



Australian Government  
Civil Aviation Safety Authority

CIVIL AVIATION ORDER

# 48.1

## FATIGUE MANAGEMENT

### PLAIN ENGLISH GUIDE

INSTRUMENT 2019

DECEMBER 2020



REGULATORY PROGRAM

# QUICK MENU

## REGULATIONS



**Regulations**  
[p05]



**Definitions**  
[p70]

## APPENDICES



**How to  
read the  
appendices**  
[p15]



**Appendix 1—**  
Basic limits  
[p18]



**Appendix 2—**  
Multi-pilot  
operations  
except flight  
training [p22]



**Appendix 3—**  
Multi-pilot  
operations  
except complex  
operations and  
flight training  
[p30]



**Appendix 4—**  
Any operation  
[p37]



**Appendix 4A—**  
Balloons [p43]



**Appendix 4B—**  
Medical transport  
and emergency  
service operations  
[p47]



**Appendix 5—**  
Aerial work  
operations and  
flight training  
associated with  
aerial work  
[p52]



**Appendix 5A—**  
Daylight aerial  
work operations  
and flight training  
associated with  
aerial work [p56]



**Appendix 6—**  
Flight training  
[p59]



**Appendix 7—**  
FRMS [p62]



**CASR 137 Q**  
[p68]

## About this guide

The Civil Aviation Safety Authority's (CASA's) Plain English Guide for fatigue management provides guidance on meeting your obligations under Civil Aviation Order (CAO) 48.1 Instrument 2019 and Subpart 137.Q of the Civil Aviation Safety Regulations 1998 (CASR). It restates these Instruments in plain English and re-orders the information contained in the appendices to make it easier for a pilot or operator to assess the legality of planning/rostering duties or variations to duties.

Pilots are required to be fit to fly and manage their fatigue accordingly. This guide is a tool to assist pilots and operators to understand and apply regulatory fatigue management principles, but it does not reproduce all the text of CAO 48.1 Instrument 2019. However, it does provide the associated legislative reference if you want to refer to the full text on the [Federal Register of Legislation](#).

By following this guide, it is expected you will comply with the fatigue management regulations. We are committed to providing you with accurate, consistent, and clear information to help you understand your obligations. If you follow this guide and some information turns out to be incorrect or misleading and you make a mistake as a result, CASA will apply its regulatory philosophy in determining what action, if any, to take.

**Disclaimer:** The information contained in this guide was correct at the time of publication and is subject to change without notice. The guide has been prepared by CASA for information purposes only, and while every effort has been made to ensure that the contents accurately conform to the civil aviation legislation, this guide is not the law. CASA accepts no liability for damages or liability of any kind resulting from its use. You should ensure you are using the most current version of the guide.

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The Civil Aviation Safety Authority asserts the right to be recognised as the author of the original material. Use of any part of this work must include the following attribution: 'Source: Civil Aviation Safety Authority'.

# How to use this guide

In this guide, certain words have been defined to avoid repetition and improve readability. The most important of these is *you* which is used throughout the guide to refer to a pilot. Where we do not define a word, you should consider its meaning to be that given in the Macquarie Dictionary or the regulations.

For completeness, the plain English text is associated with the original text of the CAO subsection and the clauses in the appendices by including the reference number in brackets ( ).

For improved understanding, the guide includes **Notes** and **Comments**.

**Notes** – are used in this guide to minimise unnecessary repetition where possible.

**Comments** – certain subsections of this guide contain (light bulb) comments which are not intended to introduce any new requirement, but to provide clarity.

To enhance the experience with digital interactive elements included in this guide, save this guide to your device. Then:

- › for iOS operating systems open the guide with Apple Books application
- › for Android operating systems open the guide with PDF viewer application.

Use the [Quick Menu](#) page as the central reference point to navigate through this guide.

The following terminology table has been created to improve readability:

Term	Meaning
appendix	Refers to the appendices to CAO 48.1 Instrument 2019 which set out flight time limitations, sleep opportunity, extensions of duty periods and other factors relevant to fatigue management.  Subpart 137.Q of CASR is also considered an appendix for the purposes of this guide.
operator	Refers to any AOC holder; a Part 141 operator, certificate, or authorisation holder; a Part 142 operator or authorisation holder.
operations manual	Means either operations manual or exposition
rostered	assigned
The CAO	CAO 48.1 Instrument 2019
unfit	A crew member is unfit when their ability to safely perform a duty is, or is likely to be, impaired. (CASR 91.520)
you (your)	A pilot/an FCM (flight crew member)

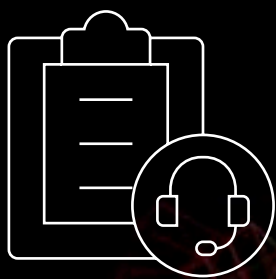
## Acronyms

AOC	Air Operator's Certificate
CAAP	Civil Aviation Advisory Publication
CAR	Civil Aviation Regulations 1988
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
FCM	flight crew member
FDP	flight duty period
FRMS	fatigue risk management system
ICAO	International Civil Aviation Organization
ODP	off-duty period
PIC	pilot in command
PICUS	pilot in command under supervision
SMS	safety management system
WOCL	window of circadian low

# Table of Contents

<b>Regulations</b>	<b>05</b>
Application and effect (4)	06
Approval of non-compliance (5A)	07
Fatigue compliance declaration form and operations manual submission to CASA (5AB)	07
General conditions on operators (8) and pilots (9)	07
Operator limits and requirements (10)	08
Part 137 operations (11)	09
Pilot to be fit for duty (137.300)	09
Private operations (12)	09
Operations under multiple appendices (13)	09
Off-duty requirements when transitioning from appendix 4B, 5 or 5A, or Subpart 137.Q of CASR (13A)	11
Operator obligations (14)	11
Enhanced fatigue management obligations (15)	12
Recognition of initial training (15A)	14
Flight crew member obligations (16)	14
<b>Appendices</b>	<b>15</b>
How to read the appendices	16
Should you fly?	17
<b>Appendix 1—Basic limits</b>	<b>18</b>
Planning/rostering	19
Variations	20
Appendix 1 – Summary	21
<b>Appendix 2—Multi-pilot operations except flight training</b>	<b>22</b>
Planning/rostering	23
Variations	28
<b>Appendix 3—Multi-pilot operations except complex operations and flight training</b>	<b>30</b>
Planning/rostering	31
Variations	35
<b>Appendix 4—Any operation</b>	<b>37</b>
Planning/rostering	38
Variations	41

<b>Appendix 4A—Balloons</b>	<b>43</b>
Planning/rostering	44
Variations	45
Appendix 4A – Summary	46
<b>Appendix 4B—Medical transport and emergency service operations</b>	<b>47</b>
Planning/rostering	48
Variations	51
<b>Appendix 5—Aerial work operations and flight training associated with aerial work</b>	<b>52</b>
Planning/rostering	53
Variations	55
<b>Appendix 5A—Daylight aerial work operations and flight training associated with aerial work</b>	<b>56</b>
Planning/rostering	57
Variations	57
Appendix 5A – Summary	58
<b>Appendix 6—Flight training</b>	<b>59</b>
Planning/rostering	60
Variations	61
<b>Appendix 7—FRMS</b>	<b>62</b>
General (1)	63
FRMS hazard identification, risk assessment and mitigation procedures (4)	64
FRMS safety assurance procedures (5)	65
FRMS safety promotion procedures (6)	65
FRMS change management procedures (7)	66
Trial FRMS implementation approval (8)	66
Full FRMS implementation approval (9)	67
Expiry, suspension, revocation, surrender of FRMS implementation approval (10)	67
<b>Flight/duty and other time limitations—Subpart 137.Q of CASR</b>	<b>68</b>
Planning/rostering	69
Variations	69
<b>Definitions</b>	<b>70</b>
Definitions (CAO 48.1 2019 section 6)	71



# REGULATIONS

▶TR/91▶83  
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▶SEARCH▶TR/91▶83  
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FATIGUE  
GUIDELINES



In more recent times it has become increasingly evident that pilot fatigue could have been a contributing or a significant factor in many aircraft incidents or accidents. The International Civil Aviation Organization (ICAO) has recognised that more up to date and science-based management of fatigue is essential for continual improvement to aviation safety.

In general, ICAO supports two distinct methods of managing fatigue:

- › a prescriptive approach that requires the operator to comply with the limits defined by the State, while managing fatigue hazards using safety management system (SMS) processes that are in place for managing safety hazards in general
- › a performance-based approach that requires the operator to implement a fatigue risk management system (FRMS) that is approved by the State.

In response to Australia's obligations to ICAO, CASA's CAO details three options that are available to operators for managing fatigue. An operator can take a prescriptive approach by adopting appendices 1 to 6 without modification, a prescriptive approach with an approved minor variation to appendices 2 to 6 or adopt a Fatigue Risk Management System (FRMS) detailed in appendix 7 (see Figure 1).

The following are the key sections taken from the CAO and rewritten in a concise and more personal style.

## Application and effect <sup>(4)</sup>

### Application

The responsibility for management of fatigue rests with the operators and pilots operating under:

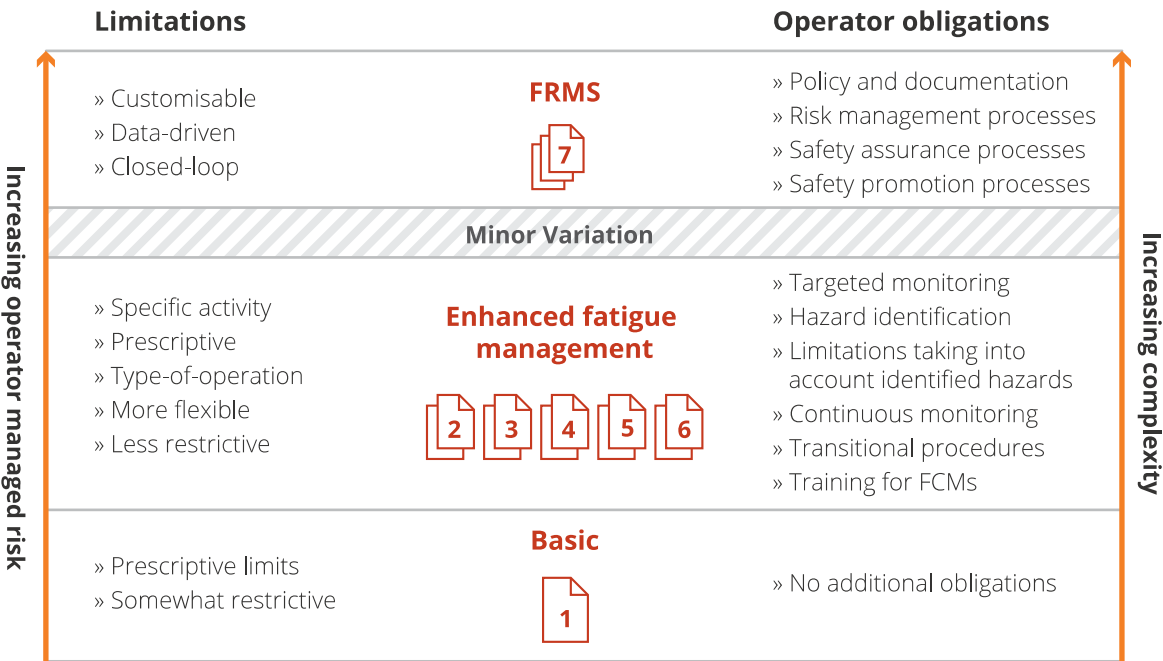
- › an Air Operator's Certificate (AOC)—except those operating under a Foreign Air Transport AOC
- › a Part 141/Part 142 certificate
- › CASR Part 137 (aerial application).

It is a condition on every flight crew licence (including private pilot licences) that a pilot must not conduct a flight if they are or are likely to be fatigued.

**Note:** The pilot in command (PIC) is responsible for safety of the aircraft and persons on board. Therefore, the PIC always has authority to reject a proposal to extend an FDP or flight time even if it is permitted in an appendix.

The CAO does not apply to the pilots for (and operators of) Part 141 or 142 flight training organisations that only use synthetic flight training devices.

Figure 1: Obligation matrix





## Effect

The CAO commenced on 2 September 2019 with immediate application for all private operations and new AOC or certificate holders from that date.

Existing AOC and Part 141 certificate holders will have the benefit of a transition period. For most operators the transition period will expire on 30 June 2021 (see the CAO 48.1 [transition policy](#)).

## Approval of non-compliance <sup>(5A)</sup>

CASA may conditionally approve a limited or minor variation to specified provisions of the CAO if an acceptable level of aviation safety can be preserved. These are called 'Minor Variations'.

Refer to the [minor variation policy](#) for further details.

## Fatigue compliance declaration form and operations manual submission to CASA <sup>(5AB)</sup>

AOC holders and Part 141 operators must submit their fatigue compliance declaration form and their operations manuals to CASA not later than 1 July 2021.



*Operators applying for an FRMS will satisfy this condition when submitting [Form 824](#).*

## General conditions on operators <sup>(8)</sup> and pilots <sup>(9)</sup>

An operator must ensure that each pilot does not operate if they are or are likely to be, unfit to fly due to fatigue.

A pilot must not operate either privately or for an operator if they are or are likely to be, unfit to fly due to fatigue.

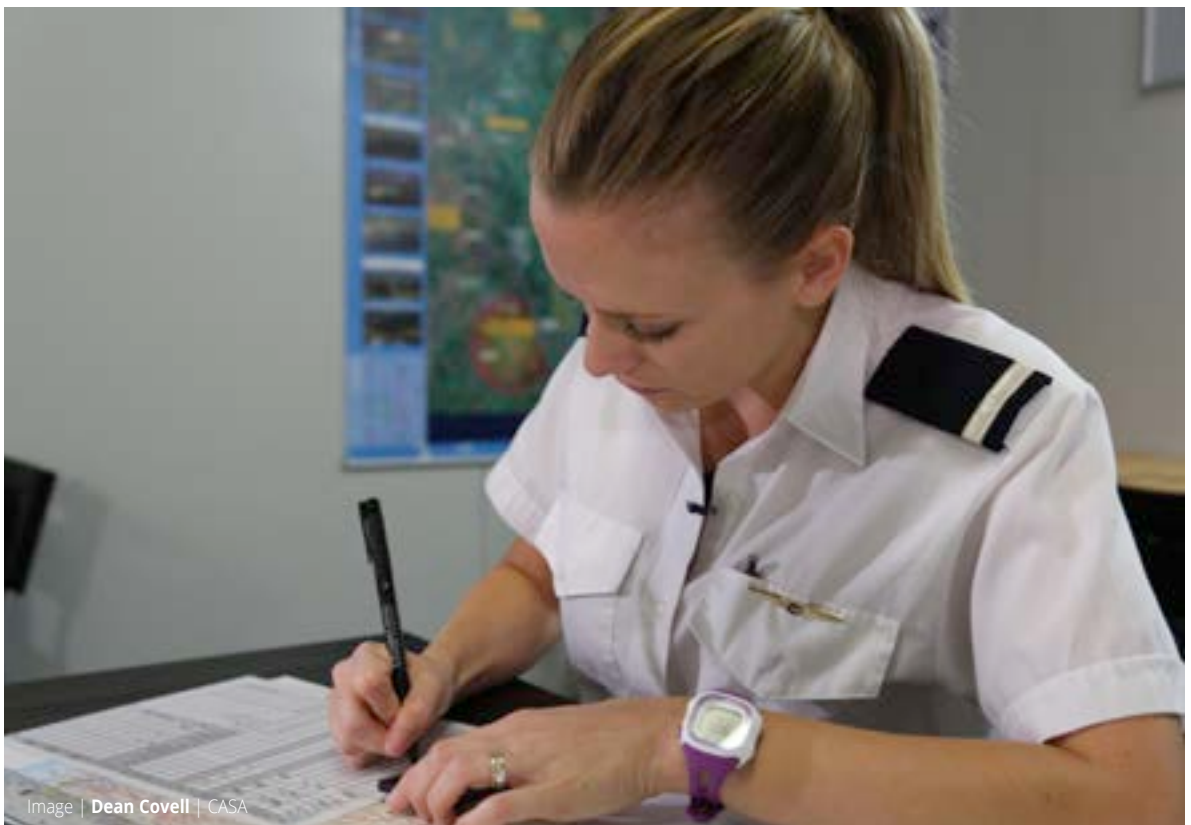


Image | Dean Covell | CASA

# Operator limits and requirements <sup>(10)</sup>

An operator must choose to operate in accordance with one or more of the appendices shown in Table 1 relevant to their intended operation. The appendices chosen shall be specified in the operations manual.

**Table 1: Limits and requirements for operations**

Operation	Appendix
Any operation.	1
Any multi-pilot operation, except flight training.	2
Any multi-pilot operation, except: (a) a complex operation, and (b) flight training.	3
Any operation.	4
Any balloon operation.	4A
Any of the following: (a) a medical transport operation (b) an emergency service operation (c) flight training for an operation mentioned in paragraphs (a) and (b) (d) an operator proficiency check for an operation mentioned in paragraph (a) or (b) (e) a flight review for an operation mentioned in paragraph (a) or (b).	4B
Any of the following: (a) an aerial work operation (b) flight training associated with aerial work (c) an operator proficiency check for an operation mentioned in paragraph (a) (d) a flight review for an operation mentioned in paragraph (a).	5
Any of the following: (a) an aerial work operation, conducted during daylight hours only (b) flight training associated with aerial work conducted during daylight hours only (c) an operator proficiency check for an operation mentioned in paragraph (a) (d) a flight review for an operation mentioned in paragraph (a).	5A
Any of the following: (a) flight training (b) a proficiency check (c) a flight review.	6
Any operation	7

**Note:** Use of appendix 7 requires CASA approval

## Part 137 operations <sup>(11)</sup>

Part 137 applies to aeroplane aerial application operations only and not those conducted in a helicopter.

The CAO does not apply to operators or pilots engaged in aeroplane aerial application operations, instead they must comply with [Flight/duty and other time limitations-Subpart 137.Q of CASR](#).

Before aeroplane aerial application operations can be conducted, the operator must ensure that its pilots have received awareness material or training in fatigue related risk management relevant to their duties.

## Pilot to be fit for duty <sup>(137.300)</sup>

A pilot must not commence an aerial application operation if they are not fit for duty.

The operator must not allow the pilot to commence the operation if they have reason to believe that the pilot is not fit for duty.

A pilot is not fit for duty if:

- › they have not had adequate rest, food, or drink, or
- › they are adversely affected by a medical condition (this includes psychological and psychiatric conditions) or a psychoactive substance (this includes alcohol, drugs, and volatile solvents, but not coffee and tobacco).

## Private operations <sup>(12)</sup>

This CAO does not apply to an operator when its pilots fly privately.



**Exception:** *If you conduct a private flight before or between a commercial flight for an operator the private flight time must be included as part of your FDP. When a private flight is conducted after the final commercial flight, then the private flight time must be included as part of your duty period. Such private flights must not be taken to be off-duty periods.*



*You should inform your operator when you conduct a private flight so that the operator can adjust:*

- › your FDP commencement time (for private flights conducted before the commercial flight)
- › your duty time (for private flights conducted after a commercial flight).

## Operations under multiple appendices <sup>(13)</sup>

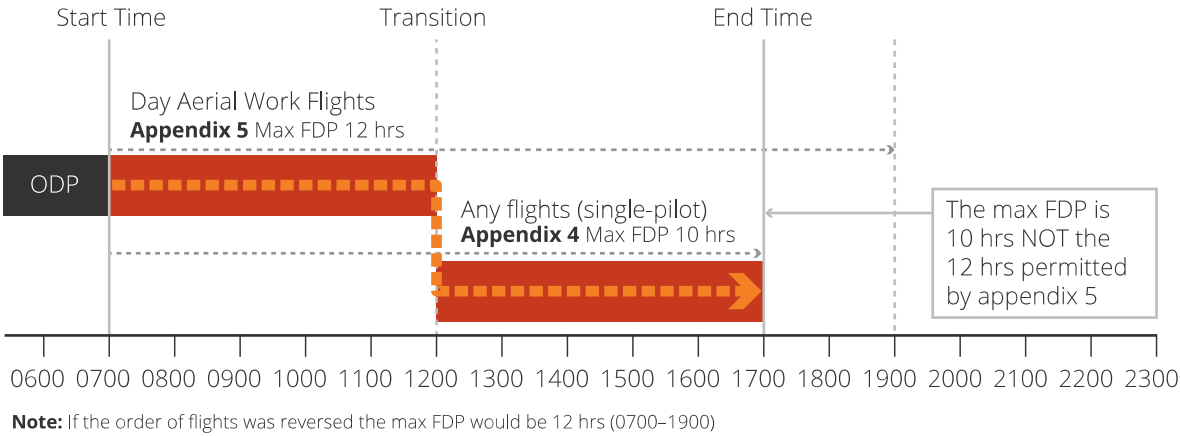
Where you operate under multiple (two or more) appendices (see Figure 2), your maximum FDP or maximum flight time is that specified in the appendix under which the operation is currently being conducted (the applicable appendix). Elapsed flight (or duty) time must be calculated from the time an FCM commenced their first flight duty.

**Note:** When operating under multiple appendices the cumulative duty and cumulative flight time limits are those specified in the applicable appendix.



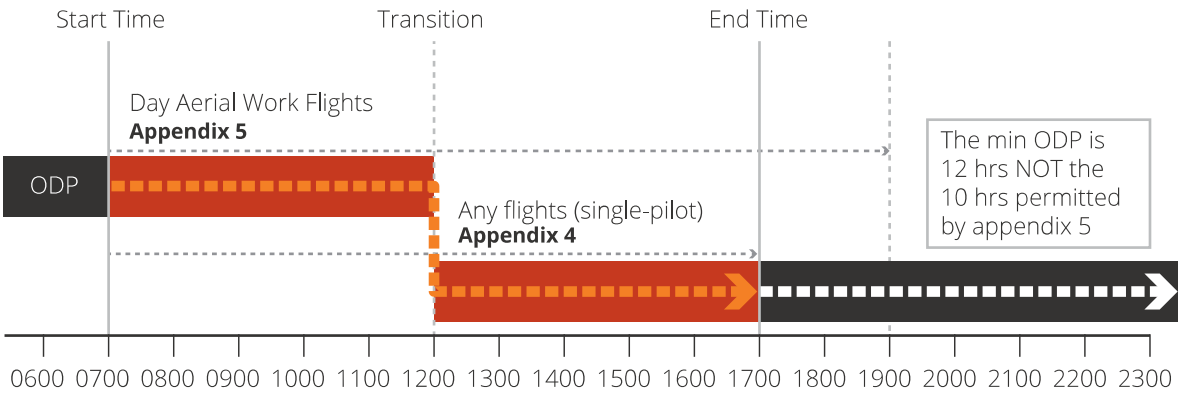
*Be aware that your operations manual may contain fatigue management policies and procedures which are more restrictive than those expressed in the CAO or the appendices.*

**Figure 2: Maximum FDP when operating under two or more appendices in a single FDP**



Subject to the following transition requirements (in 13A), the minimum off-duty period following an FDP conducted under multiple appendices is that specified in the appendix which requires the longest off-duty period as if the entire FDP were performed under that appendix (see Figure 3).

**Figure 3: Minimum ODP (in home base) when operating under two or more appendices in a single FDP**



## Off-duty requirements when transitioning from appendix 4B, 5 or 5A, or Subpart 137.Q of CASR (13A)

A pilot transitioning from an FDP or standby period under appendix 4B, 5 or 5A, or Subpart 137.Q of CASR, to another appendix, must have had at least 6 days off-duty in the previous 28 days.



**Exception:** When transitioning to appendix 1 – if you have not had the minimum number of days off following an FDP as required by the appendix under which you were last operating or you have not had at least 6 days off in the previous 28 days, you may nevertheless commence a new FDP or standby provided that:

- › the off-duty period immediately before your new FDP or standby under the other appendix is at least 12 hours, and
- › the report time for your new FDP is not earlier than 0700 hours local time, and
- › your previous FDP was less than 8 hours, and
- › your new FDP is less than 8 hours in duration, and
- › after the new FDP, you will have 1 subsequent FDP, also of less than 8 hours.

## Operator obligations (14)

### Fitness for duty

An operator must not assign a pilot for a flight duty if they reasonably believe that the pilot is unfit to perform the duty because of fatigue.

### Limits

The limits and requirements that apply to pilots must be determined in accordance with the appendix chosen by the operator.

## Operations manual

The operations manual must include the maximum and minimum flight and duty limits, noting an operator may select maxima and minima which are more restrictive than those set out in the appendix, as these are set following a hazard identification process. The operations manual must also include the details of any approved minor variations.



*An operator with an FRMS implementation approval must include relevant limits in their operations manual (see appendix 7).*

## Employee responsibilities

The operations manual must set out their employees' responsibilities for operational fatigue management, and fatigue risk management.

## Meals

Where an FDP will exceed 5 hours, the operator must provide an opportunity for the pilot to access adequate sustenance (food and drink) during the first 5 hours and periodically thereafter, so that no more than 5 hours elapses between each meal.

**Note:** For operations under appendix 7, it is expected that the FRMS would provide the opportunity for FCMs to have access to adequate sustenance at appropriate intervals.

## Records and reports

Records (including relevant reports and documents) of the following must be maintained:

- › pilot rosters
- › actual duty periods
- › actual flight times of each pilot when acting in an FCM capacity
- › actual split-duty rest periods, standby periods, and off-duty periods
- › any FDP or flight time that was extended under the relevant provision (if any) of the appendix or FRMS which an operator has chosen, including information about the extensions in such detail as enables the operator to continuously improve its fatigue management and fatigue risk management policies.

**Note:** A record of any FDP which has been extended is not required where an FDP is reassigned under the relevant provision of the appendix unless the reassignment results in an FDP exceeding an operations manual limit.

A record of each FDP extension (including copies of any relevant reports and documents) must be securely retained for at least 5 years from the date it was made.

Records of an extension of an FDP or a flight time limit must be:

- › studied and used by the operator to provide for continuous improvement of their fatigue management, and fatigue risk management policies
- › given to CASA promptly, if requested in writing.

## Home base

Except for operators operating to appendix 5 or 5A, an operator must:

- › determine the home base for each pilot (a home base determination)
- › inform each pilot of their home base
- › set out in their operations manual procedures for making a home base determination which ensure that each determination, and any changes to it, do not adversely affect aviation safety.

**Note:** A determination of home base should be assigned with a degree of permanence.

## Rosters

An operator must publish each roster in advance to give a pilot a reasonable opportunity to plan adequate rest before they commence their duty.

**Note:** More detailed guidance for operators with regards to their obligations is contained in [CAAP 48-01](#).

## Enhanced fatigue management obligations <sup>(15)</sup>

The following enhanced fatigue management obligations apply in addition to those expressed in section 14 for operators who choose to operate under one or more of appendices 2, 3, 4, 4A, 4B, 5, 5A or 6.

### Operations manual procedures for hazards, multiple appendices etc.

The operations manual must include procedures for:

- › identifying any reasonably foreseeable hazard that may compromise a pilot's alertness during their FDP
- › modifying the limits and requirements determined to be appropriate compliance with the general obligations on AOC and other certificate holders to consider possible hazards
- › the continuous monitoring and evaluation of operator policies, limits, practices, and relevant organisational experiences, considering any reasonably foreseeable hazard that may compromise a pilot's alertness during an FDP with a view to continuous improvement of fatigue management, and fatigue risk management
- › if operating under multiple appendices—any conditions that apply for transitioning between appendix 4B, 5, 5A, or Subpart 137.Q of CASR that ensures safety is not adversely affected
- › training and assessment obligations relevant to enhanced management of fatigue.

**Note:** The procedures mentioned in this paragraph may be met, at least in part, by existing procedures such as those for an SMS.

## Training

Subject to [Recognition of initial training \(CAO 48.1 2019 section 15A\)](#) an operator (as applicable) must provide and require each pilot to undertake initial and recurrent fatigue-related risk training relevant to their duties, including assessing their knowledge and learning.

A pilot must complete the initial or recurrent training session provided by the operator (as applicable) to the satisfaction of the operator.

**Note:** The training required may be incorporated into existing training programs such as an operator's human factors and non-technical skills training program.



*To satisfy the operator that the pilot has adequate knowledge, the development of training material and the assessment of knowledge of fatigue risk management can be done by an operator.*

## Initial training

Initial training must take place within 6 months of the person commencing their employment, and must be in accordance with a syllabus that:

- › provides a thorough knowledge and understanding of:
  - » fatigue causes
  - » fatigue-related impairment
  - » the management of risks associated with fatigue
  - » an operator's fatigue risk management obligations and procedures under the operations manual and this CAO
- › equips each pilot with the ability to comply with their obligations.



*Exemplar fatigue training syllabus:*  
[www.casa.gov.au/sites/default/files/fatigue-training-syllabus.pdf](http://www.casa.gov.au/sites/default/files/fatigue-training-syllabus.pdf)

Recurrent training must occur at appropriate intervals that:

- › are in accordance with a syllabus
- › revises the knowledge and understanding acquired during initial training
- › delivers a thorough knowledge and understanding of any changes in the operator's operating practices, or fatigue risk management obligations and procedures, that have occurred since they were last trained.

Records of training and assessment must be maintained and securely retained by the operator for at least 12 months after a pilot ceases to be employed.

**Note:** Guidance for operators on these additional obligations is contained in [CAAP 48-01](#).

The requirement to pass an assessment of pilot knowledge of fatigue and fatigue risk management is shown in the table below.

Appendix/ obligation	Be aware	Be trained	Be assessed
Basic (1)	No	No	No
Enhanced (2, 3, 4, 4a, 4b, 5, 5a, 6)	Yes	Yes	Yes
FRMS (7)	Yes	Yes	Yes
Subpart 137.Q of CASR	Yes	No	No



*If an operator has enhanced fatigue management obligations its operations manual needs to:*

- › set out what pilots need to know about fatigue
- › establish a training and assessment process/cycle
- › provide:
  - » a fatigue occurrence reporting mechanism
  - » a hazard identification tool
  - » an alertness considerations table/tool
  - » an FDP extension reporting mechanism
- › establish a fatigue review committee and a meeting cycle with a view to making improvements to the fatigue management system.



## Recognition of initial training (15A)

In this section:

**currency time** means the period of time that is the appropriate interval at which an operator requires recurrent training to occur.

**Note:** For example, the interval may be every 18 months, or every 24 months. Further guidance is provided in CAAP 48-01.

**initial training** means fatigue-related risk training relevant to a person's duties as an FCM.

An operator is required to ensure that its pilots successfully complete initial and recurrent fatigue risk management training and pass a competency assessment.

This requirement does not apply where a pilot has already completed such training with:

- › a previous operator or its agent, or
- › the current operator or its agent during a previous period of employment, or
- › a registered training organisation that can deliver initial training, provided that:
  - » the initial training was completed within the currency time immediately before the pilot commenced employment with the current operator, and
  - » the current operator is satisfied that:
    - the initial training complied with the initial training syllabus and delivered a thorough knowledge and understanding of fatigue causes, fatigue related impairment, and the management of risk associated with fatigue
    - the new pilot complied with the recurrency requirements following their initial training, and
  - » authentic records of the training exist, and
  - » within 4 weeks of being employed by the current operator, the pilot successfully completes an induction course to inform them of any fatigue-related risks and information specific to the current operator, and
  - » authentic records of the FCM's initial and or recurrent training and details of the induction course are:
    - included with FCM records for the operator
    - retained for at least 12 months after the FCM ceases employment with the operator.

## Flight crew member obligations (16)

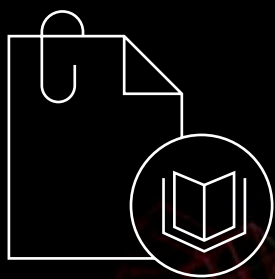
A pilot licence holder must not commence any task for a flight—whether commercial or private—if due to fatigue they are, or they are likely to be, unfit to perform a task that they must perform.

**Note:** A pilot must not exceed any limitation specified in the operations manual except in accordance with extension provisions.

**Note:** Operations manual fatigue management policies and procedures may be more restrictive than those expressed in the CAO.



*Regardless of the legality of a planned FDP, if at any time you do not feel fit to fly or you believe that at some point in the FDP you will be unfit to fly then you have an obligation not to commence the duty.*



# APPENDICES

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FATIGUE  
GUIDELI

## How to read the appendices

There are several appendices from which an operator can choose to operate. A more complex appendix may offer an operator greater flexibility in crew planning and assignment to allow adaptation to real world complexity. For completeness Subpart 137.Q of CASR has been included in this guide although it is not included in the CAO.

Words that have a specific and sometimes complex meaning have been defined. To understand the appendices, reference **must** be made to the definitions. For example *unforeseen operational circumstances* means an unplanned exceptional event that becomes evident after the commencement of the FDP, such as unforecast weather, equipment malfunction, or air traffic delay.

Each appendix has been rewritten plainly and presented under the headings planning/rostering and variations to easily understand requirements for planning of flight duty and flight time periods or when variations are needed. These are:

- › **Planning/rostering** – these are the limits to which the operator should adhere when assigning a duty or building a duty roster, including:
  - » cumulative limits
  - » sleep opportunity
  - » off-duty periods
  - » flight and duty limits
  - » flight training
  - » split-duty
  - » standby
  - » positioning.
- › **Variations** – these are short term changes permitted to allow an operator to adjust for the unexpected such as aircraft unserviceability, schedule disruptions, pilot availability and other variables which are difficult to forecast, including:
  - » delayed reporting
  - » cancellation
  - » reassignment/extension
  - » discretion.

When reading these appendices, you should note:

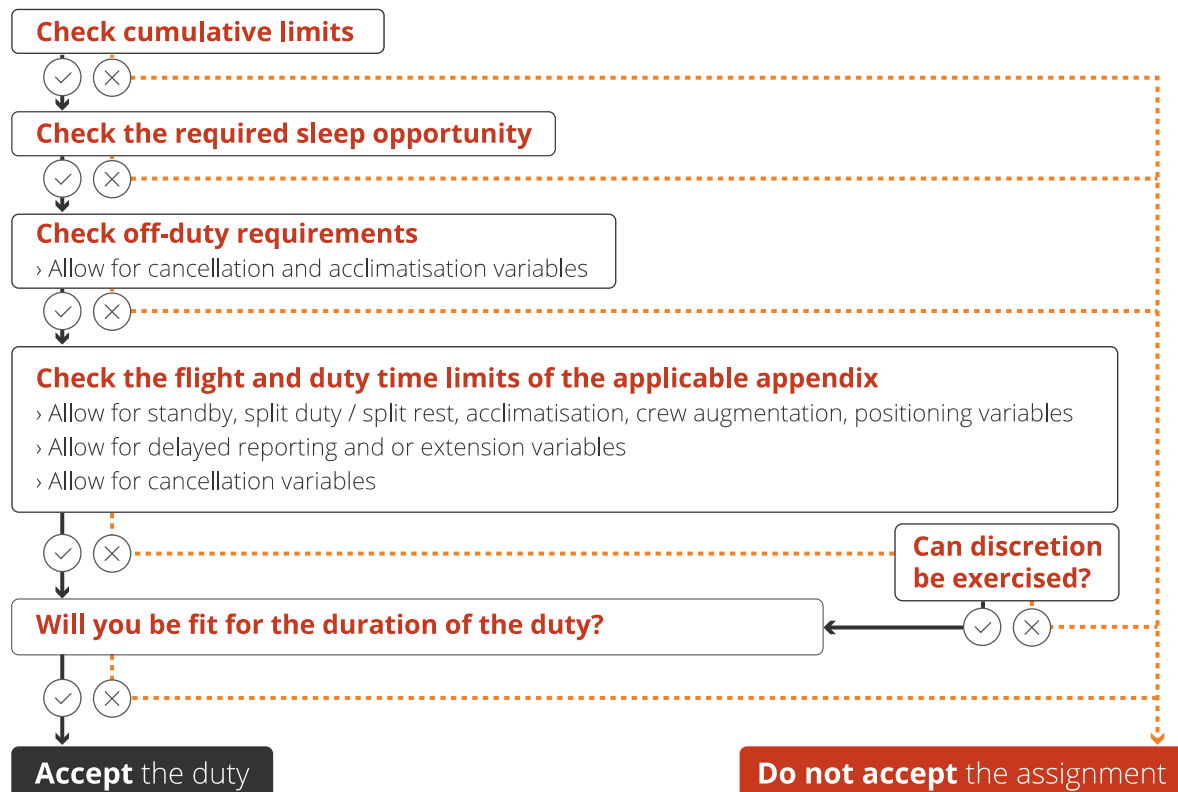
- › time of day is expressed in local time unless otherwise specified (e.g. acclimatised time)
- › all expressions of periods of *time* in the appendices are an expression of *consecutive* time unless otherwise specified or implied.

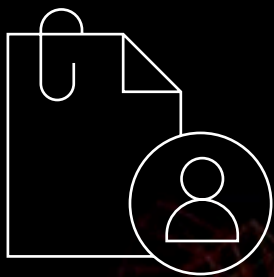
Where periods of hours have been expressed in the CAO, these have been converted to periods of days in this guide.

Period expressed in hours	Equivalent period in days
672	28
504	21
384	16
336	14
168	7

## Should you fly?

The following illustrates a method by which to establish whether you are able to undertake or vary a duty.





## APPENDIX 1—BASIC LIMITS

This appendix sets basic limits for operations broadly outside the window of circadian low (a time when physiological sleepiness is greatest and performance capabilities are lowest). It would suit simple or non-complex operations.

This appendix provides prescriptive flight and duty time limitations without the need for risk management processes or fatigue training. These limitations are relatively restrictive.

# Planning/rostering

## Limit on cumulative flight time (5)

An FDP must not cause you to exceed the following flight time limits.

	28 days	365 days
Maximum flight time	100 hours	1000 hours

## Sleep opportunity before an FDP or standby period (1)

You must have at least an 8-hour sleep opportunity when:

- › at home base - within 12 hours of commencing an FDP or standby
- › away from home base - within 10 hours of commencing an FDP or standby.

**Note:** Refer to the definition of sleep opportunity, as it occurs in an off-duty period.

## Off-duty periods (4)

Time period	Off-duty period minima
1 day	12 hours
7 days	Minimum of 36 hours off-duty over 2 local nights before commencing an FDP
28 days	Minimum of 6 days (cumulatively) off-duty before the projected end of the FDP

If you move to a new appendix, you must have at least 12 hours off-duty before commencing a new FDP even if the off-duty period under the new appendix is less restrictive.

## Duty period and limits (2)

You may only be assigned an FDP between the earlier of the hours 0700 (or the beginning of morning civil twilight (MCT)) and 0100 the next day (at the location where the FDP commenced).



In this period, you may be assigned a 9-hour (cumulative) FDP. However, an FDP commenced before 0600 or after 1400 must be no longer than 8 hours.

You may only be assigned 3 late FDPs in any 7 days. A late FDP is one that finishes after 2200.

## Flight training (2)

You must not conduct flight training after the first 7 hours of an FDP.



## Variations

### FDP and flight time extension (3)

Any FDP and flight time limit may be extended by up to 1 hour if:

- › unforeseen operational circumstances arise
- › an extension of the FDP is operationally necessary to complete the duty
- › you consider yourself fit to undertake the extension.

You must not exceed any limit in the operations manual unless it is due to unforeseen operational circumstances (see discretion of the PIC).

### Flight training extension (3)

Flight training for up to 30 minutes may be conducted after the first 7 flight hours of an FDP if unforeseen operational circumstances arise, it is operationally necessary to complete the duty, and you consider yourself fit for the extension.

### Discretion of PIC (3)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



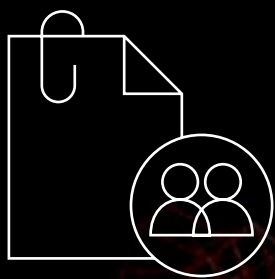
Image | Dean Covell | CASA



# Appendix 1 – Summary

Sleep/Off-duty	Max FDP/flight time			Off-duty after FDP
	1 Day	28 Day	365 Day	
8 hr sleep opportunity within: › 10 hrs of commencing FDP/standby at home base › 12 hrs of commencing FDP/standby away from home base	9 hr FDP  Except 8 hr maximum if your FDP commenced before 0600 or after 1400	100 hr flight time	1200 hr flight time	› in any 24 hrs at least 12 hrs › in any 7 days at least 36 hrs (2 local nights) before projected end of FDP › in any 28 days at least 6 days
<p>You may only be assigned an FDP between the earlier of the hours 0700 (or beginning of morning civil twilight (MCT)) and 0100 the next day (at the location where the FDP commenced).</p> <p>You must not conduct flight training after the first 7 hours of an FDP.</p> <p>You may only be assigned for FDP that finishes after 2200 (a late FDP), if less than 3 late FDPs have been rostered in any 7 days.</p>				

Variations
<b>Extensions</b> <p>At your discretion, a flight time and FDP limit can be extended by 1 hour, provided you consider yourself fit for the extension if unforeseen operational circumstances arise.</p> <p><b>Note:</b> You must not extend if you will exceed the 28-day or 365-day cumulative flight time limits.</p> <p>An extension of the FDP is operationally necessary to complete the duty.</p> <p>If unforeseen operational circumstances arise and it is operationally necessary to complete the duty and you consider yourself fit, flight training for up to 30 minutes may be conducted after the first 7 flight hours of the FDP.</p> <p>A pilot may use discretion in unforeseen operational circumstances to exceed limits in this appendix to continue to the destination.</p>



## APPENDIX 2—MULTI-PILOT OPERATIONS EXCEPT FLIGHT TRAINING

This appendix sets out the requirements for all multi-crew operations except for flight training.

This appendix would suit interstate or international multi-pilot operations where acclimatisation and crew augmentation are factors to be considered.

**Note:** see definitions of acclimatisation/acclimatised time when reading this appendix.



*Multi-pilot operations (other than flight training) that do not cross time zones, or involve augmented crew operations, may find appendix 3 more suitable than appendix 2 because it has the same limitations but is less complex.*

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# Planning/rostering

## Limit on cumulative duty time and flight time (11) (12)

	7 days	14 days	28 days	365 days
<b>Maximum duty</b>	60 hours	100 hours		
<b>Maximum flight time</b>			100 hours	1000 hours

## Sleep opportunity before an FDP or standby period (1)

You must have at least an 8-hour sleep opportunity when:

- › at home base – within 12 hours of commencing your FDP or standby
- › away from home base – within 10 hours of commencing your FDP or standby.

**Note:** Refer to the definition of sleep opportunity, as it occurs in an off-duty period.

## Off-duty period limits (10)

### Off-duty periods for cumulative fatigue recovery

Time period	Off-duty period minima
<b>7 days</b>	Minimum of 36 hours off-duty over 2 local nights before the projected end of the FDP or standby
<b>28 days</b>	Minimum of 6 days (cumulatively) off-duty before commencing the FDP or standby

### Off-duty period following an FDP



*In the following subsections duty period means the sum of your FDP and duty after the FDP.*

## Acclimatised

### FDP less than or equal 12 hours

Where your duty period does not exceed 12 hours, your following off-duty period must be at least:

- › if away from home base – 10 hours, or
- › if at home base – 12 hours, plus the amount of time that any displacement exceeds:
  - » 3 hours if travelling west, or
  - » 2 hours if travelling east.

### FDP exceeds 12 hours

Where your duty period exceeds 12 hours, your following off-duty period must be at least 12 hours, plus:

- › 1.5 times the time that the duty period exceeded 12 hours, and
- › the time that the displacement time exceeds:
  - » 3 hours if travelling west, or
  - » 2 hours if travelling east.

## Unknown acclimatisation

### FDP less than or equal 12 hours

Where your duty period does not exceed 12 hours, your following off-duty period must be at least:

- › 14 hours, and
- › the amount of the displacement time (above).

### FDP exceeds 12 hours

Where your duty period exceeds 12 hours, your following off-duty period must be 14 hours, plus:

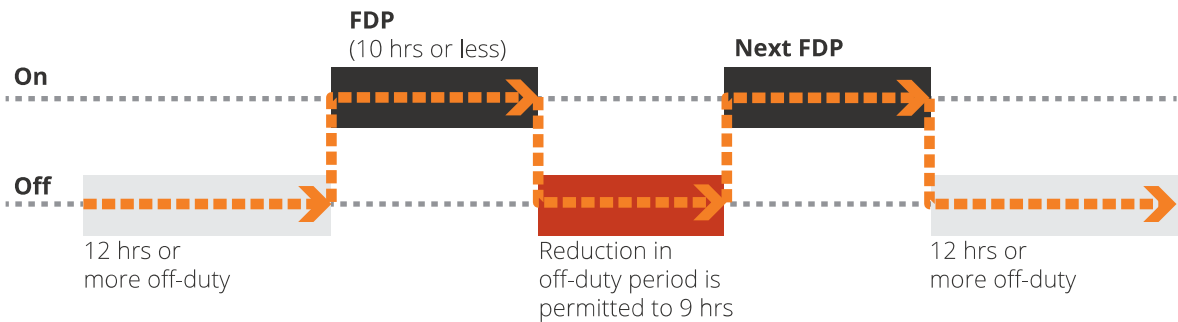
- › 1.5 times the time that the duty period exceeded 12 hours, and
- › the amount of the displacement time (above).

## Reduction in off-duty period

When not at your home base (see Figure 4), if your duty period is not more than 10 hours, your following off-duty period (ODP) may be reduced to 9 hours over a local night, provided you are acclimatised, and:

- › the off-duty period immediately before your FDP was at least 12 hours, and included a local night, and
- › the off-duty period following your next FDP will be at least 12 hours, including a local night.

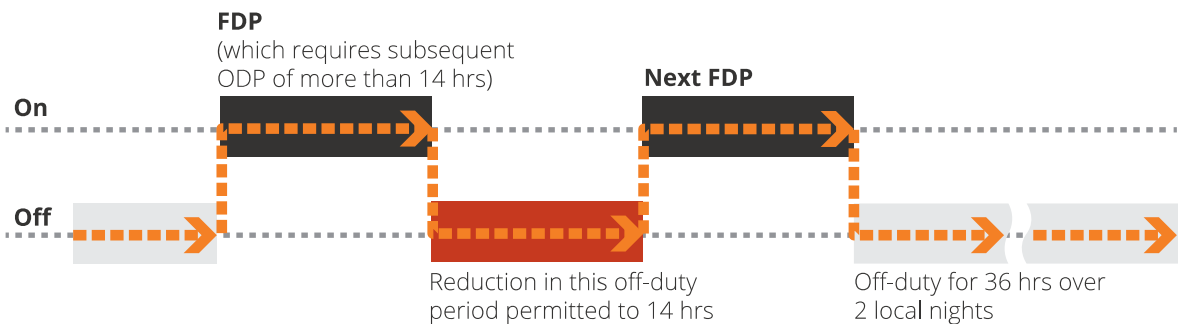
**Figure 4: Reduction in ODP to 9 hours away from home base**



If the calculated off-duty period is more than 14 hours (see Figure 5), the off-duty period may be reduced to 14 hours, if:

- › the reduced off-duty period is undertaken away from home base, and
- › the FDP was not extended past the FDP limit provided for under an operations manual, and
- › you commence the next FDP in an acclimatised state, and
- › the off-duty period following the next FDP is of at least 36 hours and includes 2 local nights.

**Figure 5: Reduction in ODP to 14 hours away from home base**



## WOCL infringement and early start limits (13)

### Early starts (0500-0659)

You may be assigned up to 5 consecutive duty periods with early starts (0500-0659) provided:

- › the FDP limit in [Table 2](#) on the 4th day is reduced by 2 hours, and
- › the FDP limit in [Table 2](#) on the 5th day is reduced by 4 hours.

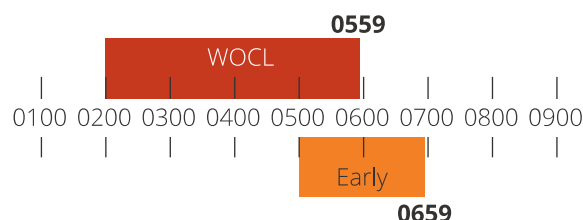
## WOCL infringement (0200-0559)

After 3 consecutive WOCL infringements you must have an off-duty period over a local night. You are permitted to infringe the WOCL more than 3 times only in accordance with the early start provisions above.



*A duty that falls within any part of the WOCL, means the WOCL is infringed.*

**Figure 6: WOCL and early start periods**



## Conditions for augmented crew operation (5)

In order to increase FDP and flight time limits as set out in Tables 3 and 4, following conditions apply:

- › the operations manual must have procedures for augmented crew operations
- › the FCMs at the end of the FDP for the augmented crew operation must be the same as those who commenced the first sector of the FDP<sup>1</sup>
- › the FDP must be limited to 3 sectors
- › the minimum in-flight rest during the FDP must be:
  - » 1.5 hours for each FCM who will not be at the aircraft controls during the final landing, and
  - » 2 hours for each FCM who will be at the aircraft controls during the final landing.

- › the in-flight rest must be planned for the cruise phase of the flight
- › if an assigned FDP is to exceed 14 hours, then:
  - » not more than 2 sectors may be assigned, and
  - » where 2 sectors are assigned, either:
    - each FCM who will be at the aircraft controls during the landing at the end of the second sector must have had an in-flight rest of at least 2 hours within the 8-hour period that ends at the scheduled time of the landing, or
    - the scheduled flight time of the second sector must be at least 9 hours.

If an assigned FDP is to exceed 16 hours, then:

- › only 1 sector may be assigned
- › the minimum in-flight rest must be:
  - » 2 hours for each FCM who will not be at the aircraft controls during the final landing
  - » 3 hours for each FCM who will be at the aircraft controls during the final landing.

**Note:** The minimum in-flight rest specified may not provide adequate rest to ensure alertness for the remainder of the FDP. Guidance on the use of in-flight rest is contained in [CAAP 48-01](#).

## FDP and flight time limits for an acclimatised FCM (2)

### Non-augmented crew operations

You must not be assigned a duty with a flight time which exceeds 10.5 hours. However, if you are acclimatised, you must not be assigned an FDP which exceeds the limits in Table 2.

**Table 2: Non-augmented, acclimatised FDP and flight time limits**

Acclimatised time at start of FDP	Maximum FDP hours according to sectors to be flown					
	1-3	4	5	6	7	8+
0000-0459	10	9.5	9	8.5	8	7.5
0500-0559	11	10.5	10	9.5	9	8.5
0600-0659	12	11.5	11	10.5	10	9.5
0700-1259	13	12.5	12	11.5	11	10.5
1300-1359	12	11.5	11	10.5	10	9.5
1400-1459	11	10.5	10	9.5	9	8.5
1500-2359	10	9.5	9	8.5	8	7.5

<sup>1</sup> For safety reasons, this is a critical condition. If, for example, a medical emergency required the disembarkation of an FCM during the FDP, for the flight to continue all the FCMs must be replaced with a new augmented crew commencing a new FDP

Augmented crew operations (5)

If you are acclimatised, you must not be assigned an FDP which exceeds the limits in Table 3.

Table 3: Augmented, acclimatised FDP and flight time limits

Acclimatised time at start of FDP	Maximum FDP according to class of crew rest facility and number of additional FCMs					
	Class 1		Class 2		Class 3	
Additional FCMs	1	2	1	2	1	2
0700-1059	16	18	15	16.5	14	15
1100-1559	16	18	15	16.5	13	14
1600-0459	16	18	15	16.5	12	13
0500-0659	16	18	15	16.5	13	14

Note: Refer to definitions to determine an FCM's acclimatised time.

FDP and flight time limits for an FCM in an unknown state of acclimatisation (3)

Non-augmented crew operations

You may only be assigned 4 consecutive FDPs while in an unknown state of acclimatisation after which you must have an adaptation period sufficient to become reacclimatised. Refer to the definition of acclimatisation.

You must not be assigned a duty with a flight time which exceeds 10.5 hours. However, if your acclimatisation is unknown, you must not be assigned an FDP which exceeds the limits in Table 4.

Table 4: Non-augmented FDP and flight time limits – unknown acclimatisation

Duration of off-duty period immediately before the FDP	Maximum FDP hours according to sectors to be flown					
	1-3	4	5	6	7	8+
Less than 30 hours	10	9.5	9	8.5	8	7.5
30 hours or more	12	11.5	11	10.5	10	9.5

### Augmented crew operations (5)

If your acclimatisation is unknown, you must not be assigned an FDP which exceeds limits in Table 5.

**Table 5: Augmented FDP and flight time limits – unknown acclimatisation**

Duration of off-duty period immediately before the FDP	Maximum FDP according to class of crew rest facility and number of additional FCMs					
	Class 1		Class 2		Class 3	
<b>Additional FCMs</b>	1	2	1	2	1	2
<b>Less than 30 hours</b>	16	18	15	16.5	12	13
<b>30 hours or more</b>	16	18	15	16.5	14	15

### Increase in FDP limits by split-duty (4)

The portion of a split FDP which follows a rest period, either in resting or sleeping accommodation, must be no longer than 6 hours.

For non-augmented crew operations, either acclimatised or in an unknown state of acclimatisation, an FDP limit that contains a split-duty rest period of at least 2 hours may be increased by half the duration of the split-duty rest, but by no more than 2 hours.

Where an FDP contains a split-duty rest period of at least 4 hours an FDP may be increased by up to 4 hours to 16 hours, and

- › the first 4 hours of the split-duty rest period may be reduced by 2 hours when determining the subsequent off-duty period or cumulative duty time.

Whenever a split-duty rest period includes any period between the hours of 2300 to 0529 being the acclimatised time or local time (if the FCM acclimatisation is unknown), then:

- › the split-duty rest period must be for a period of at least 7 hours, and
- › the maximum FDP is 16 hours, but
- › no reduction in the subsequent off-duty period and cumulative duty time provisions is permitted.

### Standby limits and standby-like arrangements (8)

An operator must not require you to be on standby for longer than 14 hours.

The maximum FDP after a call out from standby must be decreased by the number of hours by which the standby exceeded 4 hours.

From a standby call out, the maximum combined standby and subsequent FDP is 16 hours, except where the subsequent FDP:

- › is an augmented crew operation, or
- › includes a split-duty rest period, in suitable sleeping accommodation, of at least 4 hours.

A standby completed without a call out must be followed by an off-duty period of at least 10 hours.

To remove any doubt, the time you are held in a standby-like arrangement must be treated as a duty period for the purposes of this CAO.

**Note:** For example, the period spent in a standby-like arrangement must be included as part of a subsequent FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods.

### Positioning (9)

On completion of your assigned FDP, you may position to a suitable location as required by an operator.

**Note:** As with any duty, the time spent in positioning after completion of the FDP must be added to the relevant FDP when determining minimum off-duty periods.



## Variations

### Delayed reporting time (6)

#### Sleep opportunity before an FDP or standby period (1)

Where there is a delay to the commencement of your FDP:

- › of less than 10 hours, the sleep opportunity period is based on the reporting time of the original FDP, however
- › in a single period of 10 hours or more, the sleep opportunity period is based on the new FDP commencement time.

#### Operations manual without procedures for delays

An operator may only delay your assigned reporting time if you are informed of the new reporting time at least 10 hours in advance.

The operator may:

- › consider the period between the original and the new reporting time (the period of the delay) to be off-duty, and
- › at the end of this off-duty period, assign a new FDP subject to the applicable limits set out in this appendix or another appendix which the operator has specified in their operations manual.

If an operator delays your original reporting time, and does not inform you of the delay at least 10 hours in advance then your FDP is taken to commence at the original reporting time and the off-duty requirements of this appendix apply whether or not the flight occurs.

#### Operations manual with procedures for delays

If the operations manual has procedures for delays, your original reporting time may be delayed if you are properly informed:

- › At your home base:
  - » at least 2 hours before the original reporting time, and
  - » at least 2 hours before each new reporting time.
- › Away from your home base:
  - » at least 1 hour before the original reporting time, and
  - » at least 1 hour before each new reporting time.

If you are properly informed of a delay, the period between the original and the new reporting time is deemed to be a standby duty whether the definition of standby regarding suitable sleeping accommodation is met.

If any single delay to your FDP is 10 hours or less, the operator may:

- › consider the period of the delay to be off-duty, and
- › at the end of the off-duty period, assign an FDP subject to the applicable limits set out in this appendix or another appendix of this CAO.

Your FDP is taken to commence at the later of:

- › the original reporting time where you are not properly informed of a delay, or
- › the last notified reporting time - where you have been properly informed.

the usual off-duty period requirements following the completion of the FDP will then apply.

#### Maximum FDP after delay with operations manual procedures

The combination of one or more delays and the immediately following FDP must not exceed 16 hours unless the FDP contains a split-duty rest period.

If you have been properly informed of an FDP delay, and the FDP commences at a new reporting time that is within 4 hours of the original, then the maximum FDP must be based on whichever of the following is the more limiting:

- › the original reporting time
- › the new reporting time.

For a properly informed delay to an FDP commencing at least 4 hours after the original reporting time, the maximum FDP must be based on the more limiting of:

- › the original reporting time
- › 4 hours after the original reporting time.

#### Cancellations – with or without operations manual procedures for delays

If your FDP is delayed (whether in accordance with an operations manual procedure or not) and you have been informed the flight has been cancelled you must have an off-duty period of at least 10 hours from the time you were informed of the cancellation, before again being assigned an FDP in accordance with any appendix.

## Reassignment and extension (7)

### FDP

You must not be reassigned or extended if it would cause you to exceed the cumulative flight time or cumulative duty time limits.

After your assigned FDP commences, you can be reassigned to a modified FDP allowing you to continue, provided:

- › the modified FDP does not exceed the applicable limits in the operations manual (without limiting the PIC's ability to exercise their discretion to do so if necessary)
- › you have confirmed that you are fit for the reassignment.

Despite any FDP limits in the operations manual, in unforeseen operational circumstances at the discretion of the PIC:

- › the FDP limits in the operations manual may be extended by up to 1 hour (or 2 hours for an augmented crew operation)
- › the applicable sector limit increased by one.

Before exercising such discretion, the PIC must:

- › be satisfied that he or she is fit for the extension
- › consult with each FCM and be satisfied that they consider themselves to be fit for the extension.

### Flight time

The flight time limit in the operations manual for an FDP may be extended up to 30 minutes if:

- › it is operationally necessary to complete the duty
- › each FCM considers themselves fit for the extension.

### Discretion of PIC (7)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination or alternate at the discretion of the PIC.

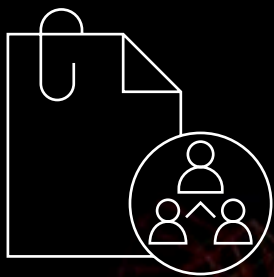


*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



Image | Dean Covell | CASA



## APPENDIX 3—MULTI-PILOT OPERATIONS EXCEPT COMPLEX OPERATIONS AND FLIGHT TRAINING

This appendix sets out the requirements for all multi-crew operations except complex operations and flight training.

This appendix would suit interstate or international multi-pilot operations without augmented crew where acclimatisation is a factor to consider.

**Note:** see definitions of acclimatisation/acclimatised time when reading this appendix.

# Planning/rostering

## Limit on cumulative duty time and flight time (9) (10)

	7 days	14 days	28 days	365 days
<b>Maximum duty</b>	60 hours	100 hours		
<b>Maximum flight time</b>			100 hours	1000 hours

## Sleep opportunity before an FDP or standby period (1)

You must have at least an 8-hour sleep opportunity when:

- › within 12 hours of commencing an FDP or standby at your home base
- › within 10 hours of commencing an FDP or standby away from home base.

**Note:** Refer to the definition of sleep opportunity, as it occurs in an off-duty period.

## Off-duty periods (8)



*In the following subsections duty period means the sum of your FDP and duty after the FDP.*

If your duty period does not exceed 12 hours you must have at least the following:

- › 10 hours off-duty when away from home base, or
- › 12 hours off-duty if at your home base.

If your duty period exceeds 12 hours, the following off-duty period must be at least 12 hours, plus 1.5 times the time that your duty period exceeded 12 hours.

## Off-duty period for cumulative fatigue recovery

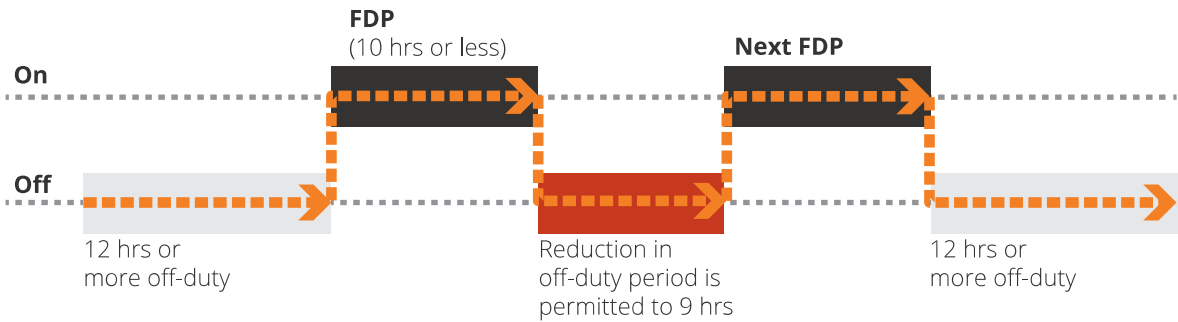
Time period	Off-duty period minima
<b>7 days</b>	Minimum of 36 hours off-duty over 2 local nights before the projected end of the FDP or standby
<b>28 days</b>	Minimum of 6 days (cumulatively) off-duty before commencing the FDP or standby

## Reduction in off-duty period

When not at your home base, if your duty period is not more than 10 hours, your following off-duty period may be reduced to 9 hours over a local night, provided you are acclimatised, and:

- › the off-duty period immediately before your FDP was at least 12 hours (see Figure 7) and included a local night, and
- › the off-duty period following your next FDP will be at least 12 hours, including a local night.

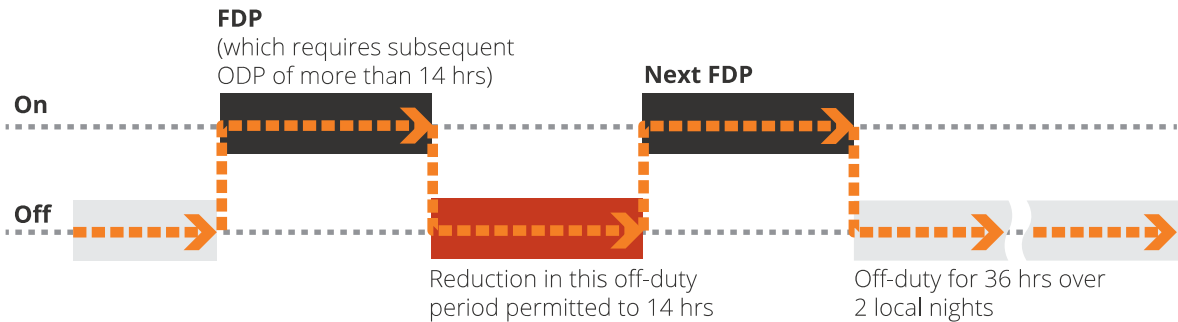
**Figure 7: Reduction in ODP to 9 hours away from home base**



If the calculated off-duty period is more than 14 hours (see Figure 8), the off-duty period may be reduced to 14 hours, if:

- › the reduced off-duty period is undertaken away from home base
- › the FDP was not extended past the FDP limit provided for under an operations manual
- › you commence the next FDP in an acclimatised state
- › the off-duty period following the next FDP is of at least 36 hours and includes 2 local nights.

**Figure 8: Reduction in ODP to 14 hours away from home base**





WOCL infringement and early start limits (11)

Early starts (0500-0659)

You may be assigned up to 5 consecutive duty periods with early starts (0500-0659) provided:

- › the FDP limits in Table 2 on the 4th day is reduced by 2 hours
- › the FDP limit in Table 2 on the 5th day is reduced by 4 hours.

WOCL infringement (0200-0559)

After 3 consecutive WOCL infringements you must have an off-duty period over a local night. You are permitted to infringe the WOCL more than 3 times only in accordance with the early start provisions above.


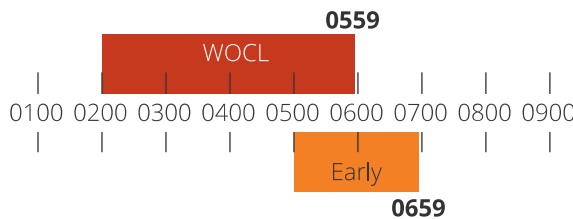
 A duty that falls within any part of the WOCL, means the WOCL is infringed.

Figure 9: WOCL and early start periods



FDP and flight time limits (2)

You must not be assigned a duty where your flight time will exceed 10.5 hours. However, if you are acclimatised, you must not be assigned in excess of the limits set out in [Table 6](#).



Image | Jon Flobrant | unsplash.com

Table 6: Maximum FDP hours

Acclimatised time at start of FDP	Maximum FDP hours according to sectors to be flown					
	1-3	4	5	6	7	8+
0000-0459	10	9.5	9	8.5	8	7.5
0500-0559	11	10.5	10	9.5	9	8.5
0600-0659	12	11.5	11	10.5	10	9.5
0700-1259	13	12.5	12	11.5	11	10.5
1300-1359	12	11.5	11	10.5	10	9.5
1400-1459	11	10.5	10	9.5	9	8.5
1500-2359	10	9.5	9	8.5	8	7.5

Increase in FDP limits by split-duty (3)

The portion of a split FDP following a rest, either in resting or sleeping accommodation, must not be more than 6 hours.

Resting accommodation

Where an FDP contains a split-duty rest of at least 2 hours with access to suitable resting accommodation, the maximum FDP in Table 6 may be increased by half the duration of the split-duty rest period, but not more than 2 hours.

Sleeping accommodation

Where an FDP contains a split-duty rest period of at least 4 hours with access to suitable sleeping accommodation, then:

- › the maximum FDP in Table 6 may be increased by up to 4 hours, but the resulting FDP must not exceed 16 hours, and
- › when determining the subsequent off-duty or duty time, the first 4 hours of the split-duty rest period may be reduced by 2 hours.

Whenever a split-duty rest period is between the hours of 2300 to 0529 being the acclimatised time or local time (if acclimatisation is unknown), then:

- › the split-duty rest must be at least 7 hours with access to suitable sleeping accommodation
- › the maximum FDP is limited to 16 hours
- › no reduction in the subsequent off-duty period and cumulative duty time is permitted.

Standby limits and standby-like arrangements (6)

Access to suitable sleeping accommodation

An operator must not require you to be on continuous standby for more than 14 hours.

If you are called out:

- › the maximum FDP after the call out must be decreased by the number of hours the standby exceeded 4 hours, and
- › the combined standby and subsequent FDP must not exceed 16 hours, except where the subsequent FDP includes a split-duty rest, in suitable sleeping accommodation, of at least 4 hours.

A standby where you were not called out must be followed by an off-duty period of at least 10 hours.

No access to suitable sleeping accommodation

To remove any doubt, the time in which you are held in a standby-like arrangement must be treated as a duty period.

**Note:** For example, the period spent in a standby-like arrangement must be included as part of a subsequent FDP assigned to you or added to the preceding FDP when determining your minimum off-duty periods.

Positioning (7)

On completion of an FDP, an operator can reposition you to a suitable location. However, the time spent repositioning is to be added to your FDP when calculating subsequent off-duty periods.

**Note:** With any minimum duty, the time spent in positioning after completion of the FDP must be added to your FDP when determining minimum off-duty periods.



## Variations

### Delayed reporting time (4)

#### Sleep opportunity before an FDP or standby period (1)

Where there is a delay of less than 10 hours to the commencement of your FDP:

- › the sleep opportunity is based on the reporting time for the original FDP, however
- › in a single period of 10 hours or more, the sleep opportunity period is based on the new FDP commencement time resulting from the delay.

#### Operations manual without procedures for delay

Where the operator has no procedures for delays, they may only delay or postpone your assigned reporting time if you are informed of the new reporting time at least 10 hours in advance. However:

- › the period between the original reporting time and the new reporting time (the delay) can be considered to be an off-duty period, and
- › at the end of this off-duty period, you can be assigned a new FDP subject to the applicable limits set out in this appendix or another appendix of this CAO.

If the operator delays your original reporting time, and does not inform you at least 10 hours in advance, then your FDP commences at the original reporting time and the off-duty period requirements of this appendix apply to you whether or not the flight occurs.

#### Operations manual with procedures for delay

Where the operator has procedures for delays, they may postpone your original reporting time if you are informed of the postponement as follows:

- › at your home base – at least 2 hours before the original and each new reporting time
- › away from your home base – at least 1 hour before the original and each new reporting time.

If you are properly informed of the delay, the period between the original reporting time and the new reporting time is deemed standby duty, whether the definition of standby regarding suitable sleeping accommodation is met.

If any single delay to the start of your FDP is 10 hours or less, the operator may:

- › consider the delay to be an off-duty period, and
- › subsequently roster you to the applicable FDP limits set out in this appendix or another appendix.

If you are not properly informed of a delay, your FDP shall commence at the later of:

- › the original reporting time, or
- › the last reporting time at which you were properly informed, and
- › the usual off-duty period requirements (at the completion of the FDP or otherwise) will apply.

#### Max FDP after delay with operations manual procedures

Where the operator has procedures, the combined duration of 1 or more delays and the following FDP must not exceed 16 hours unless the FDP contains a split-duty rest period.

If you are properly informed of the delay, and the FDP commences at a new reporting time that is within 4 hours of the original reporting time, then the maximum FDP must be based on whichever is more limiting:

- › the original reporting time, or
- › the new reporting time.

If you are properly informed of an FDP delay and the new FDP commences at least 4 hours after the original reporting time, then the FDP commences 4 hours after the original reporting time. The maximum FDP must be based on whichever is the more limiting:

- › the original reporting time, or
- › 4 hours after the original reporting time.

#### Cancellations — with or without operations manual procedures for delays (6)

If your FDP is delayed (whether in accordance with the operations manual procedure or not) and you are informed that the flight has been cancelled then, you must have an off-duty period of at least 10 hours, from the time you were informed, before being further assigned an FDP in accordance with any appendix.

## Reassignment and extension (5)

### FDP

You must not be reassigned or extended (under this clause) if it would cause you to exceed the flight time or duty time limits.

After your assigned FDP commences, your FDP (including the sectors) can be modified (a reassignment), provided that:

- › the modified FDP does not exceed the limits in the operations manual
- › you confirm that you are fit for the reassignment.

The FDP and sector limit in the operations manual, in unforeseen operational circumstances at the discretion of the PIC, may be increased:

- › for the FDP by up to 1 hour, and
- › for the sector limit by one.

However, before exercising such discretion, the PIC must:

- › be satisfied that they are fit for the extension
- › consult with and be satisfied that each FCM considers themselves to be fit for the extension.

### Flight time

The flight time limit in the operations manual for an FDP may be extended by not more than 30 minutes if:

- › it is operationally necessary to complete the duty, and
- › each FCM considers themselves fit for the extension.

### Discretion of PIC (5)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination or alternate at the discretion of the PIC.

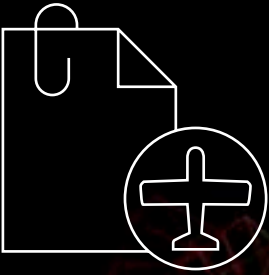


*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



Image | Dean Covell | CASA



## APPENDIX 4—ANY OPERATION

This appendix sets out the requirements for single-pilot air transport operations. However, it may also be used by an operator conducting multi-pilot operations, aerial work operations, flight training, or any combination of operations including those which cross time zones.

▶TR/01▶83  
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▶SEARCH▶TR/01▶83

FATIGUE  
GUIDELINES

# Planning/rostering

## Limit on cumulative duty time and flight time (9) (10)

	7 days	14 days	28 days	365 days
Maximum duty	60 hours	100 hours		
Maximum flight time			100 hours	1000 hours

## Sleep opportunity before an FDP or standby period (1) (2)

You must have at least an 8-hour sleep opportunity when:

- › at home base – within 12 hours of commencing an FDP or standby
- › away from home base – within 10 hours of commencing an FDP or standby.

**Note:** Refer to the definition of sleep opportunity, as it occurs in an off-duty period.

## Off-duty periods (8)



*In the following subsections duty period means the sum of your FDP and duty after the FDP.*

### Off-duty period following an FDP

Where your duty period does not exceed 12 hours, your following off-duty period must be at least:

- › at home base – 12 hours, or
- › away from home base – 10 hours, plus the amount of time that any displacement exceeds:
  - » 3 hours if travelling west, or
  - » 2 hours if travelling east.

Where your total duty period exceeds 12 hours, your following off-duty period must be at least 12 hours, plus:

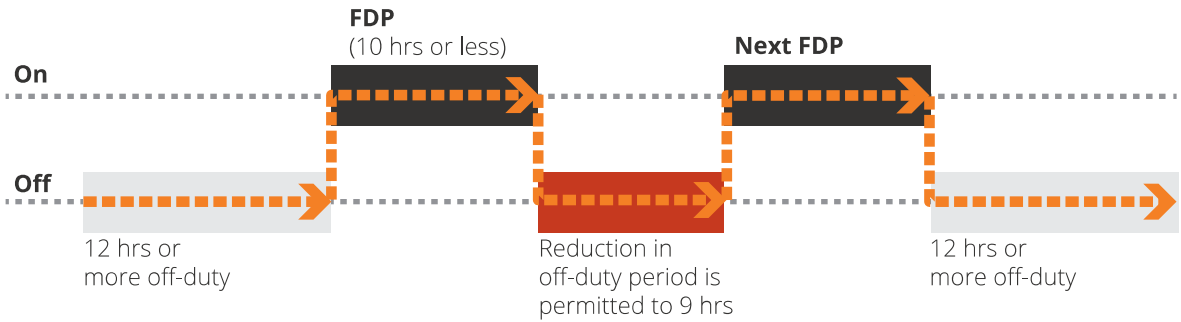
- › 1.5 multiplied by the time that your duty period exceeded 12 hours, and
- › the amount that the displacement time exceeds:
  - » 3 hours if travelling west, or
  - » 2 hours if travelling east.

### Reduction in off-duty period

When not at your home base, if your duty period is not more than 10 hours (see Figure 10), your following off-duty period may be reduced to 9 hours over a local night, provided you are acclimatised, and:

- › the off-duty period immediately before your FDP was at least 12 hours, and included a local night, and
- › the off-duty period following your next FDP will be at least 12 hours, including a local night.

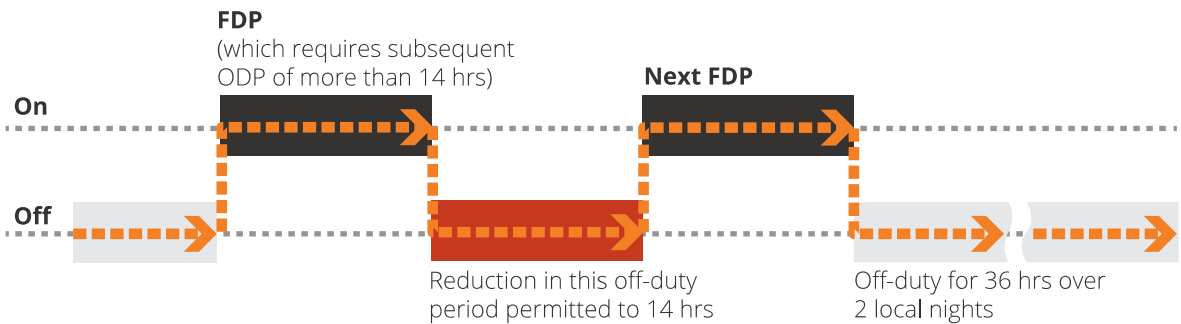
**Figure 10: Reduction in ODP to 9 hours away from home base**



If the calculated off-duty period is more than 14 hours (see Figure 11), the off-duty period may be reduced to 14 hours, if:

- › the reduced off-duty period is undertaken away from home base
- › the FDP was not extended past the FDP limit provided for under an operations manual
- › you commence the next FDP in an acclimatised state
- › the off-duty period following the next FDP is of at least 36 hours and includes 2 local nights.

**Figure 11: Reduction in ODP to 14 hours away from home base**



Off-duty periods for cumulative fatigue recovery (8)

Time period	Off-duty period minima
7 days	Minimum of 36 hours off-duty over 2 local nights before the projected end of the FDP or standby
28 days	Minimum of 6 days (cumulatively) off-duty before commencing the FDP or standby

WOCL infringement and early start limits (11)

Early starts (0500-0659)

You may be assigned up to 5 consecutive duty periods with early starts (0500-0659) provided:

- › the FDP limits in Table 2 on the 4th day is reduced by 2 hours, and
- › the FDP limit in Table 2 on the 5th day is reduced by 4 hours.

WOCL infringement (0200-0559):

After 3 consecutive WOCL infringements you must have an off-duty period over a local night. You are permitted to infringe the WOCL more than 3 times only in accordance with the early start provisions above.


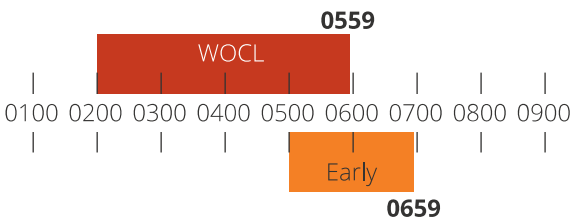
 A duty that falls within any part of the WOCL means the WOCL is infringed.

Figure 12: WOCL and early start periods



FDP limits (2)

You must not be assigned an FDP in excess of the following limits.

Local time at start of FDP	Maximum FDP hours
0500-0559	9
0600-0759	10
0800-1059	11
1100-1359	10
1400-2259	9
2300-0459	8

Flight training (2)

You must only conduct flight training within the first 7 flight hours of an FDP.

Increase in FDP limits by split-duty (3)

The portion of a split FDP which follows a rest, either in resting or sleeping accommodation, must be no more than 5 hours.

FDP	Split-duty rest/ sleep	Max FDP after split -5 hours
FDP start		FDP end

Resting accommodation

Where an FDP contains a split-duty rest period of at least 2 hours with access to suitable resting accommodation, the FDP limits may be extended by half the split-duty rest, but by no more than 2 hours.

Sleeping accommodation

Where an FDP contains a split-duty rest of at least 4 hours with access to suitable sleeping accommodation:

- › the FDP may be increased to 4 hours, and
- › the first 4 hours of the split-duty rest period may be reduced by 2 hours in determining the subsequent off-duty period or cumulative duty time.



Whenever a split-duty rest period is between 2300 and 0529 local time, then:

- › the split-duty rest must be at least 7 hours with access to suitable sleeping accommodation, and the maximum FDP is 15 hours, but
- › no reduction in the subsequent off-duty period and cumulative duty time provisions is permitted.

## Standby limits and standby-like arrangements (6)

### Access to suitable sleeping accommodation

You must not be placed on standby for longer than 14 hours.

The maximum FDP after a call out from standby must be decreased by the number of hours where the standby exceeded 4 hours.

A standby which is completed without a call out must be followed by an off-duty period of at least 10 hours.

### No access to suitable sleeping accommodation

To remove any doubt, the period in which you are held in a standby-like arrangement must be treated as a duty period.

**Note:** For example, the period spent in a standby-like arrangement must be included as part of a subsequent FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods.

## Positioning (7)

On completion of an FDP, an operator can reposition you to a suitable location. However, the time spent repositioning is to be added to your FDP when calculating subsequent off-duty periods.

## Variations

### Delayed reporting time (4)

#### Sleep opportunity before an FDP or standby period (1)

Where there is a delay to the commencement of an FDP of less than 10 hours, the opportunity period for sleep is based on the reporting time of the **original** FDP. However, if a single period delay is 10 or more hours, the opportunity period for sleep is based on the **new** FDP commencement time.

#### Operations manual without procedures for delays

The operator may only delay or postpone an assigned reporting time if the pilot is informed of the new reporting time at least 10 hours in advance.

The operator may consider the period between the original reporting time and the new reporting time (the period of the delay) to be an off-duty period. At the end of this off-duty period, you may be assigned a new FDP, subject to the applicable appendix limits.

If the operator delays the original reporting time and does not inform the pilot of the delay at least 10 hours in advance, then the FDP commences at the original reporting time and the off-duty period requirements of this appendix apply to you whether or not the flight occurs.

#### Operations manual with procedures for delays

Where the operations manual has procedures for delays, the original reporting time may be postponed provided the pilot is informed as follows:

- › at your home base – at least 2 hours before the original or each new reporting time
- › away from your home base – at least 1 hour before the original or each new reporting time.

Where the pilot is properly informed of a delay, the period between the original reporting time and the new reporting time is deemed a standby duty, even if the definition of standby regarding suitable sleeping accommodation is not met.



Where a single delay to an FDP is 10 hours or less, the operator may consider the period of the delay to be an off-duty period, and

- › at the end of the off-duty period, assign an FDP subject to the applicable limits set out in this appendix or another appendix.

Where the pilot is not properly informed of a postponement of an FDP, the FDP commences at the later of:

- › the original reporting time, or
- › the last reporting time the pilot was properly informed.

The usual off-duty period requirements (following the completion of the FDP or otherwise) will also apply.

### Maximum FDP after delay with operations manual procedures

The combined duration of 1 or more delays and the following FDP must not exceed 16 hours unless the FDP contains a split-duty rest period.

Where the pilot is properly informed, the FDP is delayed and the FDP commences at a new reporting time that is within 4 hours of the original reporting time, then the maximum FDP must be based on whichever of the following is the more limiting:

- › the original reporting times
- › the new reporting times.

Where the pilot is properly informed of an FDP delay and the FDP commences at a new reporting time that is 4 hours or more after the original reporting time, then the FDP is taken to have commenced 4 hours after the original reporting time and the maximum FDP must be based on whichever of the following is the more limiting:

- › the original reporting time
- › 4 hours after the original reporting time.

### Cancellations — with or without operations manual procedures for delays (4)

Where the pilot has been informed of an FDP delay because of a flight cancellation (whether in accordance with an operations manual procedure or not) they must then have off-duty at least 10 hours, from the time they were informed, before again being assigned an FDP.

### Reassignment and extension (5)

A pilot must not be reassigned or extended if they will exceed the cumulative flight time or cumulative duty time limits.

After an FDP has commenced, a pilot may be re-rostered to a modified FDP which may continue, provided that:

- › the modified FDP does not exceed the applicable limits in the operations manual
- › the pilot has confirmed their fitness for further duty.

In unforeseen operational circumstances, at the discretion of the pilot, the FDP limits in the operations manual may be extended by up to 1 hour.

Before exercising such discretion, the pilot must be satisfied that they are fit for the extension.

### Flight training (5)

Flight training may be conducted after the first 7 flight hours of the FDP for up to 30 minutes if:

- › unforeseen operational circumstances arise
- › it is operationally necessary to complete the duty
- › you consider yourself fit for the extension.

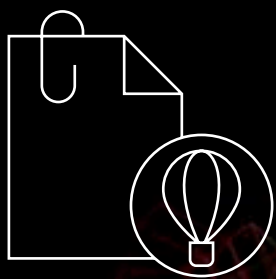
### Discretion of PIC (5)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination or alternate at the discretion of the PIC.



*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



## APPENDIX 4A— BALLOONS

This appendix sets out the requirements for balloon operations.

▶TR/81▶83  
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FATIGUE  
GUIDELINES

# Planning/rostering

## Limit on cumulative duty time and flight time (6) (7)

	7 days	14 days	28 days
Maximum duty	45 hours	84 hours	
Maximum flight time			50 hours

## Sleep opportunity before an FDP (1)

You must have an 8-hour sleep opportunity in the 10 hours prior to commencing an FDP or a 10-hour cumulative sleep opportunity, that includes a 6-hour consecutive sleep opportunity in the 24 hours prior to commencing an FDP.

**Note:** See the definition of sleep opportunity, as occurring in an off-duty period.

## Off-duty periods (5)

### Before commencing an FDP

Before beginning any FDP, you must have 2 or more days off-duty (cumulatively) in the 14 days before the projected end time of the assigned FDP.

### After finishing an FDP

Following an FDP, you must have a single off-duty period of 10 or more hours.

### Split off-duty

An off-duty period may be split by a maximum 2-hour FDP provided:

- › the cumulative time off-duty is 13 hours or more and contains
- › at least 2 off-duty periods of 4 hours.

**Note:** The sleep opportunity limits continue to apply.

## FDP limits (2)

- You must not be assigned an FDP greater than:
- › 6 hours, or
  - › 10 hours, where the duty period is split by a period of rest of 4 hours.



*This means that only the following split-duty combinations are permitted:*

FDP - hours		FDP - hours
1		5
2		4
3	4 hrs rest	3
4		2
5		1

## Increase in FDP limits by split-duty where suitable sleeping accommodation is provided (3)

Where an FDP contains a split-duty rest period of 4 or more hours with access to suitable sleeping accommodation, the FDP may be increased by the duration of the split-duty rest up to 15 hours. In any remaining portion of an FDP following a split-duty rest period the FDP must be no longer than 5 hours. However, the first 4 hours of the split-duty rest period must be reduced by 2 hours when determining the subsequent off-duty period or cumulative duty time.

Where a split-duty rest period is between 2100 and 0329 local time, then the split-duty rest must be for 7 hours or more with access to suitable sleeping accommodation. However, the first 4 hours may NOT be reduced by 2 hours for the purpose of determining the subsequent off-duty period or cumulative duty time.

## Variations

### Extensions (4)

Provided you do not exceed the cumulative flight or duty time limits, with discretion you may, in unforeseen operational circumstances, exceed the FDP limits in the operations manual by 1 hour if you consider yourself fit for the extension.

### Discretion of PIC (4)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination at the discretion of the PIC.



*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



Image | pxhere.com

# Appendix 4A – Summary

Sleep/Off-duty	Max duty/flight time				Off-duty after FDP
	1 day	7 day	14 day	28 day	
<b>Sleep</b> 8 hr sleep opportunity within: › 10 hrs of commencing FDP OR 10 hr cumulative sleep opportunity within: › 24 hrs of commencing FDP.	6 hr FDP OR 10 cumulative hrs where the duty period is split by a period of rest of 4 hours.  Up to 15 hrs where the duty period is split by a period of sleep of 4 hours.	45 hrs cumulative duty	84 hrs cumulative duty	50 hrs cumulative flight time	A single off-duty period of 10 hrs or more.  An off-duty period may be split by a maximum 2-hour FDP provided: › the total time off-duty is 13 hours or more › contains at least 2 off-duty periods of 4 hours.
<b>Off-duty</b> 2 days cumulatively in 14 days before the projected end of an FDP.					<b>Note:</b> The sleep opportunity limits continue to apply.

In any remaining portion of an FDP following a split-duty rest period the FDP must be no longer than 5 hours. However, the first 4 hours of the split-duty rest period must be reduced by 2 hours when determining the subsequent off-duty period or cumulative duty time.

Where a split-duty rest period is between 2100 and 0329 local time, then the split-duty rest must be for 7 hours or more with access to suitable sleeping accommodation. However, the first 4 hours may NOT be reduced by 2 hours for the purpose of determining the subsequent off-duty period or cumulative duty time.

## Variations

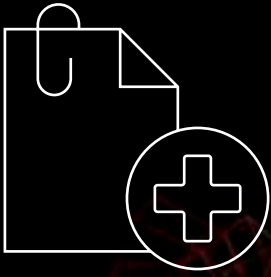
### Extensions

Provided you do not exceed the cumulative flight or duty time limits, with discretion you may, in unforeseen operational circumstances, exceed the FDP limits in the operations manual by 1 hour if:

- › the FDP has commenced, and
- › you consider yourself fit for the extension.

A pilot may use discretion in unforeseen operational circumstances to exceed an appendix limit to continue to the destination.





## **APPENDIX 4B—** MEDICAL TRANSPORT AND EMERGENCY SERVICE OPERATIONS

This appendix sets out the requirements for medical transport operations, emergency services operations, and flight training associated with these operations.

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▶SEARCH▶TR/81▶83

FATIGUE  
GUIDELINES

# Planning/rostering

## Limits on cumulative duty time and flight time (6) (7)

	7 days	14 days	28 days	365 days
Maximum duty	40 hrs	100 hrs		
Conditional maximum duty	60 hrs			
Providing you have had 1 off-duty period of at least 36 hours including two local nights				
Maximum flight time			100 hrs	1000 hrs

## Off-duty period (5)

### Off-duty cumulative fatigue recovery

In any 7 days if you:

- › cumulatively conduct 3 or more late night FDPs, or
- › you increase your FDP to:
  - » 10 hours as a single-pilot or
  - » 12 hours as a multi-pilot

then you must be off-duty for a minimum of 36 hours that includes 2 local nights.

## Before commencing an FDP (or standby) (5)

Before the projected end of the rostered FDP or standby you must have one off-duty period that is a minimum of:

Time period	Off-duty period minima
In any 14 days	36 hrs over 2 local nights
In any 21 days	72 hrs over 3 local nights

## After finishing an FDP

After an FDP you must have an off-duty period—with access to suitable sleeping accommodation—of:

- › 8 hours – between the hours of 2300-0559, or
- › 10 hours – outside the hours of 2300-0559, plus
  - » the amount of displacement time of the FDP, and either:
    - the amount of time that the FDP exceeded 12 hours, or
    - 1 hour for every 30 minutes, or part of 30 minutes, that the FDP was extended past the FDP limit (i.e. 10 hours single-pilot or 12 hours multi-pilot operations).

Where an FDP has split off-duty periods with suitable sleeping accommodation the subsequent off-duty requirement is 10 hours, plus the number of hours difference in local time between the location where the FDP commenced and the location where the split-duty rest was taken. The off-duty period also must be taken over a local night.

Example			
Start FDP in YSSY	4 hrs rest YBHI	Return to finish FDP in YSSY	The off-duty period must be 10 hrs plus 30 mins due to local time difference between YSSY and YBHI
0600	1000	1400	1800

## Reduction in off-duty period

If the calculated off -duty period following an FDP is greater than 12 hours it may be reduced to 12 hours provided the next duty is conducted under this appendix (4B) and the off-duty period following the next FDP is at least 24 hours.



### FDP limits (1)

Local time	Maximum FDP		
	Single-pilot operation	Multi-pilot operation	
		1–2 sectors	3+ sectors
0500-0559	11	12	12
0600-0659	11.5	13	12.5
0700-1159	12	14	13
1200-1459	11	13	12
1500-1559	10.5	12	11.5
1600-0459	10	11	11

### FDP limits may be increased twice per 7-day period (1)

An FDP limit may be extended to:

- › 12 hours for a single-pilot operation
- › 14 hours for a multi-pilot operation.

However:

- › cumulatively no more than 2 FDPs may be extended in any 7 days
- › before extending an FDP the off-duty period must be at least 12 hours
- › an extended FDP must not be further extended by a split-duty rest period but may be extended under the rules for extensions.

An FDP which is extended must be followed by an off-duty period of at least 12 hours. A pilot who extends an FDP under allowable extensions, must have an off-duty period of at least 36 hours that includes 2 local night in any 7 days.

If in the 8 hours immediately before an FDP the pilot performs non-flying duties, the maximum permissible FDP must be decreased by the greater of 30 minutes or the total duration of the non-flying duties.

### Increase in FDP limits by split-duty (2)

#### Sleeping accommodation

Where an FDP has a split-duty rest period of at least 2 hours with access to suitable sleeping accommodation, the FDP limits may be extended by the duration of the rest period when:

- › the remaining FDP is resumed at the time the rest period ends and it is not greater than the FDP limit that would ordinarily apply as if the FDP was being commenced by a new FCM and the FDP period including the rest period does not exceed 16 hours.

#### Example

You are rostered on at 0600 – the single-pilot max FDP is 11.5 hours – a 2.5 hrs split-duty sleep period means you can extend the FDP by 2.5 hours to 14 hours to 2000.

FDP	Rest 2.5 hrs in suitable sleeping accommodation	7.5 hrs	
0600	1000	1230	2000 (14 hrs)

**Note:** The split-duty rest period may be reduced by 50% when determining the cumulative duty time or the subsequent off-duty period following an FDP.

Resting accommodation

Where an FDP has 1 or 2 split-duty rest periods of at least 2 hours with access to suitable resting accommodation the allowed FDP in the above table may only be extended by half the time of the rest periods or up to a total of 2 hours provided the FDP does not exceed 16 hours.

Example

You are rostered on at 0600 as single-pilot. The maximum FDP is 11.5 hours, however with 2 split-duty rest periods (of 4 hours and 2 hours) you can extend to 1930.

FDP	4 hrs rest in suitable accommodation	1.5 hrs FDP	2hrs rest	Extend FDP by max 2 hrs
0600	1000	1400	1530	1730      1930 (13.5 hrs)



Where an FDP has split off-duty periods with suitable sleeping accommodation, the subsequent off-duty requirement is 10 hours, plus the number of hours difference in local time between the location where the FDP commenced and the location where the split-duty rest was taken. The off-duty period also must be taken over a local night.

Flight training (1)

You must only conduct flight training within the first 7 hours of an FDP.

Limit on late night operation (8)

In any 7 days:

- › you must not conduct more than 4 late-night FDPs (cumulatively)
- › If you do 3 late night FDPs (cumulatively), you are limited to 40 hours cumulative duty
- › If you do more than 3 late night FDPs (cumulatively), you must then be off-duty for a minimum of 36 hours over 2 local nights.

Standby (4)

You may be assigned a standby duty. Where you are called out from a standby to commence an FDP (which may include a split-duty rest period) the FDP must be followed by an off-duty period.

Where you are called out from standby to carry out duties other than flying duties you may return to standby. However, in a subsequent FDP you must not exceed the FDP limit in the operations manual.

# Variations

## Extensions (3)

### Extension of FDP at the discretion of the pilot due to unforeseen operational circumstances

In unforeseen operational circumstances the **FDP limit** (including extensions permitted in 7 days or by split-duty) may be extended at the discretion of the PIC up to:

- › 2 hours for a multi-pilot operation, or
- › 1 hour for a single-pilot operation, but never beyond 16 hours.

### Extension of FDP with 'urgent operation procedures' in the operations manual

Where an operations manual has 'urgent operations procedures' and the operation extension fits within these procedures, at the discretion of the PIC an **FDP limit**, including extensions permitted in 7 days or by split-duty may be extended by up to 4 hours but no more than 16 hours.

Before exercising such discretion, the PIC must be satisfied they are fit for the extension, and for a multi-pilot operation consult with each FCM and be satisfied they are also fit for the extension.

**Note:** Due to the nature of medical transport operations and emergency service operations, 'urgent operations extensions' may be permitted in operational circumstances where the operator and the flight crew are satisfied the safety of the flight will not be impacted by fatigue.

### 30 minutes extension to the cumulative flight time despite operations manual limits

If it is operationally necessary and you consider yourself fit, you may extend an FDP by up to 30 minutes beyond the (cumulative) flight time (limit) despite any limits in the operations manual.

### Flight training extension – 30 minutes extension after first 7 hours of FDP – due operational necessity

Flight training for up to 30 minutes may be conducted after the first 7 flight hours from the commencement of the FDP where unforeseen operational circumstances arise and the flight training is operationally necessary to complete the duty and the pilot considers themselves fit to extend.

## Discretion of PIC (3)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix then the flight may continue to the planned destination or alternate at the discretion of the PIC.



*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

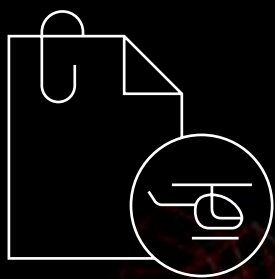


*Alleviation from off-duty requirements when transitioning from one appendix to another is available subject to section 13 and 13A of the CAO.*

Use sample **operations manual supplements** as a starting point to develop processes, procedures and limits to manage fatigue.



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# **APPENDIX 5**—AERIAL WORK OPERATIONS AND FLIGHT TRAINING ASSOCIATED WITH AERIAL WORK

This appendix sets out the requirements for an aerial work operation, and flight training associated with aerial work.

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# Planning/rostering

## Limits on cumulative flight time (6)

	7 days	28 days	90 days	365 days
Maximum flight time	50 hours	170 hours	450 hours	1200 hours

## Off-duty periods (5)

### Off-duty period following an FDP

After an FDP, you must have 8 hours off-duty between 2300- and 0559-hours local time, with access to suitable sleeping accommodation.

If your off-duty period is not between 2300 and 0559-hours local time, you must have 10 hours off-duty, with access to suitable sleeping accommodation.

**Note:** Your off-duty period must be extended by 1 hour for every 30 minutes, or part of 30 minutes, that your FDP exceeds the FDP limit.

## Off-duty periods for cumulative fatigue recovery

Before beginning an FDP or standby duty you must have had either:

Time period	Off-duty period minima
14 days	Minimum of 36 hours off-duty over 2 local nights before the projected end of the FDP or standby
21 days	Minimum of 72 hours off-duty over 3 local nights before the projected end of the FDP or standby

If the **FDP limits** are extended in accordance with the permitted FDP limit increases in a 7-day period you must have at least 36 hours off-duty, which includes 2 local nights.



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FDP limits (1)

You must not be assigned an FDP which exceeds the following limits:

Local time at start of FDP	Maximum FDP (hours)		
	Single-pilot operation	Multi-pilot operation	
		1–2 sectors	3+ sectors
0500 – 0559	11	12	12
0600 – 0659	11.5	13	12.5
0700 – 1159	12	14	13
1200 – 1459	11	13	12
1500 – 1559	10.5	12	11.5
1600 – 0459	10	11	11

FDP limit may be increased twice in 7 days

An FDP limit may be increased to:

- › 12 hours for a single-pilot operation
- › 14 hours for any multi-pilot operation, provided
  - » no more than 2 extended FDPs can be carried out in any 7 days
  - » at least 12 hours off-duty must have been taken before commencing an extended FDP
  - » an off-duty period of at least 12 hours must follow an extended FDP.

In any 7 days, no more than 4 FDPs (cumulatively) between 0000 (midnight) and 0459 local time can be assigned or conducted.



*Where the increase to the FDP allowed under this section is unsatisfactory you may evaluate the benefit provided by split-duty or by use of an extension (3) as set out below.*

If you conduct an extended FDP you must have an off-duty period of at least 36 hours, including 2 local nights, in 7 days.

In the 8 hours immediately before an FDP, where non-flying duties are performed, the maximum FDP must be reduced by the greater of:

- › 30 minutes, or
- › the total duration of the non-flying duties performed in the 8-hour period.

In any 7 days, no more than 4 FDPs (cumulatively) between 0000 (midnight) and 0459 local time can be assigned or conducted.

Flight training

You must only conduct flight training in the first 7 flight hours of an FDP.

Increase in FDP limits by split-duty (2)

Sleeping accommodation

An FDP that contains a split-duty rest period of at least 3 hours with access to suitable sleeping accommodation, may be extended beyond the FDP limit, by the duration of the split-duty rest period.

Resting accommodation

An FDP that contains a split-duty rest period of at least 2 hours with access to suitable resting accommodation, may be extended beyond the FDP limit, by half the duration of the split-duty rest period, but by no more than 2 hours.

The part of an FDP remaining after a split-duty rest period must be no longer than 6 hours plus any permitted extension.

Standby (4)

You may be assigned a standby.

When called out from standby, the FDP (which may include a split-duty rest period), and subsequent period off-duty must meet the off-duty requirements.

You may be called out from standby to commence other than flying duties and return to standby at the end of those non-flying duties. However, where this occurs in the 8 hours immediately preceding an FDP, the maximum duration of any subsequent FDP must be reduced by 30 minutes, or the total duration of the non-flying duties performed in the 8-hour period.

# Variations

## Extensions (3)

### Extension by discretion

With discretion, an **FDP limit** may be increased:

- › by up to 2 hours (including the further increases permitted on two occasions in any 7 days), or
- › by a split-duty rest period.

Before exercising such discretion, the PIC must be satisfied that they are fit to extend and also consult with each FCM to be satisfied that they too consider themselves fit to extend.

**Note:** Due to the nature of aerial work operations, extensions are permitted in operational circumstances where the FCM is satisfied that the safety of the flight will not be impacted by fatigue.

### Flight training extension – 30 minutes extension after first 7 hours of FDP – due to operational necessity

Training of up to 30 minutes may be conducted after the first 7 flight hours from the commencement of the FDP where unforeseen operational circumstances arise, and it is operationally necessary to complete the duty and you consider yourself fit to extend.

## Extended off-duty periods

Any extension over an FDP limit requires the subsequent off-duty period to be extended by 1 hour for every 30 minutes, or part of 30 minutes, that the FDP is extended beyond the FDP limit.

Where the calculated off-duty period required, following an FDP extension, is greater than 12 hours, the off-duty period may be reduced to not less than 12 hours provided that:

- › the next FDP is conducted under this appendix, and
- › the off-duty period following the next FDP is at least 36 hours, including 2 local nights.

An FDP limit must not be exceeded if it will cause an exceedance of the cumulative flight time limits in this appendix.

## Discretion of PIC (3)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix, then the flight may continue to the planned destination or alternate at the discretion of the PIC.



*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*



*Alleviation from off-duty requirements when transitioning from one appendix to another is available subject to section 13 and 13A of the CAO.*

Use sample **operations manual supplements** as a starting point to develop processes, procedures and limits to manage fatigue.





# **APPENDIX 5A—** DAYLIGHT AERIAL WORK OPERATIONS AND FLIGHT TRAINING ASSOCIATED WITH AERIAL WORK

This appendix sets out the requirements for daylight aerial work operations and flight training associated with aerial work.

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# Planning/rostering

## Limits on cumulative flight time (5)

	16 days	30 days	365 days
<b>Maximum flight time</b>	100 hours	120 hours (this only applies to pilots with less than 500 hours as PIC or PICUS)	1200 hours

**Note:** The 16 and 30-day cumulative limits are reset to zero after a pilot is provided with 5 days off-duty.

**Note:** The 365-day limits are reset to zero after a pilot is provided with 28 days off-duty.

## Sleep opportunity before an FDP (1)

Before an FDP:

- › you must have at least an 8-hour sleep opportunity in the 10 hours before an FDP
- › over the 3 preceding nights you must not have undertaken any duty in the 8 hours prior to 30 minutes before local morning civil twilight.

**Note:** This intent is to prohibit an FCM from undertaking an FDP if they have undertaken any duty on any of the 3 nights preceding the FDP.

## Off-duty periods (4)

Following an FDP, you must be off-duty for at least 10 hours.

In any 16 days, at least 2 days must be off-duty.

## FDP and flight time limits (2)

You must not be assigned or commence an FDP:

- › which begins more than 30 minutes before the start of morning civil twilight, or
- › which ends later than the end of evening civil twilight at the location at which the FDP commenced.

**Note:** This subclause does not affect other legislative requirements that limit Day VFR operations.

The maximum FDP that can be assigned in 1 day is 14 hours.

## Flight training (2)

You may only be assigned or commence flight training in the first 7 flight hours of an FDP.

**Note:** This does not apply to a flight review or a proficiency check because these are not defined as flight training.

# Variations

## Extension (3)

At your discretion you may exceed the FDP limit by a maximum of 1 hour, provided you consider yourself fit for the extension.

An FDP must not be extended beyond the end of evening civil twilight, unless it is necessary to complete the duties associated with the last daylight flight.

If unforeseen operational circumstances arise and it is operationally necessary to complete the duty and you consider yourself fit, flight training for up to 30 minutes may be conducted after the first 7 flight hours of the FDP.

**Note:** The emotional, cognitive, and physical effects of fatigue and workload can have a detrimental effect on pilot performance. Cumulative limits mitigate the effects of fatigue under optimal conditions. Where optimal conditions do not exist an AOC holder must consider an appropriate amendment (reduction) to those cumulative limits. (see sections 14 and 15 of the CAO).



*Alleviation from off-duty requirements when transitioning from one appendix to another is available subject to section 13 and 13A of the CAO.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.

# Appendix 5A – Summary

Sleep/off-duty	Max FDP/flight time				Off-duty after FDP
	1 day	16 day	30 day	365 day	
8 hrs sleep opportunity in 10 hrs prior to start of FDP, and over preceding 3 nights no duty in the 8 hrs prior to 30 min before morning civil twilight (MCT)	14 hrs FDP	100 hrs flight time	120 hrs flight time (only applies to pilots with less than 500 hrs PIC or PICUS)	1200 hrs flight time	At least 10 hours off after completing an FDP, and in any 16 days at least 2 days off.
You cannot be assigned an FDP that starts 30 minutes before the start of MCT or which ends later than end of evening civil twilight (ECT).					

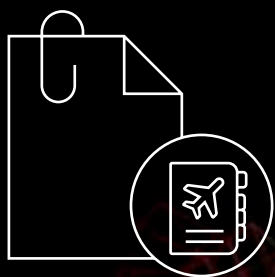
## Variations

### Extensions

At your discretion FDP limits can be extended by 1 hour, provided you consider yourself fit for the extension. An FDP cannot be extended beyond the end of ECT, unless it is necessary to complete the duties associated with the last daylight flight.

If unforeseen operational circumstances arise and it is operationally necessary to complete the duty and you consider yourself fit, flight training for up to 30 minutes may be conducted after the first 7 flight hours of the FDP.





## APPENDIX 6— FLIGHT TRAINING

This appendix sets out the requirements for flight training. This appendix does not apply to flight training in a flight training device.

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# Planning/rostering

## Limits on cumulative duty and flight time (8) (9)

	7 days	14 days	28 days	365 days
Maximum duty	60 hours	100 hours		
Maximum flight time			100 hours	1000 hours

## Sleep opportunity before an FDP or standby (1)

You must have an 8-hour sleep opportunity within the 12 hours immediately before commencing an FDP or a standby.

**Note:** See definition of sleep opportunity in relation to an off-duty period.

## Off-duty periods (7)

### Off-duty period following an FDP

You must have at least 12 hours off after completing your duty.

If your duty period exceeds 12 hours, the time in excess of 12 must be multiplied by 1.5 and then added to 12 to obtain the subsequent minimum off-duty period.

### Example

A duty period of 15 hours is 3 hours in excess of 12. 3 multiplied by 1.5 = 4.5, added to 12 = 16.5. Therefore 16.5 hours off-duty is required following a duty period of 15 hours.

## Off-duty periods for cumulative fatigue recovery

Time period	Off-duty period minima
7 days	Minimum of 36 hours off-duty over 2 local nights before the projected end of the FDP or standby
28 days	Minimum of 6 days (cumulatively) off-duty before commencing the FDP or standby

## WOCL infringement and early start limits (10)

### Early starts (0500-0659)

You may be assigned up to 5 consecutive duty periods with early starts (0500-0659) provided:

- › the FDP limits in Table 2 on the 4th day is reduced by 2 hours, and
- › the FDP limit in Table 2 on the 5th day is reduced by 4 hours.

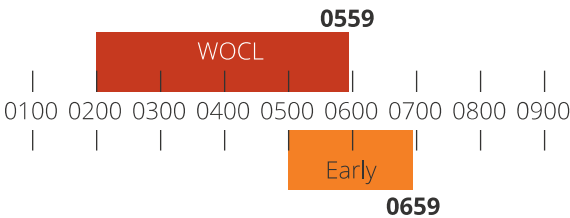
### WOCL infringement (0200-0559)

After 3 consecutive WOCL infringements you must have an off-duty period over a local night. You are permitted to infringe the WOCL more than 3 times only in accordance with the early start provisions above.



*A duty that falls within any part of the WOCL, means the WOCL is infringed.*

Figure 13: WOCL and early start periods



## FDP limits including flight time (2)

You must not be assigned a flight time of more than 7 hours in any FDP and an FDP must not exceed the following limits.

Local time at start of FDP	Maximum FDP
0500 – 0559	9
0600 – 0759	10
0800 – 1059	11
1100 – 1359	10
1400 – 2259	9
2300 – 0459	8

## Increase in FDP limits by split-duty (3)

### Sleeping accommodation

You may extend an FDP that has a split-duty rest period of at least 4 hours by up to 4 hours. However, the first 4 hours of the split-duty rest period may be reduced by 2 hours when determining the subsequent off-duty period or cumulative duty time.

A split-duty rest period between 2300 to 0529 hours local time, must be of at least 7 hours, however the maximum FDP is limited to 15 hours.

**Note:** In this case no reduction is permitted to the subsequent off-duty period calculation or cumulative duty time.

### Resting accommodation

Where an FDP has a split-duty rest period the FDP limit may only be increased by half the time of the split-duty rest period but in any case, not more than 2 hours.

### Resting or sleeping accommodation

Unless an FDP is extended, the portion of a split FDP which follows a split-duty rest period, must be no longer than 5 hours.

## Standby limits and standby-like arrangements (5)

### Access to suitable sleeping accommodation

You must not be assigned a continuous standby of more than 14 hours.

After a call out from standby, the FDP must be decreased by the number of hours the standby exceeded 4 hours.

A standby which is completed without a call out must be followed by an off-duty period of at least 10 hours.

### No access to suitable sleeping accommodation

The time in which you are held in a standby-like arrangement must be treated as a duty period.

**Note:** For example, the period spent in a standby-like arrangement must be included as part of a subsequent FDP assigned to the pilot or added to the preceding FDP when determining minimum off-duty periods.

## Positioning (6)

On completion of an FDP, an operator can reposition you to a suitable location. However, the time spent repositioning is to be added to your FDP when calculating subsequent off-duty periods.

## Variations

### Reassignment and extension (4)

You must not be reassigned or extended if it would cause you to exceed the cumulative flight or duty time limits.

After FDP commences, you may be reassigned to a modified FDP, provided it does not exceed the applicable limits in the operations manual and you have confirmed that you are fit for the reassignment.

FDP extension in unforeseen operational circumstances at the PIC discretion, an FDP limit may be extended by up to 1 hour if the PIC is satisfied that all FCM are fit for the extension.

Flight time extension if unforeseen operational circumstances arise, the flight time limit for an FDP may be extended by up to 30 minutes provided:

- › it is operationally necessary to complete the duty
- › you consider yourself fit for the extension.

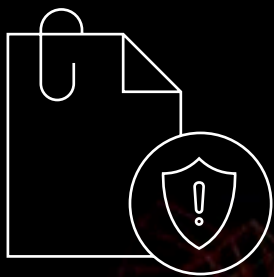
### Discretion of PIC (4)

If unforeseen operational circumstances arise after take-off on the final sector of an FDP which will cause a pilot to exceed any limit in this appendix, then the flight may continue to the planned destination or alternate at the discretion of the PIC.



*Compliance with sections 14 and 15 of the CAO (which deal with general and enhanced AOC obligations to manage fatigue) may have the effect of reducing the FDP and flight time limits set out in an appendix.*

Use sample [operations manual supplements](#) as a starting point to develop processes, procedures and limits to manage fatigue.



## APPENDIX 7—FRMS

This appendix sets out the requirements for a Fatigue Risk Management System (FRMS) in which an operator will develop flight and duty limits for its personnel and manage their risk of fatigue using safety management systems and principles. An operator's FRMS will need to be assessed and approved by CASA before operating under this appendix.

**Note:** Flight time, flight duty period, duty period and off-duty period are defined.

An FRMS (under CAR 215) forms part of the holder's operations manual and may be subject to direction by CASA.



## General <sup>(1)</sup>

For all or for part of its operations an operator may apply to CASA for:

- › a trial FRMS implementation approval, or
- › a full FRMS implementation approval.

**Note:** An AOC holder is not eligible for a full implementation approval until the FRMS has been in effective operation for at least 12 months from the date of a trial implementation approval. Refer: [Full FRMS implementation approval](#).

An FRMS applicant (for a trial or full FRMS) must incorporate the following elements in their FRMS:

- › FRMS policy and documentation
- › FRMS practical operating procedures
- › FRMS hazard identification, risk assessment and mitigation procedures
- › FRMS safety assurance procedures
- › FRMS safety promotion procedures
- › FRMS change management procedures.

**Note 1:** Significant changes require CASA approval, see [FRMS change management procedures](#).

**Note 2:** Guidance for the development and implementation of an FRMS is available on the [CASA website](#).

If the operator has a Safety Management System (SMS), an FRMS implementation approval<sup>1</sup> will not be given unless CASA is satisfied that the operator's FRMS is integrated with their SMS.

Before CASA issues a trial FRMS implementation approval, CASA must be satisfied that the FRMS:

- › incorporates the elements referred to above
- › is a safe, integrated, data-driven system which appears to be reasonably capable of continuously and effectively monitoring and managing fatigue related safety risks using scientific principles and knowledge, and operational experience
- › will enable the operator to assess the alertness of their FCMs and other relevant personnel for the purpose of ensuring safe operations.

Before a full FRMS implementation approval is issued, CASA must be satisfied that the FRMS:

- › incorporates the elements referred to above
- › is a safe, integrated, data-driven system which will continuously and effectively monitor and manage fatigue-related safety risks using scientific principles and knowledge, and operational experience
- › will enable the operator to assess the alertness of their FCMs and other relevant personnel for the purpose of ensuring safe operations.

## FRMS policy and documentation (2)

The operator's FRMS policy must:

- › be in writing
- › address the elements referred to above
- › if the operator has an SMS - require the FRMS to integrate with the SMS
- › clearly define the operations to which the FRMS applies<sup>2</sup>
- › make it clear that while primary responsibility for the FRMS lies with the operator, its effective implementation is a responsibility shared by management, FCMs, and other relevant personnel
- › clearly indicate the safety objectives of the FRMS
- › be approved in writing by the Chief Executive Officer
- › be accessible to all relevant areas and levels of the organisation
- › clearly indicate the operator's specific endorsement of the policy
- › declare management commitment to:
  - » effective safety reporting
  - » provision of adequate resources for the FRMS
  - » continuous improvement of the FRMS
- › require that clear lines of accountability be identified for management, FCMs, and all other relevant personnel
- › require periodic reviews to ensure the policy remains relevant and appropriate
- › address any relevant limits and procedures contained in the operations manual.

<sup>1</sup> Trial or full

<sup>2</sup> The operations (specific routes) to which the FRMS can be applied must also be clearly defined in the operations manual

The documents which comprise the FRMS and FRMS policy must:

- › identify and describe the personnel (including the FRMS manager) who are accountable, responsible and who have authority to effectively implement the FRMS
- › describe the mechanisms for the ongoing involvement of management, FCMs, and all other relevant personnel in fatigue risk management
- › describe the FRMS training programs, training requirements and maintain records of attendance at training
- › address the creation and maintenance of records of:
  - » scheduled and actual flight times
  - » duty periods and off-duty periods
  - » any significant deviations from any limits
  - » reasons for the significant deviation from the limits
- › allow the recording of the outputs of the FRMS, including findings from collected data, and any recommendations made, or actions taken.

### FRMS practical operating procedures (3)

The FRMS practical operating procedures must, as a minimum:

- › incorporate scientific principles and knowledge
- › identify, on an ongoing basis, fatigue-related safety hazards and the risks that may result
- › ensure that remedial actions necessary to effectively mitigate the risks associated with the hazards are implemented properly
- › provide for continuous recording and monitoring, and regular assessment of:
  - » fatigue-related safety hazards
  - » relevant remedial actions
  - » the extent to which mitigation of fatigue-related risks is achieved by remedial actions
- › provide for continuous improvement in the effectiveness of the FRMS.

The FRMS practical operating procedures must set out:

- › the maximum values for each FCM for the following:
  - » flight times
  - » flight duty periods
  - » duty periods
- › the minimum values for each FCM off-duty periods.

The maximum and minimum values for each FCM referred to above must be based on scientific principles and knowledge and subject to safety assurance processes.

Where an operator acquires data from an FRMS which indicates that the maximum and minimum values set out in their FRMS practical operating procedures (above) are too high or too low, respectively, the operator must amend the FRMS in accordance with their FRMS change management procedures to ensure that these values are acceptable.

## FRMS hazard identification, risk assessment and mitigation procedures (4)

### Hazard identification procedures

FRMS hazard identification procedures must be based on processes which are:

- › predictive
- › proactive
- › reactive.

Predictive process must be capable of identifying fatigue-related hazards by examining FCM scheduling and considering the following:

- › factors known to affect sleep
- › factors known to affect fatigue
- › the effect of sleep and fatigue factors on FCM performance.

Proactive process must be capable of identifying fatigue-related hazards within current flight operations.

Reactive process must be capable of identifying the contribution of fatigue-related hazards to events that could have affected, or did affect, safety, with a view to determining how the effects of fatigue on each event could have been minimised.

## Risk assessment procedures

FRMS risk assessment procedures must be capable of determining the following:

- › the probability of events occurring or circumstances arising that create a fatigue-related hazard
- › the potential severity of fatigue-related hazards
- › when the safety risks associated with a determined fatigue-related hazard require mitigation.

The FRMS risk assessment procedure above must ensure that identified fatigue-related hazards are examined in relation to the following:

- › the relevant operational context and procedures in which the identified fatigue-related hazard arose
- › the probability of the fatigue-related hazard arising in those circumstances
- › the possible consequences of the fatigue-related hazard in those circumstances
- › the effectiveness of existing safety procedures and controls.

## Risk mitigation procedures

FRMS risk mitigation procedures for each fatigue-related hazard must be capable of:

- › selecting appropriate mitigation strategies for the hazard
- › implementing the selected mitigation strategies
- › monitoring the implementation and effectiveness of the strategies.

## FRMS safety assurance procedures (5)

FRMS safety assurance procedures must provide for:

- › continuous monitoring of the performance of the FRMS
- › the analysis of fatigue-related trends
- › measurements to validate the effectiveness of mitigation strategies.

FRMS safety assurance procedures must include a formal process for the management of changes to the FRMS arising from the following:

- › identification of changes in the operational environment that may affect FRMS
- › identification of changes within the organisation that may affect FRMS.

The FRMS safety assurance procedures must include a formal process to assess:

- › what impact a change to the operational environment or organisation mentioned above may have on the effective performance of the FRMS
- › for such a change – what amendment, change or modification to the FRMS may be needed to ensure its continued effective performance.

FRMS safety assurance procedures must provide for the continuous improvement of the FRMS, by including the following:

- › the elimination or modification of fatigue-related risk controls that:
  - » have had unintended negative consequences, or
  - » are no longer required because of changes in the operator's operational or organisational environment
- › routine evaluations of facilities, equipment, documentation, and procedures to determine their implications for fatigue-related risk management and control
- › identification of emerging fatigue-related risks to allow the introduction of new procedures and processes to mitigate such risks.

## FRMS safety promotion procedures (6)

FRMS safety promotion procedures for fatigue-related hazards must include:

- › training and communication programs capable of supporting and continuously improving all elements of the FRMS in the delivery of optimum safety levels
- › training programs for management, FCMs, and all other relevant personnel to ensure their competency is commensurate with the role and responsibility of the person under the FRMS
- › an effective FRMS communication plan that:
  - » explains all elements of the FRMS to management, FCMs, and all other relevant personnel, and
  - » describes the communication channels which they must use to gather, disseminate and apply FRMS-related information.

## FRMS change management procedures (7)

In this subsection, a significant change means:

- › any increase to the FRMS established maximum flight times, flight duty periods, duty periods
- › any decrease to the FRMS established minimum FCM off-duty periods
- › any other change to any element of the FRMS that does not maintain or improve, or is not likely to maintain or improve, aviation safety.

The FRMS change management procedures must:

- › meet the requirements of this subsection
- › clearly indicate how the operator will amend, change, or modify any element of the FRMS consistently with the requirements of this subsection.

The change management procedures set out in this subsection apply to:

- › an operator with a trial FRMS implementation approval
- › an operator with a full FRMS implementation approval.

After issuing an FRMS implementation approval, CASA may, in writing, direct an operator to amend, change or modify the FRMS (including practices and documents), and the operator must comply within the time specified by CASA in the direction.

**Note 1:** A failure to comply may result in revocation of the FRMS implementation approval.

**Note 2:** CASA's power to direct changes to an FRMS is an emergency power for safety purposes only. It does not relieve any approval holder of their own obligation to improve the performance of their FRMS where this is safe and practicable.

The operator must not make a significant change to any element of the FRMS unless an application to make the change is approved in writing by CASA.

An application for approval of a significant change must:

- › be in writing
- › set out the change
- › be accompanied by a copy of the part of the operator's FRMS documentation affected by the change, clearly identifying the change.

A change to the FRMS that is not a significant change must be:

- › in accordance with the FRMS change management procedures
- › notified in writing to CASA within the following period after the change is made:
  - » 7 days, or
  - » the period specified in the operator's:
    - approved SMS amendment process issued under Part 82 of the CAOs, or
    - exposition change process under the Regulations.

## Trial FRMS implementation approval (8)

Following an operator's written application, CASA may issue a trial FRMS implementation approval valid for up to 24 months, if it is satisfied that each element of the operator's FRMS:

- › complies with and meets the requirements, attributes, and characteristics of an FRMS under this appendix
- › can deliver:
  - » identified safety outcomes
  - » fatigue-risk data and reports
  - » continuous improvement in the delivery of safety outcomes.

A new trial FRMS implementation approval may be issued to extend the duration of the approval:

- › following the written application of the operator, or
- › at CASA's initiative due to its safety considerations.

**Note:** More than 1 extension is possible if CASA considers it appropriate and trial FRMS implementation approval status could, therefore, be required to last longer than 24 months.

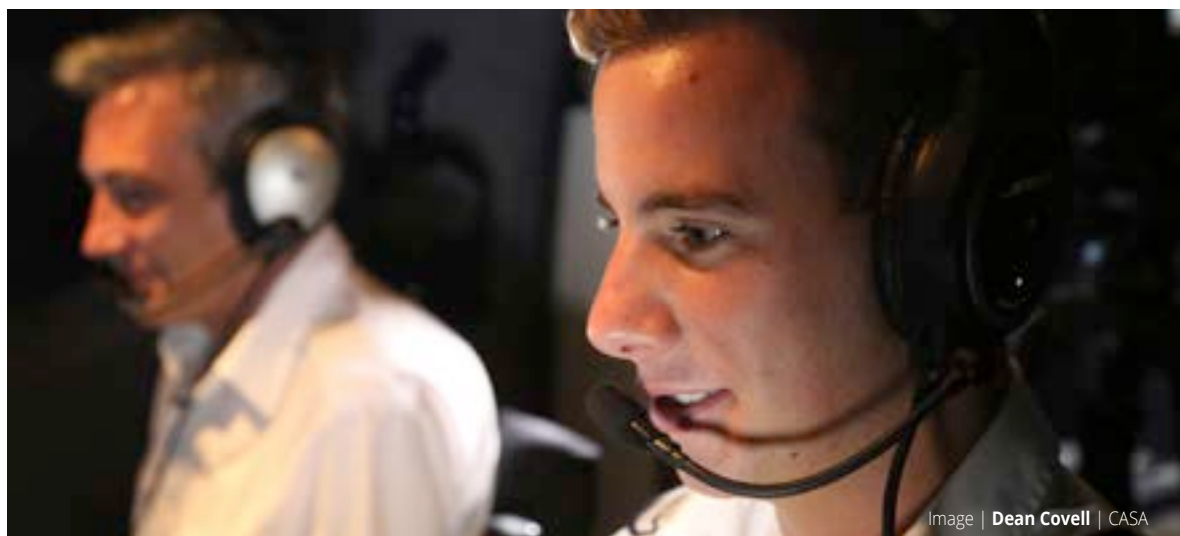


Image | Dean Covell | CASA

## Full FRMS implementation approval <sup>(9)</sup>

Following the operator's written application, CASA may issue a full FRMS implementation approval, if the operator:

- › has held a trial FRMS implementation approval for at least 12 months
- › has satisfied CASA, through relevant data and reports, that the FRMS:
  - » is demonstrably delivering the safety outcomes expected when the trial FRMS implementation approval was given
  - » can deliver continuous improvement in the delivery of safety outcomes.

If CASA decides not to issue the operator with a full FRMS implementation approval, the operator may apply again to CASA for a trial FRMS implementation approval as described above.

A trial FRMS implementation approval is deemed to include such an approval issued under CAO 48.1 Instrument 2013 as in force immediately before the commencement of this CAO.

## Expiry, suspension, revocation, surrender of FRMS implementation approval <sup>(10)</sup>

An FRMS implementation approval stops having effect if:

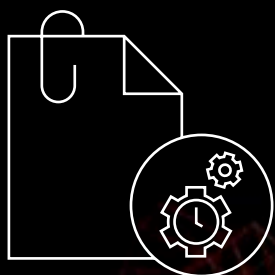
- › it expires, or it is suspended or revoked in writing by CASA, or
- › the operator tells CASA in writing that they want to surrender the approval.

If the approval is revoked or surrendered, the operator must return the approval instrument to CASA within 14 days.

CASA may revoke or suspend an approval if:

- › the operator does not comply with the requirements of this CAO for implementation or use of an FRMS, or
- › CASA considers that continued implementation or use of the FRMS would adversely affect aviation safety, or
- › the operator refuses CASA written requests for reasonable access to any information or record to assess the effectiveness and safety of the FRMS, or
- › CASA wishes to reissue the approval in a varied form (this will only take the form of a revocation).

To avoid doubt, in this clause, reference to an FRMS implementation approval means a trial or full FRMS implementation approval, and includes the approval as varied by CASA.



# FLIGHT/DUTY AND OTHER TIME LIMITATIONS— SUBPART 137.Q OF CASR

This subpart sets out requirements for duty and rest times for a pilot who conducts aeroplane aerial application operations.

▶TO/F1183  
▶TR/1183

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# Planning/rostering

## Cumulative limit on flight time (flying hours) (137.275)

	28 days	365 days
Maximum flight time	170 hours	1200 hours

## Off-duty period before and after tour of duty (137.280)

Your employment duties (including on call or flight planning) must not:

- › commence 8 hours before a tour of duty, or
- › continue 8 hours after a tour of duty of 10 hours or less, or
- › continue 10 hours after a tour of duty of more than 10 hours.

## Off-duty period each 14 days (137.290)

You must have at least a continuous 36 hours off-duty in any 14 days.

## Tour of duty—duration (137.285)

You must not undertake a tour of duty that exceeds 14 hours.

## Limit on time spent on tours of duty (137.295)

Your tour of duty must not cumulatively exceed:

- › 44 hours in 3 days, or
- › 98 hours in 7 days.

However, if you have at least 1 period of continuous rest of 6 hours during any of the days, then the 3-day or 7-day tour of duty maxima may be increased by 50% of the duration of each resting time.

A maximum tour of duty must not be increased if you would breach any other regulation in this subpart (137.Q). You must not be required to exceed a tour of duty limit.

# Variations

## Off-duty period after tour of duty (137.280)

Where you have completed a tour of duty of more than 10 hours, your next tour of duty (including on call or flight planning) must not commence within 10 hours. However, if you believe you are mentally and physically fit and will not breach any other regulation in this subpart you may choose to commence after 9 hours.

## Tour of duty—duration (137.285)

If you reasonably believe you are mentally and physically able to do so and you will not breach any other regulation in this subpart you may extend a tour of duty as follows:

- › a 14-hour tour of duty may only be extended by up to 1 hour
- › where you have had 3 or more hours of rest within the tour of duty, it may be extended by no more than the lesser of:
  - » 50% of the duration of the resting time, or
  - » 2 hours.

If, during a tour of duty, you have had 2 or more hours of sleep, the tour of duty may be extended by the lesser of:

- › the duration of the sleep, or
- › 3 hours.



*Alleviation from off-duty requirements when transitioning from one appendix to another is available subject to section 13 and 13A of the CAO.*

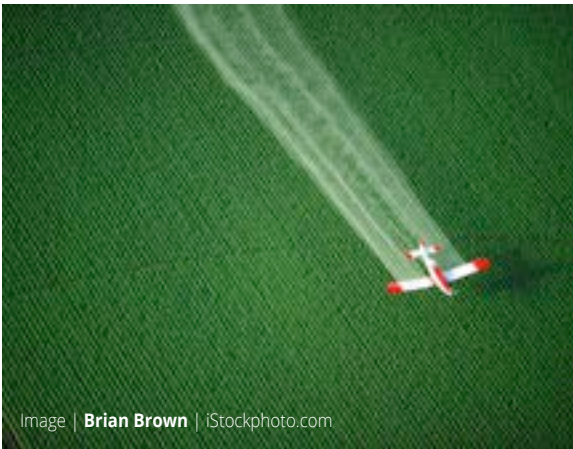


Image | Brian Brown | iStockphoto.com



# DEFINITIONS

## Definitions (CAO 48.1 2019 section 6)

**access**, in a provision is referring to 1 or more of the following (necessities):

- › a crew rest facility
- › suitable sleeping accommodation
- › suitable resting accommodation
- › adequate sustenance, and

means that there is no restriction on, or impediment to, an FCM's immediate and actual use of the necessity:

- › in accordance with the provision, or
- › if the provision is a definition — in accordance with a provision which uses the defined term.

### acclimatised

At the commencement of an FDP or an off-duty period at a location, an FCM must be considered to be acclimatised to the location if:

- › the location differs in local time by less than 2 hours from the location where the FCM was last acclimatised, and
- › the FCM has remained in an acclimatised state since they were last acclimatised.

**Note:** AOC holders and FCMs should be aware that a determination of acclimatisation under this definition may impact on an individual's body clock to a small degree. For guidance on acclimatisation, AOC holders and FCMs should refer to CAAP 48-01.

At the commencement of an FDP or an off-duty period (a period) at a new location which differs in local time by 2 hours or more from the location where you were last acclimatised (the original location), you are considered to remain acclimatised to the original location if the period at the new location commences less than 36 hours after you commenced a duty period at the original location.

At the commencement of an FDP or an off-duty period (a period) at a new location which differs in local time by 2 hours or more from the location where you were last acclimatised (the original location), you are considered to be in an unknown state of acclimatisation if the period at the new location commences 36 hours or more after you commenced a duty period at the original location.

An FCM is considered to remain in your state of acclimatisation (whether acclimatised to a particular location, or in an unknown state of acclimatisation) until you have had:

- › an adaptation period in a location (the adaptation location) in accordance with the following table in this section, or
- › an adaptation period that is:
  - › in a location other than home base, and
  - › in accordance with the following Table, and
  - › reduced by 12 hours for each previous off-duty period that:
    - immediately preceded the adaptation period, and
    - was taken at an off-duty location which differs in local time by less than 2 hours from the adaptation location, and
    - included an off-duty location local night.

Use the following table to determine the adaptation period:

- › determine the time zone displacement between:
  - » the location where you were last acclimatised (the original location), and
  - » each location where an FDP or off-duty period was commenced since last acclimatised (later locations), and
- › then choose the time zone displacement between the original location and whichever of the later locations gives the greatest time zone displacement, and
- › then choose the time zone change in the Table that corresponds to the greatest time zone displacement, and
- › then choose the direction (west or east) in which you travelled and in which, therefore, the greatest time zone displacement has occurred, and
- › then choose the number of hours west or east (as the case requires) that corresponds to the time zone change chosen.

Adaptation period to become acclimatised

Time zone change (measured in time zones)	Adaptation period to become acclimatised to new location (hours)	
	West	East
Note See definition of time zone		
2	24	30
3	36	45
4	48	60
5	48	60
6	48	60
7	72	90
8	72	90
9	72	90
10 or more	96	120

**Note 1:** Adaptation period means a continuous off-duty period for an FCM to become acclimatised to a particular location.

**Note 2:** An adaptation period referred to above may commence before the time when an FCM comes to be in an unknown state of acclimatisation.

**Note 3:** For guidance in determining acclimatisation, including examples of how an FCM becomes reacclimatised in accordance with the adaptation period referred to above AOC holders and FCMs should refer to CAAP 48-01.

---

**acclimatised time** means local time at the location where an FCM is acclimatised.

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**Act** means the Civil Aviation Act 1988.

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**adaptation period** means a continuous off-duty period for an FCM to become acclimatised to a particular location.

---

**adequate sustenance** means food and drink, including clean drinking water, in quantities sufficient to reasonably sustain a person in the person's circumstances.

---

**agent** means an organisation contracted by an operator to provide initial training to its FCMs.

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**AOC** means an Air Operator's Certificate.

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**AOC holder**, or **holder** means the holder of an Air Operator's Certificate issued under Part III, Division 2 of the Act but, except in sections which deal with Application and effect (4) and Savings and transitional provisions (5); is also taken to include the holder of a Part 141 certificate to whom this CAO applies, noting:

- › a reference to an AOC is taken to include a Part 141 certificate, and
- › a reference to an AOC holder, or a holder, is taken to include a Part 141 operator, and
- › a reference to an FCM of an AOC holder (however described), is taken to include an FCM of a Part 141 operator.

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**approval** means approval in writing.

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**assigned** means assigned by the AOC holder to his or her FCM.

**Note:** For example, the AOC holder assigns to the FCM duty, standby, a home base, a flight duty period, a reporting time.

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**augmented crew operation** means an aircraft operation in which 1 or more FCMs, additional to the minimum required number of FCMs, are engaged in a flight to allow 1 or more FCMs to be relieved of duty during flight time.

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**authorised Part 141 flight training** has the same meaning as in sub regulation 141.015 (2) of CASR but does not include flight training that is conducted in a flight simulation training device (flight training device) as the sole and exclusive form of training conducted by the operator.

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**authorised Part 142 activity** has the same meaning as in sub regulation 142.015(3) of CASR but does not include flight training that is conducted in a flight simulation training device (flight training device) as the sole and exclusive form of training conducted by the operator.

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**bed** for suitable sleeping accommodation means it includes at least 1 pillow, clean bed linen, and bed covering appropriate for the temperature of the accommodation.

---

**call out** means being required by an AOC holder to commence a duty period during a standby.

---

**CAR** means the Civil Aviation Regulations 1988.

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**CASR** means the Civil Aviation Safety Regulations 1998.

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**Crew members to be fit for duty (CASR 91.520)**

A crew member is taken to be, or taken as likely to be, unfit to perform a duty if the crew member is:

- › fatigued to the extent that their ability to safely perform the duty is reduced, or likely to be reduced, or
  - › under the influence of a psychoactive substance to the extent that their ability to safely perform the duty is reduced, or likely to be reduced.
-

**Chief Executive Officer** means the person who is:

- › if the AOC holder is an individual — that individual, or
- › if the AOC holder is a corporation — the person (however described) whom CASA was satisfied, for subparagraph 28(1)(b)(iv) of the Act (and the definition of key personnel in section 28(3) of the Act), could hold or carry out the duties of the AOC holder's Chief Executive Officer.

<https://www.legislation.gov.au/Details/C2016C01097>

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**commencement** means comes into force.

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**complex operation** means an operation which involves 1 or more of the following:

- › an FDP with a displacement time of 2 hours or more
- › an augmented crew operation
- › an FDP that commences when the FCM is:
  - » in an unknown state of acclimatisation, or
  - » acclimatised to a location other than the location where the FDP commences.

**Note:** AOC holders should consider the impact of Daylight-Saving Time on local time differences for relevant locations because Daylight Saving Time may have an impact on whether or not an operation is complex.

---

**consecutive**, in relation to the hours or days of a period of time mentioned in a provision of this CAO, means a continuous, unbroken, period of time for the duration of the hours or days mentioned.

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**consequential** means as a result, or consequence.

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**contracted checking** means checking conducted by a Part 142 operator for a contracting operator.

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**contracted recurrent training** means recurrent training conducted by a Part 142 operator for a contracting operator.

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**contracting operator** means an aircraft operator who enters into a contract with a Part 142 operator for the Part 142 operator to conduct:

- › recurrent training for the aircraft operator, or
- › checking for the aircraft operator.

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**crew member** has the same meaning as in the Regulations.

**Note:** Under regulation 2 of CAR, crew member means a person assigned by an operator for duty on an aircraft during flight time, and any reference to crew has a corresponding meaning.

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**crew rest facility** means 1 of the following defined classes of facility on board an aircraft that is available to an FCM:

- › class 1, which means a bunk or other surface that:
  - » is fit for the purpose of an FCM obtaining sleep in a horizontal sleeping position, and
  - » is located separate from both the flight deck and passenger compartment in an area that:
    - is temperature-controlled, and
    - allows the FCM to control light, and
    - provides isolation from noise and disturbance.
- › class 2, which means a seat in an aircraft cabin that:
  - » is fit for the purpose of an FCM obtaining sleep in a horizontal or near horizontal sleeping position, and
  - » is separated from passengers by at least a curtain that provides darkness and some noise mitigation, and
  - » is reasonably free from disturbance by passengers or crew members.
- › class 3, which means a seat in an aircraft cabin or flight deck that:
  - » is fit for the purpose of an FCM obtaining rest, and
  - » reclines at least 40 degrees from the vertical plane, and
  - » provides leg and foot support in the reclined position.

**cruise** means the period of a flight from not less than 30 minutes after take-off until not less than 60 minutes before the estimated time of landing.

**cumulative duty** means the progressive sum of duty periods.

**cumulative flight time** for an FCM means the progressive total of flight time accrued by the FCM when acting as a crew member on board any aircraft, but excluding flight time accrued during recreational private operations.

**day** means the period between local midnight at home base and the subsequent local midnight at home base.

**Note:** Day also means the daytime or daylight depending on the context in which its being used.

**displacement time** means the difference in local time between:

- › the place where an FCM commenced an FDP, and
- › the place where the FCM undertakes an off-duty period following the FDP.

**duty** means any task that a person who is employed as an FCM is required to carry out associated with the business of an AOC holder.

**duty period** means a period of time which:

- › starts when an FCM is required by an AOC holder to report for duty, and
- › ends when the FCM is free of all duties.

**Note:** A duty period includes any time spent by the FCM in positioning.

**early start**, for an FDP of an FCM, means:

- › in appendix 2:
    - » if the FCM is acclimatised — an FDP that commences between the hours of 0500 and 0659 local time at the location where the FCM is acclimatised, or
    - » if the FCM is in an unknown state of acclimatisation — an FDP that commences between the hours of 0500 and 0659 local time at the location where the FCM was last acclimatised
  - › for an appendix other than appendix 2 — an FDP that commences between the hours of 0500 and 0659 local time at the location where an FCM commences the FDP.
- 

**emergency service operation** means an operation involving an aircraft:

- › for the purpose of law enforcement, or saving or protecting life or property, and
  - › conducted by, or at the request of, an organisation recognised by an Australian governmental agency as having responsibility to conduct or request the operation as part of the organisation's functions.
- 

**employment** includes employment under a contract for services.

---

**fatigue** for an FCM means a physiological state of reduced alertness or capability to perform mental or physical tasks, which:

- › may impair the ability of the FCM to safely operate an aircraft, and
  - › is caused by 1 or more of the following:
    - » the FCM's lack of sleep
    - » the FCM's extended wakefulness
    - » the FCM's circadian phase at any relevant time
    - » the FCM's workload of mental activities, or physical activities, or mental and physical activities at any relevant time.
- 

**fatigue risk management system** (or FRMS) means a comprehensive system for managing fatigue-related risks that:

- › is appropriate for the size, nature and complexity of the AOC holder's operations, and
  - › includes all of the elements set out in appendix 7, and
  - › is approved for implementation by CASA.
- 

**fit for the purpose**, for a crew rest facility, or suitable sleeping accommodation, means that the facility, or accommodation, has ergonomic characteristics which make it suitable for an FCM to obtain sleep or rest, as the case requires.

**Note:** CASA has issued guidance on relevant ergonomic characteristics in CAAP 48-01.

---

**flight crew licence:**

- › until immediately before 1 September 2014 — has the meaning given in sub regulation 2 (1) of CAR, and
- › on and from 1 September 2014 — means a flight crew licence within the meaning of regulation 61.010 of CASR.

[https://www.legislation.gov.au/Details/F2019C00821/Html/Volume\\_2#\\_Toc23855089](https://www.legislation.gov.au/Details/F2019C00821/Html/Volume_2#_Toc23855089)

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**flight crew member** (or FCM) means a crew member who is a pilot or flight engineer assigned to carry out duties essential to the operation of an aircraft during flight time. *Any reference to flight crew has a corresponding meaning.* The abbreviation FCMs means more than 1 FCM.

---

**flight duty period** (or FDP) means a period of time which:

- › starts when a person is required by an AOC holder to report for a duty period in which 1 or more flights as an FCM are undertaken, and
- › ends at the later of:
  - › the person's completion of all duties associated with the flight, or the last of the flights, or
  - › 15 minutes after the end of the person's flight, or the last of the flights.

**Note:** See also the definition of **positioning**.

---

**flight review** has the same meaning as in regulation 61.010 of CASR.

**Note:** Flight review means an assessment of the competency of an FCM to perform:

- › for the holder of a pilot licence or flight engineer licence — an activity authorised by a flight crew rating that the crew member holds, or
- › for the holder of a glider pilot licence — an activity authorised by the licence.

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**flight time** for an FCM, means such part of the total time mentioned for an aircraft in first two dot points below (as the case may be) which occurs while the FCM is acting as a crew member on board the aircraft:

- › in the case of a heavier-than-air aircraft — the total time from the moment at which the aircraft first moves under its own power for the purpose of taking off, until the moment at which it comes to rest after landing, and
- › in the case of a lighter-than-air aircraft — the total time from the moment at which the aircraft first becomes airborne until it comes to rest on the ground, excluding any time during which the aircraft is moored.

**Note:** Thus, flight time for an FCM does not include the time he or she spends in positioning.

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**Flight training**, for a flight crew licence, rating or endorsement including aerial work means the training mentioned in regulation 61.195 of CASR for the licence, rating or endorsement.

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**flight training associated with aerial work** means flight training for the grant, under Part 61 of CASR, of a rating or endorsement mentioned in points below:

- › the following operational ratings:
  - » low-level rating
  - » aerial application rating
  - » night vision imaging system rating
- › endorsements for the following operational ratings:
  - » low-level rating
  - » aerial application rating
  - » night vision imaging system rating
- › the following endorsements on the flight instructor rating:
  - » low-level rating training endorsement (category specific);
  - » aerial application rating (day) training endorsement (category specific)
  - » aerial application rating (night) training endorsement (category specific)
  - » night vision imaging system rating training endorsement
  - » sling operations training endorsement
  - » winching and rappelling operations training endorsement
- › the following endorsements on the flight examiner rating:
  - » low-level rating flight test endorsement (category specific)
  - » aerial application rating flight test endorsement (category specific)
  - » night vision imaging system rating flight test endorsement.

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**flight training device, for a specific type (or a specific make, model and series) of aircraft:**

- › means a device that:
  - » simulates the aircraft in ground and flight operations to the extent of the systems installed in the device, and
  - » comprises a full size replica of the instruments, equipment, panels and controls in an open flight deck area, or an enclosed flight deck, of the aircraft, and
  - » does not, in every respect, simulate the aircraft in ground and flight operations, and
- › includes the necessary software and equipment, and the way that the equipment is interconnected.

---

**FRMS Manager** means the person in an AOC holder's organisation who is appointed by the Chief Executive Officer to be responsible for the day-to-day implementation, management and continuing effectiveness of the AOC holder's FRMS.

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**grandfathering** is a colloquial expression intended to refer to a current legal provision—marked to be superseded at a specified date—which although different from the law which it will be replaced by is still in force. Legal provisions to be grandfathered will be detailed in transitional provisions.

**home base** means the location, assigned by the AOC holder to the FCM, from where the FCM normally starts and ends a duty period or a series of duty periods.

**in-flight rest** means, in an augmented crew operation, the period of time, or periods of time, during which an FCM has access to a crew rest facility.

**informed** means informed by the AOC holder in accordance with procedures in the holder's operations manual for communicating information between the holder and an FCM.

**initial flight training** means dual flight conducted for training in the units of competency mentioned in the Part 61 Manual of Standards for the grant of a recreational pilot licence. [https://www.legislation.gov.au/Details/F2019C00821/Html/Volume\\_2#\\_Toc23855089](https://www.legislation.gov.au/Details/F2019C00821/Html/Volume_2#_Toc23855089)

**late-night operation** means an operation where an FDP includes more than 30 minutes between the hours of 2300 and 0530 local time.

**limit** when used in a provision refers expressly or impliedly to a quantity of time and, depending on the context and other language of the provision, is used to denote a maximum quantity of time that is not to be exceeded except in accordance with this CAO, or a minimum quantity of time that is not to be reduced except in accordance with this CAO.

**local night** means a period of 8 consecutive hours which includes the hours between 2200 and 0500 local time.

**local time**, for a location, means:

- › local time in the time zone of the location, or
- › local time in a time zone (the alternative local time):
  - › that adjoins the time zone of the location, and
  - › whose nearest boundary is reasonably proximate to the location, provided the alternative local time is:
    - specified in the AOC holder's operations manual, and
    - used consistently as local time for the location, for the purposes of this CAO.

**Note 1:** CASA considers an alternative time zone to be used consistently as local time for a location if it is used, for example, throughout a period of daylight saving in the location or the adjoining time zone.

**Note 2:** Examples of where an AOC holder may consider using alternative local time are as follows:

Local time	Alternative local time
Gold Coast airport, Queensland summertime	NSW
Kununurra airport, Western Australia	NT

**medical personnel** mean persons with medical, paramedical or nursing qualifications, and responsibilities directly related to the qualifications.

---

**medical transport operation** means an aircraft operation consisting of 1 or more flights for any of the following purposes:

- › delivery of urgent medical assistance to a person, when determined to be necessary by a medical transport tasker
- › transportation of any of the following, when determined to be necessary by a medical transport tasker:
  - » an ill or injured person
  - » another person directly involved with an ill or injured person

**Note:** For example, a close relative or the police.

- › medical personnel intended to be, or who are, directly involved with the person mentioned in the first sub dot point
  - › blood, tissue or an organ for transfusion, grafting or transplantation (an item), including a person who has authorised custody of the item
  - › the return of the aircraft to its base because an operation mentioned in either of first two dot points completed.
- 

**medical transport tasker** means:

- › medical personnel, or
  - › an organisation whose purpose is, or whose purposes include, medical transport tasking.
- 

**multicrew operation** means an operation that requires at least 2 pilots in:

- › a multi crew aircraft, or
  - › an aircraft that is equipped, and required by these Regulations, to be operated by a crew of at least 2 pilots.
- 

**multi-pilot operation:**

- › means an aircraft operation conducted under multi-pilot procedures contained in the AOC holder's operations manual, but
  - › does not include:
    - » contracted checking, within the meaning of regulation 142.020 of CASR, or
    - » contracted recurrent training within the meaning of regulation 142.020 of CASR
  - › unless the training or checking is conducted as a multi-crew operation within the meaning of regulation 61.010 of CASR.
- 

**mustering operation** means an aircraft operation to herd or otherwise control livestock, and includes the following:

- › aerial mustering within the meaning of CAO 29.10 (<https://www.legislation.gov.au/Details/F2015C00073>)
  - › aerial livestock spotting
  - › aerial livestock culling
  - › flight training associated with aerial work for any of the activities mentioned in this definition.
- 

**off-duty period** means a period of time during which an FCM is free of all duties and standby associated with his or her employment.

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**Operator proficiency check** means an assessment conducted by an operator in accordance with its training and checking responsibilities under the Regulations of whether a person has the aeronautical skills and knowledge required by the operator.

**Part 141 certificate** means the Part 141 certificate of a Part 141 operator to whom this CAO applies and, to that extent only, has the same meaning as in sub regulation 141.015 (4) of CASR.

[https://www.legislation.gov.au/Details/F2019C00821/Html/Volume\\_4#\\_Toc23856461](https://www.legislation.gov.au/Details/F2019C00821/Html/Volume_4#_Toc23856461)

**Note:** A Part 141 operator whose training is conducted exclusively through the use of a flight simulation training device is excluded from the scope of the CAO. In sub regulation 141.015 (4) of CASR, a Part 141 certificate is defined as a certificate issued under regulation 141.060 of CASR. A reference in this CAO to an AOC holder is taken to include a Part 141 operator.

**Part 141 operator** means a Part 141 operator to whom this CAO applies and, to that extent only, has the same meaning as in sub regulation 141.015 (3) of CASR.

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**Note:** A Part 141 operator whose training is conducted exclusively through the use of a flight simulation training device (flight training device) is excluded from the scope of the CAO. In sub regulation 141.015 (3) of CASR, a Part 141 operator is defined as the holder of a Part 141 certificate. A reference in this CAO to an AOC holder is taken to include a Part 141 operator

**Part 142 operator** means a Part 142 operator to whom this CAO applies and, to that extent only, has the same meaning as in sub regulation 142.015 (4) of CASR.

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**Note:** A Part 142 operator whose training is conducted exclusively through the use of a flight simulation training device is excluded from the scope of the CAO.

**positioning** for a person who is employed as an FCM:

- › means being transported, as a passenger, to a location, by any mode of transportation, as required by the AOC holder, and
- › does not include being transported to or from suitable accommodation after or before an FDP, and
- › if undertaken immediately before duty that includes the person flying an aircraft as an FCM (flying duty) — must be considered part of his or her FDP, and
- › if undertaken immediately after the person's flying duty and no other flying duty is to be conducted in the duty period — is not part of his or her FDP or off-duty period, and
- › is duty and part of the duty period.

**Note:** The time spent positioning following an FDP, as described above is not part of the FDP or off-duty period. However, it is added to the FDP for calculating off-duty period requirements.

**reassign** means to assign to an FCM in a modified form that which had previously been assigned to the FCM.

**recreational private operation** means flying conducted by an FCM in a personal capacity, and for the FCM's leisure.

**Note:** A flight conducted by an FCM as a private operation is not a recreational private operation if it is conducted for, or on behalf of, an entity, regardless of whether or not the entity is an AOC holder.

**registered training organisation** has the meaning given by section 3 of the *National Vocational Education and Training Regulator Act 2011*, which means a training organisation listed on the National Register as a registered training organisation.

**repeal** means the removal of a law or provision of that law from the statute book. If a provision is repealed, a new compilation will be prepared to remove the provision. A law that has been repealed will display on the Legislation Register as no longer in force.

**reporting time** means the time assigned to an FCM to commence an FDP.

**roster** means a list made available to an FCM by an AOC holder setting out the times when the FCM is assigned to undertake duties or standby.

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**saving provision** allows some or all of a repealed law to remain in force under specific circumstances. When large-scale changes to the law are proposed, a saving provision is sometimes enacted into a separate law such as a Consequential and Transitional Provisions Act. If a law is affected by a saving provision this will usually be noted in the endnotes.

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**sector**, for this CAO, has the following meanings:

- › except for a rotorcraft — any flight consisting of a take-off and a landing, when conducted by a person in the capacity of an FCM
  - › for a rotorcraft — the period
    - › from when the rotor blades start turning until they stop turning, and
    - › during which an FCM on the rotorcraft conducts 1 or more flights, each consisting of a take-off and a landing
  - › each hour, or each part of an hour, of an FDP spent in a synthetic training device.
- 

**single-pilot operation** means any operation other than a multi-pilot operation.

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**sleep opportunity** means a period of time during an off-duty period when an FCM:

- › is not meeting the reasonable requirements of bodily functioning such as eating, drinking, washing or dressing, and
- › has access to suitable sleeping accommodation without, under normal circumstances, being interrupted by any requirement of the AOC holder.

**Note:** When an FCM is interrupted during sleep opportunity, this may affect the FCM's fitness for duty before the commencement of, or during, the next FDP.

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**SMS** means a safety management system approved by CASA.

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**split-duty** means an FDP which contains a split-duty rest period.

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**split-duty rest period** means a predefined period of time (or, for appendix 4B or appendix 5, a period of time that may or may not be predefined) during which an FCM:

- › has access to suitable resting accommodation or suitable sleeping accommodation, and
  - › is relieved of all duties associated with his or her employment by the AOC holder.
- 

**standby** means a period of time during which an FCM:

- › is required by an AOC holder to hold himself or herself available for duties, and
- › has access to suitable sleeping accommodation, and
- › is free from all duties associated with his or her employment.

**Note:** If suitable sleeping accommodation is not available for an FCM, who is required by an AOC holder to hold himself or herself available for duty, the FCM will be considered to be on duty and not on standby.

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**standby-like arrangement** means a period of time during which an FCM:

- › is required by an AOC holder to hold himself or herself available for duties, and
  - › has no access to suitable sleeping accommodation.
-

**suitable resting accommodation** means a comfortable resting area:

- › which has a comfortable temperature and minimal noise levels, and
- › which contains at least a comfortable chair, and
- › at which the FCM has access to adequate sustenance at times appropriate to the duty requirements.

**Note:** Suitable resting accommodation is solely for split-duty rest periods. Suitable sleeping accommodation may also be used for split-duty rest periods.

**suitable sleeping accommodation** means accommodation, not within an aircraft, that is fit for the purpose of an FCM obtaining sleep, and that includes the following:

- › a comfortable room, compartment or facility
- › a single occupancy, at the discretion of the FCM
- › access to clean, tidy and hygienic amenities, including a toilet and hand washing basin
- › a bed that is comfortable, flat and horizontal, allowing the occupant to sleep on his or her stomach, and back, and either side
- › minimum noise levels, including low occurrence of random noise
- › the means to control light, temperature and ventilation
- › access to adequate sustenance.

**Note:** A person's home or residence is considered to meet the requirements of suitable sleeping accommodation.

**synthetic training device** means:

- › a flight simulator, or
- › a flight training device, or
- › a basic instrument flight trainer.

**the operations manual**, when used in a provision of this CAO, is taken to mean whichever of the following the Regulations require of the AOC holder to whom the provision applies:

- › the operations manual of the AOC holder
- › the exposition of the AOC holder.

**the Regulations** means CAR and CASR, as in force from time to time.

**Note:** The effect of regulation 2C is that the Regulations, CAR and CASR, are to be read together.

**time zone** means a defined region of the earth with a uniform local time which differs by 1 hour, or by part of 1 hour, from the uniform local time of an adjoining region of the earth.

**tour of duty** for a flight crew member:

- › means a period from when the member begins any duties associated with his or her employment before making a flight or series of flights until the member is finally relieved of all such duties after the end of the flight or flights, and
- › includes a period during which the member is required by an operator to hold himself or herself available at an aerodrome for the performance of any such duties.

A **transitional provision** sets out the special arrangements that apply when changes to the law are implemented over an extended period. Transitional provisions are sometimes put together into a separate law such as a Consequential and Transitional Provisions Act. If a law is affected by a transitional provision this will usually be noted in the endnotes.

**unforeseen operational circumstance** means an unplanned exceptional event that becomes evident after the commencement of the FDP, such as forecast weather, equipment malfunction, or air traffic delay.

**Note:** Guidance on the application of unforeseen operational circumstances is contained in CAAP 48-01.

**window of circadian low**, or WOCL, for an FCM, means:

- › in appendix 2:
  - › if the FCM is acclimatised — the period between the hours of 0200 and 0559 local time at the location where the FCM is acclimatised, or
  - › if the FCM is in an unknown state of acclimatisation — the period between the hours of 0200 and 0559 local time at the location where the FCM was last acclimatised, and
- › in an appendix other than appendix 2 — the period between the hours of 0200 and 0559 local time at the location where the FCM commences a duty period.

**written application**, for an approval, means the written application of the AOC holder who is seeking the approval.



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