁰ paragraph 4.10(2)(b) of the Part 121 MOS.

⁶¹ subsection 4.08(3) of the Part 121 MOS

- i. cloud ceiling greater than 1,000 ft above the landing minima for the IAP likely to be used on arrival at the aerodrome or 500 ft above the minimum altitude for a circling manoeuvre for the IAP likely to be used on arrival if the straight-in IAP to the most into-wind runway cannot be performed and a circling manoeuvre for the IAP must be performed⁶²
- b. Visibility:
 - i. the greater visibility of 5 km or if is likely that an IAP will be used on arrival, the landing minima visibility for the IAP plus 2 km⁶³
- c. Wind:
 - i. wind values forecast must not exceed a headwind, crosswind or downwind component more than the maximum for the aeroplane, including any forecast wind gusts
- d. TS:
 - i. a thunderstorm or its associated severe turbulence does not itself prevent a destination aerodrome from being planned without a destination alternate aerodrome. (See discussion in paragraph 4.4.8.4 of this AC for further information)

4.4.8.2 Whilst the 'determining minima' provision with the Part 121 MOS specifies that only the ceiling and visibility weather criteria are used to assess whether a destination alternate aerodrome is required for a destination aerodrome, that is not the full extent of the requirements.

4.4.8.3 The wind forecast at the destination aerodrome for the estimated time of use, need only be within the aeroplane AFM limitations capability, which is not specifically called out in the MOS provision, but obviously the aeroplane must be operated in accordance with the AFM, including wind limitations⁶⁴. The PIC must also comply with any exposition requirements imposed by the operator that may further reduce the permissible wind limits for a destination aerodrome⁶⁵.

4.4.8.4 For TS and its associated severe turbulence, a TS by itself is not a limiting criterion. It may be determined by an operator or a PIC that its forecast presence can reasonably be taken to require a destination alternate aerodrome be planned, but the legislation does not specifically mandate such. The legislation deliberately addresses a forecast TS presence in the estimated time of use by requiring the application of the ceiling and visibility criterion (and by extension – wind) to the forecast ceiling and visibility within the TS forecast period. Severe turbulence associated with the forecast TS is also not by itself reason to require a destination alternate aerodrome, unless an AFM limitation or operator policy dictates such.

4.4.8.5 There are some differences in respect of weather forecasting provided by other weather service providers internationally. For instance, where a jurisdiction specifies that any forecast of TS must be taken to include variable wind direction and gusts to 30 kts for example, the operator must ensure that the wind effects are adequately considered in the application of aerodrome suitability. Many foreign NAAs will publish in their AIP or AIM information in relation to the inclusion of otherwise of wind associated with forecast or observed TS.

4.4.9 Determining Minima – two destination alternate aerodromes required

4.4.9.1 Where the weather assessment for the destination aerodrome for the estimated time of use determines that relevant weather conditions exist below the landing minima for the likely IAP to be flown then two destination alternate aerodromes must be planned⁶⁶.

⁶² subsection 4.08(5) of the Part 121 MOS

⁶³ subsection 4.08(6) of the Part 121 MOS

⁶⁴ Subregulation 121.055(1) of CASR

⁶⁵ Subregulation 119.220(1) of CASR

⁶⁶ paragraph 4.10(2)(a) of the Part 121 MOS.

Note: Fuel requirements necessary to address the two destination alternate aerodromes circumstance are satisfied by a fuel quantity that is sufficient to fly to the destination alternate (of the two) that requires the highest quantity of alternate fuel, usually the most distant (by track miles) of the two. This does not impose that sufficient fuel to fly to both of the destination alternate aerodromes in a sequence is required.

- 4.4.9.2 Also, if an authorised weather forecast for the planned destination aerodrome is either not available for the estimated time of use or does not completely encompass the estimated time of use, two destination alternate aerodromes must be planned⁶⁷.
- 4.4.9.3 For the avoidance of doubt and restating paragraphs 4.4.5 and 4.4.6 of this AC, where a destination aerodrome does not have a TAF, but does have an authorised weather forecast that is a GAF/GAMET for an area that encompasses the destination aerodrome and satisfies the validity requirements described in paragraph 4.4.9.2 of this AC then the GAF/GAMET can be used to assess whether a destination alternate aerodrome is required.
- 4.4.9.4 Where two destination alternate aerodromes are required to be planned, it is permissible that where one destination alternate aerodrome can satisfy certain requirements then only one destination alternate aerodrome need be planned.

4.4.10 Separate runway requirements – destination aerodromes outside Australian territory

- 4.4.10.1 For Part 121 operations it is a requirement that a destination aerodrome that is not located in Australian territory must have separate runways that are usable at the aerodrome, with at least one runway having an operational authorised instrument approach procedure (IAP)⁶⁸. See the further explanation commencing at paragraph 3.3.3.21 of this AC.
- 4.4.10.2 It is an acknowledgement of the characteristics of aerodrome infrastructure that exist in Australia that the international standards for separate runways as a determining value for destination aerodromes does not apply at aerodromes in Australian territory.

4.4.11 Determining Minima – summary

- 4.4.11.1 A summary of the simplified determining minima is; ETA +/-30 min, the likely IAP to be flown at the destination aerodrome:
- Above IAP minima +1000 ft and 5 km visibility (or IAP +2 km) and 2 RWY = no destination alternate aerodrome required
 - Below IAP minima +1000 ft and 5 km visibility (or IAP +2km) and 2 RWY = one destination alternate aerodrome required
 - Below landing minima or uncertain = 2 destination alternate aerodromes required.

Note: The summary is not fully inclusive of all matters that can necessitate a destination alternate aerodrome be planned.

⁶⁷ paragraph 4.10(2)(b) of the Part 121 MOS.

⁶⁸ paragraph 4.08(3)(d) of the Part 121 MOS.

4.4.12 In-flight to the destination aerodrome - alleviation to the destination alternate aerodrome requirements

- 4.4.12.1 For Part 121 operations an in-flight alleviation to the requirement for a destination alternate aerodrome to be planned and retained is provided. The alleviation is only able to be applied in the circumstances during a flight (in-flight) where the aeroplane is within 60 min flight time to the aerodrome of intended landing⁶⁹ (destination aerodrome in most cases). The alleviation relies on the weather assessment being made by reference to a TAF3 for a destination aerodrome in Australian territory or an ICAO landing forecast for a destination aerodrome not in Australian territory⁷⁰. See discussion below for identifying ICAO landing forecasts.
- 4.4.12.2 The time period to be assessed is not the same as the defined destination aerodrome ETOU applicable to destination aerodrome determining minima. The weather assessment for the in-flight alleviation in relation to relevant weather conditions is required to be made for the period from 30 min before the ETA at the aerodrome to 60 min after the ETA⁷¹. The weather criteria to be assessed in the ETA -30/+60 period require that relevant weather conditions are not forecast to exist below the ceiling and visibility values applicable to the appropriate item of Table 4.11 of the Part 121 MOS for the approach facility configuration of the aerodrome intended to be used, or available for use, by the aeroplane.

Note: As explained section 3.3.3 of this AC in relation applying Table 4.11 of the Part 121 MOS, the runway(s) assessed must include a suitability assessment.

- 4.4.12.3 The basis for the reduction from the pre-flight and in-flight determining minima to the qualifying minima, in this circumstance, is borne out of the safety margins provided by the enhanced forecasting accuracy of the TAF3 1st three hours or ICAO landing forecast when coupled with the increased accuracy of arrival time and the constrained time within which forecast variance is sufficiently reduced to permit a lower minima be used for determining the need if any for a destination alternate aerodrome.

Note: Where the in-flight alleviation to the requirement for a destination alternate aerodrome is applied, the destination alternate fuel for the planned destination alternate leg need no longer be preserved, instead, the destination alternate fuel value of 15 min fuel for the 'no-destination alternate' is required⁷². (See the Part 121 AMC/GM for explanation of protection of destination alternate fuel).

- 4.4.12.4 The question arises as to whether the in-flight alleviation can be used prior to take-off on flights less than 60 min flight time to their destination. In short, where the definition of a flight having commenced is satisfied, then legislatively the aeroplane is in-flight albeit potentially not airborne. A reasonable interpretation ought to be taken that considers the certainty of flight progress against the potential for ground delays or departure aerodrome terminal area delays that might result in the planned or assumed time to destination being increased beyond the 60-minute limitation. It essentially boils down to the certainty or otherwise of the ETA at the destination aerodrome being known and within the applicable time limit to determine if the in-flight alleviation can reasonably be applied prior to take-off or established en-route.
- 4.4.12.5 In order to apply the alleviation, the first three hours of the validity of a TAF3 must wholly encompass the period of the ETA -30/+60⁷³. The routine, 3-hourly issuing of the TAF3 does

⁶⁹ subsection 4.08(4) of the Part 121 MOS.

⁷⁰ paragraph 4.09(1)(a) of the Part 121 MOS.

⁷¹ paragraph 4.09(1)(b) of the Part 121 MOS.

⁷² paragraph 7.05(3)(b) and subsection 7.02(3) of the Part 121 MOS.

⁷³ subsection 4.09(2) of the Part 121 MOS.

result in periods of time where the ETA -30/+60 at an aerodrome for a flight may be comprised of portions of the 1st three hours of two consecutive TAF3s. Where this occurs, the weather assessment must ensure that relevant weather conditions are not forecast in either TAF3 to exist below the ceiling and visibility values applicable to the appropriate item of Table 4.11. Where the ETA -30/+60 is not wholly contained within the 1st three hours of either a single or consecutive TAF3 1st three hours, then the alleviation cannot be used.

- 4.4.12.6 There may be circumstances where the time interval between the point where the in-flight alleviation is sought to be applied and the ETA, up to the maximum permissible 60 min, when coupled with the ETA -30/+60 occurs prior to the issuing of the next TAF3. In such circumstances the in-flight alleviation cannot be used as the weather forecast assurance provided by the TAF3 is not covered for the ETA -30/+60.
- 4.4.12.7 For application of the in-flight alleviation for aerodromes outside of Australian territory an ICAO landing forecast is required. An ICAO landing forecast is normally issued every 30 min and is valid for 2 hours, thereby giving uninterrupted coverage of the ETA window for the purposes of the alleviation provision.
- 4.4.12.8 Additionally, the alleviation to the alternate aerodrome requirement also requires an assessment of likely ATC delays for the period of the ETA to the ETA plus 60 min. Finally, the provision also requires 2 separate runways for aerodromes not within Australian territory, at least one of which must have an operational IAP.
- 4.4.12.9 As distinct from different runways, separate runways are runways at an aerodrome that are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane.
- 4.4.12.10 It is usually the case that foreign NAAs will publish in their AIP or AIM compliance or differences from ICAO standards and recommended practices (SARPs). The relevant ICAO SARPs for the Landing forecast that satisfy the Part 121 MOS requirement⁷⁴ to be “a forecast declared (however described) by the relevant State to be an ICAO landing forecast”; is ICAO Annex 3 - Meteorological Services for International Air Navigation - Part I — Core SARPs Twentieth Edition, July 2018, Section 6.3, 6.3.1, 6.3.2 and 6.3.3. An internet search will usually return the current AIP or AIM references to those SARPs and declared differences, if any, for each NAA.

4.4.13 Destination alternate aerodrome(s) and the operational flight plan

- 4.4.13.1 The Part 121 MOS prescribes that where a destination alternate aerodrome is required for a flight the operational flight plan must include the name, or other identifying information, of the destination alternate aerodrome, and the routes or route segments required for a flight to the destination alternate aerodrome⁷⁵.

Note: Whilst the requirement in the Part 121 MOS is expressed in relation to ‘a’ destination alternate aerodrome, it does not disapply the requirement where it involves two destination alternate aerodromes, it is simply a form of legal expression.

- 4.4.13.2 Alleviation to the operational flight plan (OFP) requirement described in paragraph 4.4.13.1 of this AC is permitted in the circumstances where there is a last-minute change (LMC) to the destination alternate aerodrome required for the flight; or requiring a destination alternate aerodrome to be planned for the flight; and it is not reasonably practicable in the circumstances to update the flight plan to include either or both matters⁷⁶.

⁷⁴ subparagraph 4.09(1)(a)(ii) of the Part 121 MOS.)

⁷⁵ subsection 5.01(5) of the Part 121 MOS.

⁷⁶ subsection 5.01(5) of the Part 121 MOS

- 4.4.13.3 In the case where the information identifying the destination alternate aerodrome is not included in the OFP, the aeroplane operator's exposition must contain procedures that would ensure the PIC is notified of the name, or other identifying information, of the destination alternate aerodrome before the aeroplane takes off for the flight.

Note: The operator's exposition should explain or constrain what reasonably constitutes a LMC for the purpose.

4.5 Isolated destination aerodromes (qualifying minima)

4.5.1 Criteria that establish a destination aerodrome as isolated

- 4.5.1.1 An isolated destination aerodrome is effectively a destination aerodrome that does not have an aerodrome that can be used as a destination alternate aerodrome within approximately 90 min flight time (for a turbine-powered aeroplane) or 45 min plus 15% of flight time at cruise level between departure and destination aerodromes (for a piston-powered aeroplane)⁷⁷.
- 4.5.1.2 Destination aerodromes could be rendered isolated on the basis of geographic location (actual distances to the nearest aerodrome) or due to operational factors such as weather, lighting, instrument approach configuration, etc. at aerodromes that would otherwise be within the relevant diversion distance (geographic area).
- 4.5.1.3 There may be circumstances where a destination aerodrome that would otherwise have a nearby destination alternate aerodrome may become, for periods of time, isolated. As an example, an aerodrome closure at Surabaya (WARR) for certain times of day may render Bali (WADD) only 164 NM away, isolated.

Note: Operators may seek to arrange with authorities and aerodrome operators to have otherwise closed aerodromes available with sufficient notice, should they be required to be active as a destination alternate aerodrome.

4.5.2 Isolated destination aerodrome (qualifying minima) – applicable requirements

- 4.5.2.1 Setting aside the specific nuances of the actual fuel calculations required to establish the exact time/distance from an aerodrome that would render a destination aerodrome 'isolated', the following paragraphs explain the weather assessment requirements relating to planning and operating to isolated destination aerodromes.
- 4.5.2.2 The estimated time of use for an isolated destination aerodrome is the period commencing 30 min before, and ending 60 min after, the estimated time of arrival of an aeroplane at the aerodrome⁷⁸.
- 4.5.2.3 The Part 121 MOS permits an isolated destination aerodrome to be planned for use only if an authorised weather forecast for the aerodrome indicates that, during the estimated time of use at the aerodrome, relevant weather conditions are not forecast to exist below the cloud ceiling

⁷⁷ section 4.03 of the Part 121 MOS

⁷⁸ section 4.05 and Table 4.05 (Item 3) of the Part 121 MOS.

and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration.

Note: Qualifying minima, whilst routinely used to describe qualifying a destination alternate aerodrome, can be used in the context of qualifying an isolated destination aerodrome for use.

4.5.2.4 For the purposes of assessing whether relevant weather conditions are forecast to exist at an isolated destination aerodrome, there is no specific requirement for a TAF or TAF3 (ICAO Landing forecast) to be used to satisfy the weather assessment requirement. In that respect, the PIC is permitted to use a GAF/GAMET area forecast for the assessment if a TAF is not available.

4.5.3 Isolated destination aerodrome planning requirements.

4.5.3.1 In order for a flight to be planned to an isolated destination aerodrome the following must be satisfied:

- a. The authorised weather forecast for the isolated destination aerodrome must indicate that, during the estimated time of use at the aerodrome, relevant weather conditions are not forecast to exist below the cloud ceiling and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration⁷⁹.
- b. A critical point (CP) must be calculated before the commencement of the flight⁸⁰.
- c. The calculated CP must be included on the operational flight plan (OFP) before the flight commences⁸¹.
- d. The en-route alternate (ERA) aerodrome that is used in the calculation of the CP must also have an authorised weather forecast for the aerodrome that indicates that, during the estimated time of use at the ERA aerodrome, relevant weather conditions are not forecast to exist below:
 - i. Where the authorised weather forecast for the aerodrome is a TAF or TAF3 (ICAO Landing forecast) - the cloud ceiling and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration⁸²
 - or
 - ii. Where the authorised weather forecast for the aerodrome is a GAF or GAMET area forecast:
 - A For an aerodrome with at least one authorised IAP a cloud ceiling of the circling minimum altitude specified on the IAP chart for the IAP likely to be conducted, plus 500 ft; and visibility of the circling visibility specified on the IAP chart for the IAP likely to be conducted, plus 2 km.

Note: Also, where actual QNH is not available for the IAP to be flown and the forecast area QNH is used 50 ft must be added to the IAP minima.

⁷⁹ paragraph 4.11(1)(c) of the Part 121 MOS.

⁸⁰ subsection 4.12(2) of the Part 121 MOS.

⁸¹ paragraph 5.01(2)(h) of the Part 121 MOS.

⁸² paragraph 4.11(1)(b) of the Part 121 MOS.

- B For an aerodrome without an authorised IAP a cloud ceiling of the lowest safe altitude for the last route segment to the aerodrome, plus 500 ft; and visibility of 8 km.

- 4.5.3.2 The inter-relationship between alternate aerodrome requirements and fuel requirements is demonstrated in the construction of the isolated destination aerodrome planning and the fuel requirements required for the CP and for the flight segments, either onward from the CP to the isolated destination aerodrome, or from the CP to the ERA aerodrome. The construction expressed in chapter 4 of the Part 121 MOS in relation to isolated destination aerodromes retains two landing options until the CP with both aerodromes being required to have authorised weather forecast for the aerodrome indicating that, during the estimated time of use at the aerodromes, relevant weather conditions are not forecast to exist below the cloud ceiling and visibility values mentioned in Table 4.11 (or higher where a GAF or GAMET area forecast is the authorised weather forecast for the ERA aerodrome) for the relevant aerodrome approach facility configuration, with the pre-flight and in-flight fuel requirements imposing the higher destination alternate fuel quantity be carried for one of those landing options, that being the isolated destination aerodrome. (As discussed briefly in paragraph 2.2.3 of this AC)
- 4.5.3.3 The Part 121 MOS permits relevant weather conditions that would be operationally limiting at an isolated destination aerodrome to not be taken to be present if an amount of holding fuel is carried in certain circumstances. That alleviation to the presence of relevant weather conditions through the carriage of holding fuel is permitted for planning and continuation of a flight to an isolated destination aerodrome. Further, for an isolated destination aerodrome, the fuel required to alleviate the presence of relevant weather conditions for INTER or TEMPO for the period of overlap can be taken to be satisfied by fuel in excess of the final reserve fuel carried and required for the flight by at least the amount of holding fuel mentioned in the relevant provision.

Example

Where the destination alternate fuel required for an isolated destination aerodrome for a turbine-engine aeroplane is approximately 90 min, (comprised of 2 hrs at normal cruise consumption above the isolated destination aerodrome minus final reserve fuel – 30 min) then holding fuel to alleviate the presence of relevant weather conditions for INTER or TEMPO can be taken to be satisfied by the isolated destination aerodrome fuel required.

4.5.4 In-flight to the CP – relevant aerodrome weather awareness

- 4.5.4.1 During a flight to an isolated destination aerodrome the PIC must retain situational awareness of the authorised weather forecasts for the ETOU at the isolated destination aerodrome and the ERA aerodrome upon which the CP is calculated. In the circumstance where either forecast indicates for the ETOU that relevant weather conditions are forecast to exist below the ceiling and visibility values applicable to the appropriate item of Table 4.11 for the approach facility configuration for the aerodrome (no longer above qualifying minima) then an alternative course of action must be planned and undertaken.
- 4.5.4.2 If changes to the authorised weather forecasts occur at a point in a flight or to an extent that no viable alternative courses of action are available to the PIC then the defence provided by Section 30 of the Act would apply, permitting the PIC to act as necessary to ensure the safe operation of the aeroplane.

4.5.5 In-flight to the CP – requirements to proceed

- 4.5.5.1 During a flight to an isolated destination aerodrome the flight must not be continued beyond the CP unless:
- an assessment of the authorised weather forecast that is:

- i. a TAF or TAF3 (ICAO Landing forecast) indicates that, during the estimated time of use at the aerodrome, relevant weather conditions are not forecast to exist below the cloud ceiling and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration⁸³
 - ii. a GAF or GAMET area forecast indicates that, during the estimated time of use at the aerodrome, cloud ceiling is not forecast to be lower than the lowest safe altitude for the last route segment to the aerodrome, plus 500 ft and a visibility not less than 8 km.⁸⁴
- b. the aircraft traffic and other operational conditions relevant to conducting an approach and landing at the aerodrome indicate that a safe landing can be made at the estimated time of use⁸⁵.

4.5.5.2 Matters variously required to be assessed, prior to continuing past the CP and the operational conditions referred to in the preceding paragraph include but are not limited to the following:

- a. fuel requirements
- b. wind must not exceed the headwind, crosswind or downwind component more than the maximum for the aeroplane, including any forecast wind gusts
- c. TS or its associated severe turbulence (if applicable)
- d. aerodrome lighting
- e. landing distance performance
- f. operator imposed requirements as specified in the operator's exposition for the purpose
- g. any other matters than may render the aerodrome unsuitable at the ETOU for a safe landing.

4.5.6 In-flight to the CP – destination no longer isolated.

4.5.6.1 In the circumstance where a flight is planned and commences to an isolated destination aerodrome and changes occur that remove operationally limiting conditions at an aerodrome within the geographic proximity (90-minute flight time) that can then be used as a destination alternate aerodrome for the isolated destination aerodrome, then the destination aerodrome must revert to being assessed for the requirement to plan a destination alternate aerodrome⁸⁶. Essentially, an aerodrome being an isolated destination aerodrome is one of the exceptions to the requirement that at least one destination alternate aerodrome must be planned for a flight of an aeroplane as a Part 121 operation.

4.5.6.2 However, where the conditions that render the destination aerodrome isolated are no longer present then the alleviation to the requirement to plan for or carry a destination alternate aerodrome are also no longer permissible. Given, the inter-relationship between the fuel required to satisfy the 'no destination alternate' fuel for an isolated destination aerodrome and the range to a destination alternate, it is unlikely that an in-flight change that requires a destination alternate aerodrome be planned and held, will result in a fuel requirement greater than the likely fuel on board at that time.

Note: It is not permissible for an operator to choose to apply (or continue to apply during a flight) the isolated destination aerodrome provisions where a destination alternate aerodrome can be planned (or has become available during a flight).

⁸³ subsection 4.12(4) of the Part 121 MOS.

⁸⁴ subsection 4.12(5) of the Part 121 MOS.

⁸⁵ paragraph 4.12(3)(b) of the Part 121 MOS.

⁸⁶ subparagraph 4.08(1)(b)(i) of the Part 121 MOS.

- 4.5.6.3 Where an isolated destination aerodrome is no longer isolated, the isolated destination alternate fuel⁸⁷ is no longer required, instead it is required to be destination alternate fuel to the destination alternate aerodrome⁸⁸. Further, where an aeroplane has been unable to land at the planned destination aerodrome the excess fuel that may be on-board can be used if required for additional IAP and holding, prior to diverting to the destination alternate aerodrome with sufficient fuel remaining to permit the flight to the destination alternate⁸⁹.

4.5.7 Planning to an isolated destination – below qualifying minima

- 4.5.7.1 The question arises as to the permissibility of planning a flight to an isolated destination aerodrome that during the estimated time of use at the aerodrome, has relevant weather conditions forecast to exist below the cloud ceiling and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration (below qualifying minima) or any other matter that precludes a safe landing. It is not permitted under Part 121 to plan (or continue) a flight to an isolated destination aerodrome that is below qualifying minima.
- 4.5.7.2 It is incorrect to suggest that a flight can be planned to an isolated destination aerodrome using a point of in-flight replanning in a manner that, irrespective of the weather at the isolated destination aerodrome, only requires the ERA aerodrome upon which the point of in-flight replanning is based being above qualifying minima. It is not permitted due to the specific requirements pertaining to planning and continuing a flight to an isolated destination aerodrome remaining in force. Those requirements are not given alleviation nor over-ridden using a point of in-flight replanning methodology.

Note: Planning as described in paragraph 4.5.7.2 is not compliant with subsection 4.11(1) of the Part 121 MOS.

- 4.5.7.3 Further, when contemplated in the context of a Part 121 operation being required to retain two landing options, the use of a point of in-flight replanning to plan to an isolated destination aerodrome, where it could potentially have relevant weather conditions that would be operationally limiting disregarded and have the ERA aerodrome only required to be above qualifying minima would not retain sufficient safety margins for Part 121 operations, hence it is not permitted.
- 4.5.7.4 There may be circumstances where an operator planning to a destination aerodrome that is for all intents and purposes an isolated destination aerodrome, would prefer to plan for a flight to hold a destination alternate aerodrome beyond the fuel/time/distance criteria that established the destination as an isolated destination aerodrome (nominally 90 min). The following section of this AC describes the alternative isolated destination aerodrome planning requirements.

4.5.8 Alternative isolated destination aerodrome planning requirements

- 4.5.8.1 Because of the manner in which the Part 121 MOS defines an isolated destination aerodrome and then applies requirements to aerodromes that are isolated destinations an alternative means of planning and operating to those aerodromes is also provided.
- 4.5.8.2 Subsection 4.12(6) of the Part 121 MOS is an exception to the isolated destination aerodrome planning requirements that permits operators to plan flights to an aerodrome classified as an isolated destination aerodrome with a destination alternate aerodrome, subject to specific conditions and safety controls.

⁸⁷ subsection 7.02(4) of the Part 121 MOS.

⁸⁸ subsection 7.02(1) of the Part 121 MOS.

⁸⁹ subsection 7.05(6) of the Part 121 MOS.

- 4.5.8.3 Under general isolated aerodrome requirements, flights to isolated destination aerodromes are an alleviation from the requirement to retain 2 safe landing options, provided sufficient fuel is carried to allow at least 90 minutes endurance after arrival overhead the aerodrome (plus fixed reserves). It requires that the destination aerodrome weather forecast is assessed at the critical point and exceeds the 'qualifying minima' specified in table 4.11.
- 4.5.8.4 The alternative means allows operators to plan flights to isolated destination aerodromes with a destination alternate aerodrome, provided a fully compliant destination alternate aerodrome is planned in accordance with section 4.11, including table 4.11. Fuel planning must also comply with the specific related provision in subsection 7.02(5), which requires that sufficient fuel is carried to mitigate risks associated with extended diversion distances and potential engine failure or depressurisation during diversion.
- 4.5.8.5 The provision preserves the target level of safety by ensuring that 2 safe landing options are retained throughout the flight. Enhanced fuel requirements and alternate aerodrome planning mitigate risks associated with extended diversions and unforeseen operational circumstances.

4.6 Destination alternate aerodromes (qualifying minima)

- 4.6.1 An aerodrome may be planned for use as a destination alternate aerodrome where an authorised weather forecast indicates that relevant weather conditions are not forecast below the relevant minima cloud ceiling and visibility values determined in relation to an approach facility configuration mentioned in Table 4.11, for the estimated time of use.
- 4.6.2 In relation to qualifying a destination alternate aerodrome, the phrase contained in subsection 4.11(1) that includes 'planned for use' does not set a condition that need only be applied in the pre-flight phase. In other words, the qualifying minima do not cease to apply during a flight. Refer to section a of this AC for a description of how to establish when a particular provision applies or is disapplied.
- 4.6.3 The estimated time of use for a destination alternate aerodrome is the period commencing 30 min before, and ending 30 min after, the estimated time of arrival of an aeroplane at the aerodrome⁹⁰.
- 4.6.4 The flight time interval from the MAPt at the destination aerodrome to the destination alternate aerodrome must be calculated and added to the ETA for the destination to determine the estimated time of use at the destination alternate aerodrome.
- 4.6.5 With the estimated time of use for the destination alternate aerodrome being known, a determination can be made as to whether relevant weather conditions are forecast to exist below the cloud ceiling and visibility values mentioned in Table 4.11 for the relevant aerodrome approach facility configuration (below qualifying minima). When the forecast conditions are better than qualifying minima, then the aerodrome can be planned (or retained) as a destination alternate aerodrome for the flight.
- 4.6.6 Subsection 4.11(3) ensures the ceiling and visibility minima that apply for the planning of a destination alternate aerodrome, an ERA or an isolated destination aerodrome do not exceed the minima that would apply if those aerodrome types were planned as a destination aerodrome without a destination alternate. This prevents operational penalties where destination alternate aerodrome requirements become restrictive compared to destination aerodrome requirements.
- 4.6.7 This aligns destination alternate aerodrome planning with the operational reality that in most cases, the destination alternate aerodrome is a contingency option, not the primary landing point, and should not impose stricter requirements than those applied to the destination aerodrome. It maintains an equivalent level of safety by preserving the principle that 2 safe landing options must be available while removing unnecessary operational constraints.

⁹⁰ section 4.05 and Table 4.05 (Item 2) of the Part 121 MOS.

4.6.8 Destination alternate aerodromes – TAF or TAF3/ICAO landing forecast

4.6.8.1 The weather assessment described above must be made by reference to a TAF or TAF3/ICAO landing forecast for the values prescribed in Table 4.11 for the aerodrome approach facility configuration that is to be used.

4.6.9 Destination alternate aerodromes - area forecast only

4.6.9.1 For the purposes of assessing the authorised weather forecast, for a destination alternate aerodrome the assessment must be based on an authorised weather forecast, however there are no specific requirements for that forecast to be a TAF or TAF3 (ICAO Landing forecast) to satisfy the weather assessment requirement. In that respect, the PIC is permitted to use a GAF/GAMET area forecast for the assessment if a TAF is not available⁹¹.

4.6.9.2 An aerodrome may be planned for use as a destination alternate aerodrome if the authorised weather forecast for the aerodrome is a GAF or GAMET area forecast (i.e. without a TAF or TAF3), if for the estimated time of use relevant weather conditions are not forecast below the following cloud and visibility minima⁹²:

a. for an aerodrome with at least one IAP:

i. Cloud:

A the circling minimum altitude specified on the IAP chart for the IAP being conducted, plus 500 ft

ii. Visibility:

A the circling visibility specified on the IAP chart for the IAP being conducted, plus 2 km

b. For an aerodrome without an IAP:

i. Cloud:

A the lowest safe altitude for the last route segment to the aerodrome, plus 500 ft

ii. Visibility:

A 8 km.

It is also a requirement that where forecast area QNH is used in place of forecast aerodrome QNH or actual QNH for the conduct of an IAP at an aerodrome that the IAP minima must be increased by 50 ft⁹³.

4.6.10 Two destination alternate aerodromes (qualifying minima)

4.6.10.1 The circumstances where two destination alternate aerodromes must be planned for a flight or retained during a flight are described in paragraphs 4.4.9.1 and 4.4.9.2 of this AC.

4.6.10.2 Where two destination alternate aerodromes are required to be planned for a flight each destination alternate aerodrome must have an authorised weather forecast indicating that relevant weather conditions are not forecast below the relevant minima cloud ceiling and visibility values determined in relation to an aerodrome approach facility configuration mentioned in Table 4.11, for the estimated time of use (above qualifying minima).

4.6.10.3 If a flight is required to be planned with two destination alternate aerodromes and one destination alternate aerodrome can be planned that is able to satisfy all the subsection 4.08(3)

⁹¹ subsection 4.07(7) of the Part 121 MOS.

⁹² subsection 4.11(2) of the Part 121 MOS.

⁹³ subsection 14.03(3) of the Part 91 MOS.

criteria (above determining minima), then the two destination alternate aerodrome requirement can be satisfied by that one aerodrome⁹⁴.

- 4.6.10.4 Simply stated, the two destination alternate aerodrome requirements can be taken to be satisfied if 2 are above qualifying minima or 1 is above determining minima.

4.7 En-route alternate (ERA) aerodromes (non-EDTO) (qualifying minima)

- 4.7.1 Part 121 requires the planning of an en-route alternate (ERA) aerodrome (non-EDTO) in three specific circumstances.

Note: Other foreseeable circumstances may generate a requirement to plan for an ERA, such as an aeroplane AFM limitation requiring one to be planned, but they are outside the scope of this AC.

- 4.7.2 The three specific circumstances are:
- flights to isolated destination aerodromes require the CP be based on flight to an ERA⁹⁵
 - flights planned via a point of in-flight replanning (POIRP) require the POIRP be based on flight to an ERA⁹⁶
 - flights required to be able to fly to and land at an ERA for the purpose of ensuring the 'additional fuel' requirements can be satisfied (sometimes referred to as a 'fuel ERA').

Note: Fuel ERAs arise from the combined effect of Part 121 MOS section 7.05 (amount of fuel that must be carried for a flight) and paragraph (a) of the MOS definition of additional fuel.

When the additional fuel requirements of MOS paragraphs 7.05(1)(g), 7.05(2)(f) or 7.05(3)(e) apply, and these requirements cannot be satisfied solely by flight to the planned destination aerodrome, a Part 121 operation must plan for an ERA, including weather assessment as discussed later in this subsection.

- 4.7.3 For an aerodrome to be planned as a non-EDTO ERA, the authorised weather forecast must indicate that relevant weather conditions at the ETOU are not forecast below the cloud ceiling and visibility values relating to the relevant MOS Table 4.11 approach facility configuration.

Note: The ETOU for an ERA is the period commencing 30 minutes before the earliest ETA and ending 30 minutes after the latest ETA⁹⁷.

- 4.7.4 An aerodrome may be planned for use as an en-route alternate aerodrome in the same manner as a destination alternate aerodrome if the authorised weather forecast for the aerodrome is a GAF or GAMET area forecast, subject to the same cloud ceiling and visibility minima prescribed for that purpose. The use of the qualifying minima prescribed by Table 4.11 for an ERA is intended to accommodate the lower likelihood of the diversion to that aerodrome being required than the minima imposed by 4.08(3) as determining minima at a destination aerodrome. This

⁹⁴ subsection 4.10(3) of the Part 121 MOS.

⁹⁵ subsection 4.12(2) and subsection 1.04(1) critical point definition element (b) of the Part 121 MOS

⁹⁶ subsection 1.04(1) point of in-flight replanning definition element (b) and subsection 7.05(2) of the Part 121 MOS

⁹⁷ section 4.05 and Item 5 of Table 4.05 of the Part 121 MOS

too explains why the ERA and the qualifying minima are not intended to be used for the purposes of point of in-flight replanning.

- 4.7.5 Although not required by the legislation, operators may elect to adopt policy in their expositions that adjust the ceiling and minima values to make consideration of the capability of the aeroplane to conduct the approach at the non-EDTO ERA with one engine inoperative, should an adjustment be prudent or warranted.

4.7.6 Threshold aerodromes

- 4.7.6.1 Importantly, the requirements of regulation 121.030 in relation to flights further than the 60 min distance, for flight time to an adequate aerodrome, do not relate to subparagraph 4.11(1)(a) of the Part 121 MOS (qualifying minima) for an en-route alternate aerodromes.
- 4.7.6.2 Paragraph 121.030(2)(c) however, requires flights by 2-engine aeroplanes that are not EDTO flights to ensure that the values of cloud ceiling and visibility for the adequate aerodrome at the estimated time of use of the aerodrome are not less than the landing minima required to comply with the requirements under Division 121.D.4 for the aerodrome, which includes regulation 121.185 - Take-off and landing minima for aerodromes.
- 4.7.6.3 For the avoidance of doubt, it would not be reasonable for any aerodrome that is planned for a flight to meet the adequate aerodrome distance limitation requirements to either not be weather assessed or when weather assessed to have relevant weather conditions below landing minima.
- 4.7.6.4 Operators may implement their own policy, to a higher level than required in baseline Part 121, to treat the aerodromes used to satisfy the applicable flight time distance from adequate aerodromes (referred by some operators as threshold aerodromes) in the manner applicable to the fuel ERA including weather assessment to the Table 4.11 minima requirements or to the lower landing minima for the likely IAP should the diversion be undertaken. It must be remembered that this conservative approach is not a legislative requirement, and operators have the prerogative to waive such self-imposed policies where operational necessity warrants.

4.7.7 Aeroplane AFM imposed flight time (distance) limitations

- 4.7.7.1 Some aeroplanes have AFM limitations specifying a maximum allowable flight time to an aerodrome for landing. Such limitations can be written in a variety of ways, such as time, speed or distance, and may use phrases like 'suitable' or 'adequate' that do not translate exactly to terminology used in the CASR.
- 4.7.7.2 It is important that operators understand the safety hazards being addressed by these limitations so that appropriate exposition content can be developed.
- 4.7.7.3 For example, if an AFM limitation relates to cargo fire protection limitations or another time limited system, then it would be appropriate for the operator to use normal cruising speed (defined term) for determining the time-distance limit to an aerodrome. Alternatively, if the AFM limitation relates to engine or propulsion system failure, then it would be appropriate to use one-engine-inoperative cruising speed (defined term).
- 4.7.7.4 CASA's interpretation of these kinds of AFM limitations is that a landing must be feasible upon arrival at the aerodrome for the aerodrome to be used to satisfy such AFM requirements. Critically, the relevant weather conditions forecast at the ETOU must be at or above the landing minima for the likely IAP to be flown. This is subtly different to the circumstance explained in paragraph 4.7.3 of this AC in relation to adequate aerodromes for flight distance limitation requirements prescribed by regulation 121.030 of CASR.
- 4.7.7.5 Although not mandatory, CASA recommends operators consider applying the ceiling and visibility values relevant to an ERA contained in Table 4.11 of the Part 121 MOS to these circumstances.

4.7.8 Point of in-flight replanning

- 4.7.8.1 A point of in-flight replanning (POIRP), as referred to in the Part 121 MOS, is **NOT** about a planned flight developing and executing an alternative course of action in response to particular circumstances, such as unforeseen changes to weather conditions or to aerodrome unavailability.
- 4.7.8.2 The POIRP methodology involves a deliberate pre-flight activity that plans the flight to a calculated point (location) from which, subject to satisfying the necessary criteria, the flight can proceed to the planned destination aerodrome.
- 4.7.8.3 If the criteria to proceed to the planned destination aerodrome **cannot be satisfied**, then the flight must divert to the ERA. This methodology can be employed to reduce the fuel necessary to accomplish the flight. The methodology can also be employed to take advantage of the benefits of the in-flight TAF3/ICAO landing forecast alleviation for those aerodromes, which cannot be utilised until in-flight until within 1 hour of flight time to the relevant TAF3/ICAO landing forecast aerodrome.

Note: Significant guidance relating to the POIRP methodology is contained in Annex D to AC 1-02 *Exposition and operations manual fuel policy guidance*.

4.8 EDTO en-route alternate aerodromes

4.8.1 General

- 4.8.1.1 The general philosophy of EDTO is to establish conditions that preclude an EDTO approved aeroplane from having to divert to an ERA aerodrome during a flight and, if the diversion is required, protect the diversion. A supporting component of protecting the diversion, in the unlikely event it is required, is the selection and planning of the EDTO ERA aerodrome.
- 4.8.1.2 This AC does not explain detailed EDTO operational aspects beyond the matters pertaining to the selection of EDTO ERA aerodromes⁹⁸. The performance and equipment requirements prescribed in subsection 4.19(3) of the Part 121 MOS that must be satisfied for a flight to reach an EDTO ERA aerodrome for a flight are explained in AC 121-07 Extended Diversion Time Operations (EDTO)⁹⁹.
- 4.8.1.3 An aerodrome may be selected as an EDTO ERA aerodrome for the flight of an aeroplane at a time before the flight commences only if the requirements explained in the following section of this AC are met in relation to the aerodrome. The selection and planning must be conducted pre-flight. It is a pre-flight EDTO dispatch requirement¹⁰⁰ and a pre-flight operational flight plan (OFP) requirement¹⁰¹ that the OFP lists any selected EDTO ERA aerodromes for the flight.
- 4.8.1.4 The EDTO area of operations permitted to the extent of the maximum diversion time (MDT) is anchored to the EDTO ERA aerodromes selected for the flight. In that respect the selection of EDTO ERA aerodromes is crucial in establishing the area of operation that in turn is taken to be the area within which the risk acceptability for such a flight is satisfied.

⁹⁸ See section 4.19 of the Part 121 MOS.

⁹⁹ At the time of publishing v1.0 of this AC, AC 121-07 has not yet been published. Operators are recommended, in the interim, to read the [OPS.06 protocol suite](#).

¹⁰⁰ See paragraph 2.18(1)(e) of the Part 121 MOS.

¹⁰¹ See paragraph 5.01(2)(g) of the Part 121 MOS.

4.8.2 Aerodrome requirements

- 4.8.2.1 The first aerodrome requirement to be satisfied for an aerodrome to be selected as an EDTO ERA aerodrome is the aerodrome must be an adequate aerodrome.¹⁰² Relevantly to EDTO ERA aerodrome selection criteria, the CASR Dictionary defines an adequate aerodrome to require:
- an authorised weather forecast for the aerodrome must be available for the aeroplane's estimated time of use of the aerodrome
 - the aerodrome's services and facilities must be operational for at least the estimated time of use
 - the landing distance available for the aeroplane must be at least the landing distance required for the aeroplane's landing at the aerodrome
 - at least one authorised IAP that is suitable for use by the aeroplane must be operational for at least the estimated time of use.
- 4.8.2.2 As Part 121 operations are required to be conducted under the IFR¹⁰³, the CASR dictionary definitional element that at least one authorised IAP that is suitable for use by the aeroplane must be operational is applicable in all cases in relation to EDTO ERA aerodromes. Therefore, for aerodromes located in Australian territory to be selected as an EDTO ERA, the aerodrome must have a published IAP which requires the operator of the aerodrome to hold an aerodrome certificate¹⁰⁴ or be a listed military aerodrome within the meaning of section 5 of CASA 68/24—Terminal Instrument Flight Procedures (Military Aerodromes) Instrument 2024.
- 4.8.2.3 The requirement for the aerodrome's services and facilities to be operational for at least the estimated time of use is a performance-based provision. Often overlooked is that for these services and facilities to be operational they must also be available. There is no intent that an unavailable aerodrome, whose services and facilities are technically operational, can be selected as an EDTO ERA. Operators should have procedures that ensure whatever aerodrome services and facilities are necessary to protect and support an aeroplane conducting an EDTO ERA diversion are available.
- 4.8.2.4 Operators are required to list in their exposition the aerodromes that may be selected as EDTO ERA aerodromes.¹⁰⁵
- 4.8.2.5 For an aerodrome to be selected as an EDTO ERA aerodrome, an aerodrome forecast or ICAO landing forecast for the aerodrome must be available at, and entirely encompass, the estimated time of use of the aerodrome by the aeroplane¹⁰⁶. A GAF or a GAMET area forecast is not sufficient to meet the requirement in relation to the authorised weather forecast.

4.8.3 Estimated time of use – EDTO ERA aerodrome

- 4.8.3.1 The estimated time of use for an EDTO ERA aerodrome is the period commencing at the earliest estimated time of arrival, and ending at the latest estimated time of arrival, of an aeroplane at the aerodrome¹⁰⁷.
- 4.8.3.2 The methods for determining earliest and latest estimated time of arrival are explained in detail in AC 121-07 Extended Diversion Time Operations (EDTO)¹⁰⁸. These reproduce the methods

¹⁰² See paragraph 4.19(2)(a) of the Part 121 MOS.

¹⁰³ See subregulation 121.025(1) of CASR.

¹⁰⁴ See subregulation 139.025(1) of CASR.

¹⁰⁵ See paragraph 4.19(2)(b) of the Part 121 MOS.

¹⁰⁶ See paragraph 4.19(4)(a) of the Part 121 MOS.

¹⁰⁷ See section 4.05 and Table 4.05 (Item 6) of the Part 121 MOS.

¹⁰⁸ At the time of publishing v1.0 of this AC, AC 121-07 has not yet been published. Operators are recommended, in the interim, to read the [OPS.06 protocol suite](#).

for determining earliest and latest estimated time of arrival for an EDTO ERA described in ICAO Doc 10085 Extended Diversion Time Operations (EDTO) Manual.

4.8.4 Rescue and firefighting services (RFFS) requirements

- 4.8.4.1 For an EDTO ERA aerodrome located outside Australian territory to be planned for a flight it must have rescue and firefighting services to at least MOS Part 139H category 4, with not more than 30 minutes notice¹⁰⁹.
- 4.8.4.2 For an EDTO ERA aerodrome located inside Australian territory to be planned for a flight there are no specific requirements relating to the provision of RFFS.

4.8.5 MOS Part 139H Cat 4 or equivalent facilities

- 4.8.5.1 MOS Part 139H specifies the standards for facilities and equipment used to provide an ARFFS¹¹⁰.
- 4.8.5.2 These standards incorporate by reference the ICAO SARP expressed in Chapter 9 of Annex 14 to the Chicago Convention¹¹¹. In summary, the minimum number of vehicles to satisfy aerodrome category level 4 (Cat 4) is one ARFFS vehicle¹¹². That vehicle or vehicles are required to satisfy the vehicle performance standards prescribed in Chapter 5 of the MOS Part 139H¹¹³ which incorporates reference to ICAO Doc 9137 Airports Service Manual, Part 1, Rescue and Fire Fighting - Chapter 6¹¹⁴.
- 4.8.5.3 The MOS Part 139H further specifies the fire extinguishing agent performance criteria and complimentary agent requirements to satisfy aerodrome category level 4 (Cat 4)¹¹⁵.
- 4.8.5.4 Determining the equivalence or otherwise of facilities at, or nearby to, non-ARFFS provisioned aerodromes is not a simple task. Municipal or regional non-aviation fire services can be assessed for their capacity and capability to perform fire suppression tasks at an EDTO ERA aerodrome.

Note: Equivalent facilities only applies to vehicle numbers and capabilities such as extinguishant capacity, composition and delivery rate. It need not apply to aviation specific ancillary equipment nor fire-fighter aviation training and qualification requirements specified in MOS 139H for ARFFS certification.

4.8.6 Air traffic control (ATC) service and air traffic service (ATS) requirements

- 4.8.6.1 For an EDTO ERA located outside Australian territory to be planned for a flight, it must have air traffic control services with not more than 30 minutes notice¹¹⁶.
- 4.8.6.2 For an EDTO ERA located within Australian territory to be planned for a flight, the aerodrome must:

¹⁰⁹ See subparagraph 4.19(2)(f)(ii) of the Part 121 MOS.

¹¹⁰ See paragraph 139.712(1)(c) of CASR.

¹¹¹ See paragraph 2.1.2.1 of the MOS Part 139H.

¹¹² See paragraph 2.1.3.3 and paragraph 2.2.2.5 of the MOS Part 139H.

¹¹³ See paragraph 4.1.1.4 of the MOS Part 139H.

¹¹⁴ See paragraph 5.1.1.1 of the MOS Part 139H.

¹¹⁵ See section 7.1.1 of the MOS Part 139H.

¹¹⁶ See subparagraph 4.19(2)(f)(i) of the Part 121 MOS.

- have either air traffic control (ATC) services or air traffic services (ATS) provided or available within 30 minutes notice
- be a controlled aerodrome, or an uncontrolled aerodrome for which radio carriage is required under regulation 91.400 of CASR.

4.8.6.3 Regulation 91.400 of CASR relates to communicating at certified, registered, military or designated non-controlled aerodromes. Those designated non-controlled aerodromes are specified in Chapter 17 of the Part 91 MOS¹¹⁷.

4.8.7 Planning minima requirements – EDTO ERA aerodromes

4.8.7.1 An aerodrome forecast (TAF) or ICAO landing forecast must indicate that relevant weather conditions, during any part of the estimated time of use at the aerodrome, are not forecast to exist below the cloud ceiling and visibility values determined in accordance with Table 4.19 of the Part 121 MOS, adjusted as necessary to account for the forecast weather conditions and runway surface conditions. Those minima must also be adjusted as necessary to ensure that a safe one-engine-inoperative landing can be made.

4.8.7.2 The assessment of weather conditions at an EDTO ERA is not entirely consistent with the assessment of weather conditions for other aerodrome use types. The key difference is that if an aerodrome forecast or ICAO landing forecast for an EDTO ERA at the estimated time of use contains a probability indicator of 30% (PROB30) alone, or combination of a PROB30 and a change indicator of INTER or TEMPO deteriorations in relation to cloud ceiling, they can be disregarded¹¹⁸.

Note: This applies in relation to cloud ceiling only. PROB30 or PROB30 INTER/TEMPO for deteriorations to visibility must be taken to be present.

4.8.7.3 Where an EDTO ERA has relevant weather conditions forecast to exist during the estimated time of use but there is either an INTER/TEMPO or FM/BECMG, it is permissible to use holding fuel to alleviate the presence of relevant weather conditions during the estimated time of use provided any applicable EDTO time limitation, such as cargo fire suppression system (CFFS) limit or maximum diversion time (MDT), is not exceeded. The determination of the time required would be the cumulative value of the diversion time to the EDTO ERA plus the holding fuel necessary to alleviate the presence of relevant weather conditions.

4.8.7.4 Noting the complex nature of calculating the possible diversion times from points along a route to an EDTO ERA and the inter-relationship with the INTER/TEMPO or FM/BECMG periods, a simplified methodology would be to constrain the MDT accordingly.

Example

Where an EDTO flight has a MDT of 180 minutes, a forecast which indicates the presence of TEMPO for relevant weather conditions during the estimated time of use at an EDTO ERA could be alleviated by ensuring that the flight remains within 120 minutes 'diversion time' from the EDTO ERA.

¹¹⁷ At the time of publishing v1.0 of this AC, there are no designated aerodromes in Chapter 17 of the Part 91 MOS.

¹¹⁸ See subsection 4.06(6) of the Part 121 MOS.

4.8.8 Alternative planning minima—low-visibility EDTO

- 4.8.8.1 An operator may be permitted as part of their EDTO approval to use cloud ceiling and visibility values lower than those specified in Table 4.19 of the Part 121 MOS, subject to ALL the following conditions being satisfied:
- a. to utilise the approved lower ceiling and visibility minima the relevant aerodrome must have either an aerodrome forecast, or ICAO landing forecast, but not a GAF or a GAMET area forecast¹¹⁹
 - b. the runway anticipated to be used at the aerodrome has a serviceable precision approach procedure for the runway that is an authorised IAP, and that procedure has either a Category II or Category III minima published in the authorised aeronautical information¹²⁰
 - c. the operator holds an approval, under regulation 91.045 of CASR for the purposes of regulation 91.315 of CASR, to conduct a low-visibility operation that is Category II or Category III¹²¹
 - d. the aeroplane is capable of conducting an instrument approach procedure to Category II or Category III minima with one engine inoperative.¹²²

¹¹⁹ See subsection 4.19(9) of the Part 121 MOS.

¹²⁰ See paragraph 4.19(8)(a) & (b) of the Part 121 MOS.

¹²¹ See paragraph 4.19(8)(e) of the Part 121 MOS.

¹²² See paragraph 4.19(8)(d) of the Part 121 MOS.

5 Operational variations (OV) to alternate aerodromes requirements

5.1 Scope and purpose

- 5.1.1 Section 4.21 of the Part 121 MOS outlines that an OV can be approved in relation to the requirements of Division 2 of Chapter 4. Division 2 of Chapter 4 commences with section 4.06 and extends to section 4.20. Importantly, matters contained in Division 1, such as the meaning of estimated time of use¹²³ and the definition of relevant weather conditions¹²⁴, cannot be subject to this OV approval.
- 5.1.2 The purpose of section 4.21 is to provide a mechanism for operators to be approved by CASA to substitute alternative requirements, in place of the prescriptive requirements in the MOS chapter 4, relating to the selection and qualification of alternate aerodromes. Those alternative requirements are called operational variations (OVs) and must be specifically approved by CASA and detailed in the operator's exposition.
- 5.1.3 The policy basis of the alternates OV is ICAO Annex 6 Part 1 SARP 4.3.4.4 a) to f). Those SARP elements are explained in detail as the operational variation considerations for destination alternate aerodromes and take-off alternate aerodromes in Appendix 1 and Appendix 2, respectively, to Chapter 5 of ICAO Doc 9976 - Flight Planning and Fuel Management (FPFM) Manual.
- 5.1.4 The breadth of possible variations can range from a simple variation of a single element of the Division 2 requirements, to a complex multi-element inter-related variation.
- 5.1.5 Fundamentally, an OV places the onus of identification of risks and development and maintenance of mitigations and treatments of those risks on the operator more so than simply complying with the prescriptive legislation, within the bounds of reasonableness established or assessed by CASA under a performance-based regulatory oversight methodology.

5.2 Performance-based compliance and regulatory oversight

- 5.2.1 Performance-based compliance relies on a safety risk based approach to regulatory compliance involving the setting or application of target levels of safety performance of a system or process, which in turn facilitates the implementation of variable regulations or operational variations from existing prescriptive regulations.

Note: Performance-based compliance is supported by proactive operator processes that constantly monitor the real-time safety performance, hazards and safety risks treated.

- 5.2.2 Performance-based regulatory oversight is a method, supplementary to compliance-based oversight employed by NAAs, which supports the implementation of variable regulations or variations from existing prescriptive regulations, based on the demonstrable capabilities of the operator and the incorporation of safety risk based methods for the setting or application of target levels of safety performance.

¹²³ See section 4.04 of the Part 121 MOS.

¹²⁴ See section 4.05 of the Part 121 MOS.

Note: Performance-based regulatory oversight components rely on NAA processes that constantly monitor the real-time performance, hazards and risks of a system to assure that target levels of safety performance are achieved in an air transportation system.

5.3 Alternate aerodrome OVs and fuel OVs

- 5.3.1 It is not intended that the variations to the calculation of destination alternate fuel permitted under the fuel OV mentioned in Chapter 7 of the Part 121 MOS can be used to vary the requirement or necessity to have that alternate fuel (however calculated) available. In that respect, the fuel requirements are 'downstream' of the alternate aerodrome requirements.
- 5.3.2 For the avoidance of doubt, the Part 121 MOS Chapter 7 fuel OV calculation provisions cannot be taken to alleviate or vary the requirements to have or not have an alternate aerodrome as prescribed by the Part 121 MOS Chapter 4.

5.4 Alternates OV approval requirements

- 5.4.1 For CASA to grant an alternates OV approval under regulation 121.010, several matters must be satisfied¹²⁵.
- 5.4.2 Foremost, the operator must have submitted to CASA a specific safety risk assessment. The specific safety risk assessment is required to contain at least the following:
- a means of demonstrating how the operational variation approval sought will maintain or improve safety
 - information and consideration of the capabilities of the operator
 - information and consideration of the overall capability of the aeroplane and its systems
 - the available aerodrome technologies, capabilities and infrastructure
 - the quality and reliability of meteorological information
 - any hazards, safety risks and specific mitigating measures, relevant to the OV approval sought as identified by the operator.
- 5.4.3 Each of the elements above are described in detail in the following sections.

5.4.4 Maintain or improve safety

- 5.4.4.1 There is no intention of allowing unconstrained variation to all things in Chapter 4 of the Part 121 MOS. The ICAO SARP constrains the bounds to the 'selection' of alternate aerodromes. It is intended that CASA apply the same bounds in relation to those elements that require selection of an alternate aerodrome. It could be extended with caution to apply potentially to those things that 'qualify' an aerodrome as an alternate.
- 5.4.4.2 Section 4.21 requires the operator's risk assessment to demonstrate how the requested OV will maintain or improve safety, which aligns with the ICAO SARP that requires 'equivalence'.
- 5.4.4.3 CASA does however, in relation to the eventual grant of an OV, as distinct from the operator's risk assessment, have some additional flexibility to approve an OV where CASA assesses the level of safety might not maintain or improve aviation safety. This flexibility arises from subregulation 121.010(3) specifying that OV approvals are subject to subregulation 11.055(1B), which requires the preservation of a level of aviation safety that is at least acceptable.

¹²⁵ See subsection 4.21(2) of the Part 121 MOS.

- 5.4.4.4 CASA's policy is that an approval would only be granted in these circumstances where CASA's application assessment determined that equivalence was reasonably likely once further data had been obtained during operations under the approval.
- 5.4.4.5 AC 11-04 provides CASA's policy on the interpretation of 'acceptable'. Unless an operational circumstance was legitimately not foreseen in the original creation of the rules, CASA's policy is that alternate OV approvals must preserve a level of safety that is equivalent to the baseline Division 2 rules.

5.4.5 Capabilities of the operator

- 5.4.5.1 Consistent with the contents of ICAO Doc 9976 – Flight Planning and Fuel Management (FPFM) Manual, it is expected that operators assess whether or not their knowledge, skills and resources are sufficient to implement and oversee the systems and processes necessary for performance-based compliance and explain their capabilities in their application.
- 5.4.5.2 Operators are reminded that accurately and succinctly identifying their capabilities is itself a demonstration of capability, and are recommended to avoid including information in their application of a generic and non-specific nature.

5.4.6 Capabilities of the aeroplane and its systems

- 5.4.6.1 The baseline alternate aerodrome rules in Chapter 4 of the Part 121 MOS presume aeroplane certification to the standards required by regulation 121.020 and that the fitted navigation equipment complies with MOS requirements. Section 3.6 of this AC describes the risks arising from aeroplane equipment failure or the inability for an aeroplane to be able to achieve an IAP at a destination or destination alternate aerodrome.
- 5.4.6.2 Consequently, where aeroplane capabilities exceed those used to establish the baseline alternate aerodrome rules, such capabilities may be relevantly applied in an OV where doing so can be demonstrated to provide a meaningful increase in capability in relation to identified risks.

5.4.7 The available aerodrome technologies, capabilities and infrastructure

- 5.4.7.1 It is generally accepted that aerodrome technologies and infrastructure in Australian territory and the nearby Pacific region do not support Part 121 operations to the level present in North America and Europe. It would be likely that OV approval applications will need to mitigate reductions in aerodrome technologies and capabilities rather than take advantage of enhancements.

5.4.8 The quality and reliability of meteorological information

- 5.4.8.1 Only in a very small number of cases would Part 121 operations be supported by enhanced meteorological forecasting or reporting capabilities. It would be likely that OV approval applications would need to mitigate the potential for a degradation in quality and reliability of meteorological information in some remote operating locations that Part 121 operations may be conducted, including outside Australian territory.
- 5.4.8.2 There may be circumstances where the on-board communications capability of an aeroplane coupled with flight following or dispatch personnel engaged in delivery and analysis of available meteorological information may exceed the reasonable capability basis established in the prescriptive rules. In such cases the enhanced capability could be part of mitigation to risks identified in an operator's safety risk assessment provided in support of an OV approval application, provided the mitigations are specifically relevant to the identified hazards and the effectiveness of the proposed safety controls can be demonstrated or substantiated.

5.4.9 Hazards, safety risks and specific mitigating measures

- 5.4.9.1 The identification of hazards and safety risks for an OV is not a simple or small task.
- 5.4.9.2 Where a variation to a prescriptive requirement is proposed, the hazards, safety risks and mitigations that underpin the established MOS requirements proposed to be varied must be identified by the operator. Operators must then identify the additional safety controls necessary to ensure an equivalent level of safety can be maintained.

IMPORTANT

Simply applying for an alleviation to a prescriptive requirement without meaningful treatment of the risks by another means is not acceptable.

- 5.4.9.3 Although this AC has articulated many of the hazards and safety risks associated with the prescriptive provisions of Chapter 4 of the Part 121 MOS, it is the operator's responsibility to thoroughly consider and identify relevant hazards and safety risks. Only then can reasonable mitigation measures within the capability of the operator be applied to address those matters.
- 5.4.9.4 It is not CASA's responsibility to remediate an unsatisfactory operator identification of hazards and alternative safety controls. Operators unable to identify relevant hazards and risks are unlikely to demonstrate the capabilities necessary for an OV approval to be granted.

5.5 OV approval application process

- 5.5.1 It is not acceptable for the applicant to simply provide a description of the operational behaviour proposed. In the circumstances where an operator conceptually establishes how they propose to conduct operations in a different manner to the prescriptive provisions, the onus rests with the operator to translate that conceptual operation into a description of the specific prescriptive provisions in the MOS to be varied.
- 5.5.2 The OV approval application process is the same irrespective of the complexity of the OV sought.
- 5.5.3 OV approvals are to be applied for using the [Application - Air Operator's Certificate / Associated approvals \(CASR Part 119\)](#) form.
- 5.5.4 The following information is to be included in an OV approval application:
- a. clear, unambiguous and precise identification of which Part 121 MOS Chapter 4 Division 2 prescriptive requirements are sought to be varied
 - b. detailed description of each variation to each prescriptive requirement(s)
 - c. describe how the variation will maintain or improve aviation safety, including any applicable supporting organisational capabilities and additional constraints or conditions which might be placed on the operation
 - d. for an application requested multiple variations, describe the degree to which the multiple variations interact or rely on the other variations
 - e. the specific safety risk assessment in a recognisable form of presentation for safety risk assessments that contains at least the following elements:
 - i. hazards or safety risks
 - ii. existing controls/mitigators
 - iii. additional controls/mitigators
 - iv. effectiveness of controls (existing and proposed)
 - v. likelihood and consequence

- vi. residual risk
 - f. draft exposition content.
- 5.5.5 Upon receipt of the OV approval application, CASA will log the application, determine the fee to be charged and assign an assessing CASA officer. This will not be an immediate process as CASA receives numerous applications throughout the year. The assessing officer will liaise as needed with the applicant to undertake the application assessment process.
- 5.5.6 For a simple OV where existing examples with common elements and controls are proposed by the applicant, the application process will be similar to other applications, with any eventual approval and specified conditions being included in the operator's AOC.GEN instrument.
- 5.5.7 For highly complex OV, CASA recommends that the operator seek a pre-application meeting with CASA to discuss their intent and identify areas they will need to focus on when developing their application. Potential application steps might be:
- a. pre-application meeting
 - b. submission of formal OV application with safety case and supporting documentation
 - c. application itemised feedback phase
 - d. review of draft proposed variation
 - e. review of conditional matters, exposition inclusions, implementation/transition plan, etc
 - f. final summative CASA assessment and delegate decision
- 5.5.8 Highly complex OV are almost certain to require ongoing performance monitoring and frequent reviews of overall safety performance to ensure the target level of safety is being maintained.