

Explanatory Statement

Civil Aviation Regulations 1988

CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018

Purpose

The purpose of *CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018* is to prescribe requirements relating to fuel for aircraft in the interests of the safety of air navigation.

Legislation

The *Civil Aviation Act 1988* (the **Act**) establishes the regulatory framework for maintaining, enhancing and promoting the safety of civil aviation, with particular emphasis on preventing aviation accidents and incidents.

Subsection 9 (1) of the Act specifies, in part, that the Civil Aviation Safety Authority (**CASA**) has the function of conducting the safety regulation of civil air operations in Australian territory by means that include developing and promulgating appropriate, clear and concise aviation safety standards and issuing certificates, licences, registrations and permits.

Subsection 98 (1) of the Act provides, in part, that the Governor-General may make regulations, not inconsistent with the Act, prescribing matters required or permitted by the Act to be prescribed, or necessary or convenient to be prescribed for carrying out or giving effect to the Act. That subsection also provides that the Governor-General may make regulations for the purpose of carrying out and giving effect to the provisions of the *Convention on International Civil Aviation (Chicago Convention)* relating to safety, and regulations in relation to the safety of air navigation with respect to any other matters for which the Parliament has power to make laws.

Paragraph 98 (5A) (a) of the Act provides that the regulations may empower CASA to issue instruments in relation to matters affecting the safe navigation and operation or the maintenance of aircraft.

Subsection 98 (5D) of the Act provides that a legislative instrument made under the Act or the regulations may apply, adopt or incorporate any matter contained in any instrument or other writing as in force or existing from time to time, even if the other instrument or writing does not yet exist when the legislative instrument is made.

Relevantly, the Governor-General has made the *Civil Aviation Regulations 1988 (CAR)*.

The *Civil Aviation Amendment (Fuel and Oil Requirements) Regulations 2018* [FRL ref: F2018L00599] (the **Amendment Regulations**) will substitute a new regulation 234 of CAR when it commences on 8 November 2018. The changes clarify the distinction between regulatory requirements and guidance material issued by CASA. In particular, new regulation 234 of CAR will empower CASA, for subregulation 98 (5A) of the Act, to issue a legislative instrument that prescribes fuel related requirements. It will also specify the scope of matters that may be addressed by the instrument. These matters include:

- matters that must be considered when determining whether an aircraft has sufficient fuel to complete a flight safely

- the amounts of fuel that must be carried on board an aircraft for a flight
- procedures for monitoring amounts of fuel during a flight
- procedures to be followed if fuel reaches specified amounts during a flight.

Regulation 234 of CAR will include strict liability offences for both the pilot in command and the operator of an aircraft if a requirement under the instrument is not complied with.

Under section 4 of the *Acts Interpretation Act 1901* (the **AI Act**), applied by paragraph 13 (1) (a) of the *Legislation Act 2003* (the **LA**), the new power to issue a legislative instrument under regulation 234 of CAR may be exercised before the commencement of the amendment that confers that power. However, the legislative instrument does not take effect before the commencement of the amendment. Accordingly, although the instrument is made before the commencement of the Amendment Regulations, the instrument is expressed to commence immediately after the commencement of the Amendment Regulations.

Background

The Australian Transport Safety Bureau database has provided evidence that fuel quantity issues are becoming problematic and, therefore, CASA has decided that action must be taken to address the issues.

Additionally, amendment 36 to Annex 6 Part I, International Commercial Air Transport — Aeroplanes of the Chicago Convention (**amendment 36**), has specific changes relating to fuel planning, in-flight fuel management, selection of alternate aerodromes and extended diversion time operations (**EDTO**). This amendment to Annex 6 also specifically addresses fuel and operational requirements for flights to isolated aerodromes.

The Amendment Regulations provides the head of power which permits CASA to implement fuel-related provisions that meet its International Civil Aviation Organization (**ICAO**) obligations with respect to adopting the applicable changes brought about by amendment 36.

In the past, CASA has published guidance material that provides information and guidance on fuel requirements for aircraft for the purposes of regulation 234 of CAR. The current guidance material is Civil Aviation Advisory Publication (CAAP 234-1(1)) titled *Guidelines for Aircraft Fuel Requirements*. This legislative instrument largely takes the place of that guidance material.

Instrument

This instrument is made under regulation 234 of CAR as in effect after it is amended by the Amendment Regulations.

Sections 1 and 1A — Name and commencement

Section 1 of the instrument provides that the name of the instrument is *CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018*.

In accordance with section 4 of the AI Act, section 1A provides that the instrument commences immediately after the commencement of the Amendment Regulations. In effect, the instrument commences on 8 November 2018. Under section 48D of the LA, section 1A is repealed immediately after the commencement that section 1A provides for.

Section 2 — Definitions for the instrument

Section 2 of the instrument contains definitions of expressions used in the instrument. In particular, it contains definitions of the various types of fuel required in section 5 of the instrument, including additional fuel, alternate fuel, fixed fuel reserve, holding fuel, taxi fuel, trip fuel and variable fuel reserve.

Section 2 defines an **operational variation** to mean an alternative requirement to a requirement of this instrument. That definition is used in section 8 of the instrument.

The term **unforeseen factors** is defined to mean factors that could have an influence on the fuel consumption to the destination aerodrome. These factors could include extended delays and deviations from forecast meteorological conditions or planned routings.

Section 2 also includes definitions of other terms that are relevant to fuel planning such as alternate aerodrome, destination aerodrome, destination alternate, decision point, en-route alternate and ISA.

It also contains notes explaining that expressions used in the instrument that are not defined in section 2 have the same meaning as in the Act, CAR and the *Civil Aviation Safety Regulations 1998 (CASR)*.

Section 3 — Application of the instrument

Section 3 of the instrument specifies the aircraft to which the instrument applies.

Subsection 3 (1) provides that the instrument applies to all Australian aircraft, subject to the exceptions in subsections 3 (2) and 3 (3).

Civil Aviation Order (**CAO**) 95.4 contains exemptions from various provisions of CAR for sailplanes (being gliders with an empty weight of more than 70 kilograms), power-assisted sailplanes and powered sailplanes. Those exemptions are subject to various general and flight conditions set out in subsections 5 and 6 of CAO 95.4. Subsection 3 (2) provides that the instrument does not apply to a private operation in a power-assisted sailplane or a powered sailplane that complies with the conditions in CAO 95.4. Subsection 3 (3) provides that the instrument (other than section 11 of the instrument) does not apply to the charter operation of a power-assisted sailplane or a powered sailplane that complies with the conditions in CAO 95.4.

The note under section 3 of the instrument explains that the requirements of the instrument for Part 141 operators (being certain flight training providers) and holders of an Air Operator's Certificate (**AOC**) may be affected by section 8 of the instrument. Section 8 deals with operational variations, being alternative requirements to the requirements of this instrument.

Section 4 — Determining the usable fuel required for flight

Section 4 of the instrument prescribes the matters that the operator and the pilot in command of an aircraft must consider and factor into the determination of the quantity of usable fuel required by this instrument. The matters include aircraft specific fuel consumption data, operating conditions for the planned flight, such as weather conditions and anticipated delays, and the potential for deviations from the planned flight because of unforeseen factors, as defined in section 2.

Section 5 — Amount of fuel that must be carried

The purpose of section 5 of the instrument is to prescribe the minimum amount of usable fuel that an aircraft must carry. Both the operator and pilot in command of the aircraft are required to ensure that the prescribed minimum amount is carried.

Subsection 5 (2) prescribes the amount of usable fuel that must be on board the aircraft at flight commencement, being the moment the aircraft vacates its parking position for the purpose of take-off. Subsection 5 (3) prescribes the amount of usable fuel that must be on board the aircraft at a decision point. Subsection 5 (4) prescribes the amount of usable fuel that must be on board the aircraft at any time to continue flying safely. The amount of usable fuel required is the sum of the amounts of the various types of fuel listed in the relevant subsection. The types of fuel are defined in section 2 of the instrument.

Subsection 5 (5) relates to a situation where, after flight commencement, fuel is used for a purpose other than that originally intended during pre-flight planning. For example, where the amount of fuel used before take-off is more than the planned amount of taxi fuel, some of the other fuel would have been used for the purpose of taxiing the aircraft. Subsection 5 (5) requires the pilot in command of the aircraft to re-analyse the fuel on board. If the planned flight cannot be completed in accordance with the instrument, the pilot in command must adjust the planned flight.

Subsection 5 (6) and Table 1 specify factors that are used for the calculation of fixed fuel reserve and variable fuel reserve.

The term ***fixed fuel reserve*** is defined in section 2 to mean the amount of fuel required to fly in specified conditions for the period specified in column 3 of Table 1 for the flight. The period specified for a flight is 20, 30 or 45 minutes depending on:

- the type of aircraft, such as small piston engine aeroplane or helicopter
- the flight rules that apply to the flight, such as day or night Visual Flight Rules (***V.F.R.***) or Instrument Flight Rules
- the class of operation, being a regular public transport (***RPT***) or charter operation, or some other class of operation, such as flying training, aerial work or a private operation.

The term ***variable fuel reserve*** is defined in section 2 to mean the amount of fuel calculated by reference to the percentage specified in column 4 of Table 1 of the trip fuel. The percentage specified is 0%, 5% or 10%, depending on the type of aircraft, the applicable flight rules and the class of operation.

The note in Table 1 alerts readers to the definition ***variable fuel reserve*** in section 2. In particular, it refers to the requirement in paragraph (c) of that definition that, for RPT and charter flights in an aeroplane, the variable reserve fuel is at least the amount of fuel to fly for 5 minutes in specified conditions.

Section 6 — Pre-flight and in-flight fuel quantity checks

Section 6 of the instrument relates to determining and monitoring the amount of fuel in an aircraft before and during a flight. Subsection 6 (1) requires the pilot in command to ensure that a determination of the quantity of usable fuel on board the aircraft is conducted before flight commencement, that is before the aircraft vacates its parking position for the purpose of take-off.

Subsection 6 (2) requires the pilot in command of an aircraft to ensure that a fuel quantity check is carried out and the usable fuel is evaluated at regular intervals during a flight. For each check, the amount of usable fuel remaining must be evaluated to compare the actual fuel consumption that has occurred with the planned fuel consumption. The check must include a determination of whether the amount of usable fuel remaining is sufficient to complete the planned flight in accordance with the applicable requirements in subsections 5 (3) and (4). The pilot must also ensure that a determination is made of the expected usable fuel remaining on arrival at the aerodrome to which the flight is planned.

The maximum efficiency of in-flight fuel quantity checks is achieved when checks are conducted at regular intervals using a consistently applied methodology. The interval between fuel quantity checks should be sufficient to allow the pilot in command to remain aware of the aircraft fuel state. A commercial operator may specify the desired regularity of fuel checks and limits on acceptable time between fuel checks in its operations manual. It is normal industry practice for the interval between fuel checks to exceed 30 minutes only in rare circumstances, such as when the time interval between flight plan waypoints exceeds 30 minutes.

In addition to fuel quantity checks at regular intervals, there are instances where a fuel quantity check is needed to ensure that in-flight decisions are supported by accurate fuel state awareness, such as before passing a decision point mentioned in subsection 5 (3).

Subsection 6 (3) applies to operations of aircraft that are authorised by an AOC or a Part 141 certificate. It requires the holder of the relevant certificate to have instructions and procedures in its operations manual for recording specified information. The instructions and procedures must require, before flight commencement, the recording of the quantity of fuel on board the aircraft. The instructions and procedures must also require, after each fuel quantity check conducted during a flight, the fuel quantity data evaluated and determined as required by subsection 6 (2). The records must therefore include, for each in-flight fuel quantity check conducted, the amount of usable fuel expected to be remaining at the destination aerodrome and a statement of whether the usable fuel remaining is sufficient to complete the planned flight. The inclusion of instructions in the operations manual is important because subregulation 215 (9) of CAR makes it an offence if a member of the operations personnel of an operator does not comply with all instructions contained in the operations manual insofar as they relate to his or her duties or activities.

The requirement in subsection 6 (3) is in addition to the requirement in subsection 6 of CAO 20.2, which deals with instructions and procedures for the verification of the quantity of fuel on board certain aircraft before flight. Where both subsection 6 (3) of this instrument and subsection 6 of CAO 20.2 apply, the operations manual is required to contain relevant instructions and procedures that satisfy both provisions.

Section 7 — Procedures if fuel quantity below specified levels

Section 7 of the instrument prescribes procedures that must be followed when the quantity of fuel is determined to be below specified levels. The purpose of subsections 7 (1), (2) and (3) is to ensure that aircraft land with at least the fixed fuel reserve on board. The purpose of subsections 7 (4) and (5) is to ensure appropriate communication by the pilot in command of an aircraft to air traffic control (*ATC*) when the aircraft will land, or is at risk of landing, with less than the fixed fuel reserve on board.

Subsection 7 (1) applies if, as a result of a fuel quantity check in accordance with subsection 6 (2) of the instrument, the usable fuel expected to be remaining on arrival at the destination aerodrome is less than the total amount of the alternate fuel plus the fixed fuel reserve. In that case, the pilot in command of the aircraft must consider the traffic and the operational conditions prevailing at the destination aerodrome, at the destination alternate and at any other en-route alternate. Having taken account of the traffic and operational conditions at the destination aerodrome, if there is insufficient fuel to land at that aerodrome in compliance with the instrument, the pilot in command must ensure a safe landing can be made at the destination alternate or an en-route alternate with at least the amount of fixed fuel reserve remaining.

Subsection 7 (2) applies when unforeseen factors (as defined in section 2) may result in the aircraft landing at the destination aerodrome with less than the total of the fixed fuel reserve plus any required alternate fuel. In that case, the pilot in command must request ATC to provide delay information, being any information in relation to anticipated additional airborne elapsed time for the flight, for example due to weather or traffic conditions at the aerodrome.

Subsection 7 (3) applies during a flight for which no alternate aerodrome is required to be planned if, as a result of an in-flight fuel quantity check in accordance with subsection 6 (2) of the instrument, the usable fuel expected to be remaining on arrival at the destination aerodrome is less than the fixed fuel reserve. In that case, the pilot in command must take appropriate action, including proceeding to an en-route alternate where a safe landing can be performed with at least the fixed fuel reserve remaining.

Subsection 7 (4) applies when, having committed to land at a specific aerodrome, the pilot calculates that any change to the clearance to land at that aerodrome may result in the aircraft landing with less than the required fixed fuel reserve. In that situation, the pilot in command must advise ATC of a minimum fuel state. The notes in that subsection explain that a declaration of MINIMUM FUEL alerts ATC that the specific aerodrome is the only option for landing the aircraft and that any changes to the existing clearance may cause a landing with less than the fixed fuel reserve. While a minimum fuel state is not an emergency, it indicates that an emergency is possible if further delay were to occur. The notes also state that pilots should not expect any priority handling because of a MINIMUM FUEL declaration. However, ATC will advise flight crew of any additional expected delays and coordinate when transferring control of the aircraft to ensure other ATC units are aware of the flight's fuel state.

Subsection 7 (5) applies when the calculated amount of usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the fixed fuel reserve for the flight. In that situation, the pilot in command must declare a situation of **emergency fuel** by broadcasting the words "MAYDAY, MAYDAY, MAYDAY FUEL". The note in that subsection explains that an emergency fuel declaration is a distress message. People hearing the message should assume that the aircraft is in danger and requires immediate assistance.

Section 8 — Operational variations to requirements of the instrument

The purpose of section 8 of the instrument is to provide a mechanism for AOC holders and Part 141 certificate holders (collectively defined as **certificate holders**) to substitute alternative requirements, instead of the requirements in this instrument, relating to the calculation of specified types of fuel. Those alternative requirements are called operational

variations and, to be effective, must be contained in a certificate holder's operations manual. As noted above, it is an offence under subregulation 215 (9) of CAR if a member of the operations personnel of an operator does not comply with all instructions contained in the operations manual insofar as they relate to his or her duties or activities.

Subsection 8 (1) provides that a certificate holder's operations manual may include an operational variation relating to the calculation of any of 5 types of fuel, being taxi, trip, alternate and additional fuel and variable fuel reserve.

Subsection 8 (2) provides that a certificate holder's operations manual may include an operational variation relating to the calculation of fixed fuel reserve for an aerial work operation in which the only occupants are flight crew members. It provides a limited exception to the general prohibition, in subsection 8 (3), that a certificate holder's operations manual must not include an operational variation relating to the calculation of holding fuel or fixed fuel reserve.

Subsection 8 (4) applies if a certificate holder has an operational variation in its operations manual, as permitted by subsection (1) or (2). It requires the certificate holder to give CASA evidence of how the operational variation will maintain or improve aviation safety. The certificate holder must give CASA evidence of documented in-service experience or the results of a specific safety risk assessment that the certificate holder has conducted. The certificate holder may give evidence of both documented in-service experience and a risk assessment.

Subsection 8 (5) prescribes the requirements for an acceptable safety risk assessment for the purposes of subsection 8 (4). It must include flight fuel calculations and details of the certificate holder's capabilities. Those capabilities must include a data-driven method for calculating amounts of fuel that includes a fuel consumption monitoring program. The capabilities must also include the use of sophisticated techniques for determining the suitability of alternate aerodromes and specific risk mitigation measures.

Subsection 8 (6) specifies the circumstances in which subsection 8 (7) applies. Those limited circumstances are where the certificate holder's operations manual includes an operational variation mentioned in subsection 8 (1) or (2), and the certificate holder has met the requirements in subsection 8 (4), which requires specified evidence to be given to CASA.

Subsection 8 (7) is the key provision in section 8 that, in limited circumstances, excuses certificate holders from the requirements of the instrument relating to the calculation of types of fuel. It states that a provision of the certificate holder's operations manual relating to the calculation of fuel in accordance with an operational variation prevails over a provision of this instrument to the extent of any inconsistency. For example, if a certificate holder has met the requirements in subsection 8 (4) and its operations manual, as it exists at the relevant time, includes a method of calculating the amount of variable reserve fuel that results in a lower amount than the amount of variable reserve fuel otherwise required by the instrument, the aircraft is only required to carry the lower amount.

Subsections 8 (8) and (9) provide transitional provisions for certificate holders whose operations manual contained an operational variation, permissible under subsections 8 (1) and (2), immediately before the commencement of this instrument. Those operators are taken to have met the requirement in subsection 8 (4) for a limited transitional period. For operators whose current AOC or Part 141 certificate expires within 12 months after the commencement

of the instrument, the transitional period expires when the certificate expires. For operators whose current AOC or Part 141 certificate does not expire within 12 months after the commencement of the instrument, the transitional period expires 12 months after the commencement of the instrument. This transitional period, combined with the period between the making and commencement of the instrument, provides certificate holders with a reasonable period to give CASA the evidence required by subsection 8 (4) if they wish to continue to use the existing operational variation after the transitional period.

Section 9 — Extended diversion time operations

Section 9 is included in the instrument for the avoidance of doubt and relates to extended diversion time operations, known as EDTO and defined in CAO 82.0 as in force from time to time. If a flight is an EDTO, section 9 requires the AOC holder to comply with the requirements in clause 6 of Appendix 5 of CAO 82.0 as in force from time to time. Clause 6 of Appendix 5 of CAO 82.0 currently requires the AOC holder for an aeroplane conducting an EDTO flight to ensure that the aeroplane carries at least an amount of fuel calculated by taking into account a range of specified factors, such as wind conditions, potential decompression or engine failure and the location of alternate aerodromes.

Section 10 — flights to remote islands

Section 10 of the instrument defines the amount of fuel that is the **minimum safe fuel** for an aeroplane undertaking a flight to a remote island, being any of Christmas Island, the Cocos (Keeling) Islands, Lord Howe Island and Norfolk Island.

The term the **minimum safe fuel** is currently defined in paragraphs 2.3 to 2.4.1 of CAO 82.0. Relevantly, paragraph 3A.1 of CAO 82.0 provides that each AOC authorising RPT or charter operations for the carriage of passengers or medical transport operations is subject to the condition that a passenger must not be carried on a flight to a remote island unless, when the flight commences, the aeroplane is carrying not less than the “minimum safe fuel” for the flight. The purpose of section 10 is to reflect the definition of **minimum safe fuel** in CAO 82.0 in this instrument, with the provisions restructured and redrafted to clarify their operation and in accordance with current drafting practice. CASA intends to make a consequential amendment to CAO 82.0 to omit paragraphs 2.3 to 2.4.1 of CAO 82.0 at the time that this instrument commences.

Subsection 10 (1) largely reflects paragraph 2.3 of CAO 82.0. Under paragraph 10 (1) (a), the **minimum safe fuel** for an aeroplane undertaking a flight to a remote island is the minimum amount of fuel that the aeroplane should carry on that flight, according to the operations manual of the aeroplane’s operator.

Paragraph 10 (1) (b) applies to the situation where the operations manual of the aeroplane’s operator does not make provision for the calculation of the minimum amount of fuel that the aeroplane should carry on the flight. In that situation, the **minimum safe fuel** is the greater of the amounts mentioned in subsection 10 (2), worked out in accordance with subsections 10 (3) to (7). The note in subsection 10 (1) refers readers to the requirements of paragraph 3A.1 of CAO 82.0.

Subsection 10 (2) largely reflects paragraph 2.4 of CAO 82.0 and specifies the amounts of fuel referred to in paragraph 10 (1) (b). The first amount of fuel, described in paragraph 10 (2) (a), is the sum of:

- the minimum amount of fuel that will, whatever the weather conditions, enable the aeroplane to fly, with all its engines operating, to its destination aerodrome on the remote island and then to its destination alternate
- any fixed fuel reserve and variable fuel reserve required by section 5.

The second amount of fuel, described in paragraph 10 (2) (b), is the minimum amount of fuel that would, if there was an engine failure or a loss of pressurisation at any time during the flight, enable the aeroplane to fly to its destination aerodrome or the destination alternate for the flight, fly for 15 minutes at 1 500 feet above the relevant aerodrome in international standard atmosphere (ISA) conditions, make an approach and land.

Subsections 10 (3) to (7) largely reflect paragraph 2.4.1 of CAO 82.0 and specify the performance data and fuel consumption data that must be used when working out the amounts of fuel mentioned in paragraphs 10 (2) (a) and (b).

Subsection 10 (3) applies if the aeroplane is a transport category aircraft. It requires an amount of fuel described in subsection 10 (2) to be calculated using the performance data and fuel consumption data in the aeroplane's flight manual.

Subsection 10 (4) describes the aeroplanes to which subsection 10 (5) applies. It provides that subsection 10 (5) applies to aeroplanes that are not transport category aircraft and for which performance data and fuel consumption data are available from specified sources, such as relevant manufacturers and manuals. Subsection 10 (5) requires an amount of fuel described in subsection 10 (2) to be calculated using the performance data and fuel consumption data from the relevant source mentioned in subsection 10 (4).

Both subsections 10 (3) and (5) are subject to subsection 10 (6). Subsection 10 (6) relates to aeroplanes for which there is a supplementary type certificate (*STC*) that affects the performance data or fuel consumption data. Under Subpart 21.E of CASR, CASA can issue an STC for the approval of the design of a major change to a type certificated aircraft, aircraft engine or propeller. Subsection 10 (6) requires the amount of fuel to be calculated using the performance data or fuel consumption data as amended because of the issue of the STC.

Subsection 10 (7) applies to an aeroplane if neither subsection 10 (3) nor (5) apply to the aeroplane. For example, subsection 10 (7) will apply to an aeroplane that is not a transport category aircraft and for which performance data or fuel consumption data is not available from the sources listed in subsection 10 (4). Subsection 10 (7) requires an amount of fuel described in subsection 10 (2) to be calculated using the performance data and fuel consumption data for the aeroplane obtained during a flight test of the aeroplane carried out in a manner approved by CASA. Regulation 21.035 of CASR sets out the relevant requirements for the conduct of flight tests of aircraft.

Section 11 — Charter operations in powered or power-assisted sailplanes

Section 11 of the instrument applies to a charter operation of a power-assisted sailplane or a powered sailplane. It requires that the operator and the pilot in command ensure that the aircraft carries at least the fuel required to allow the aircraft's engine to be in operation during all times that the aircraft is out of gliding range of the aerodrome from which it took off.

Incorporation by reference

The legislative instrument applies, adopts or incorporates matters contained in instruments or other writing that come from a variety of sources, including private organisations. In accordance with subsection 98 (5D) of the Act, the instruments and other writing are incorporated as in force or existing at a particular time or from time to time and may not yet exist when the legislative instrument is made.

In accordance with paragraph 15J (2) (c) of the LA, the following table contains a description of the documents incorporated by reference into the legislative instrument, the organisation responsible for each document and how they may be obtained.

Document	Description	Source
<i>Civil Aviation Order 82.0</i>	Legislative instrument setting out conditions to which AOCs are subject.	Freely available on the Federal Register of Legislation at: https://www.legislation.gov.au/Details/F2015C00204
<i>Civil Aviation Order 95.4</i>	Legislative instrument containing exemptions from the regulations for sailplanes.	Freely available on the Federal Register of Legislation at: https://www.legislation.gov.au/Details/F2012C00683
ICAO Document 7488	Manual of ICAO Standard Atmosphere	Available for purchase from the ICAO Store at: https://store.icao.int/ [Cost US\$319]
NOTAMS	Notices to Airmen	Freely available from Airservices Australia at: http://www.airservicesaustralia.com/flight-briefing/
Meteorological reports and forecasts	Reports of past and current weather conditions and forecasts of future weather conditions.	Freely available on the Bureau of Meteorology website at: http://www.bom.gov.au/
ATC procedures and restrictions	Procedures and restrictions relating to the operation of aircraft required by ATC.	Contained in the Aeronautical Information Package, which is freely available from Airservices Australia at: http://www.airservicesaustralia.com/aip/aip.asp
Fuel consumption data derived from a fuel consumption monitoring system	Data relating to the consumption of fuel by an aircraft that are obtained from a system to track consumption of fuel by the aircraft.	Held by the relevant operator of an aircraft derived from its own systems or similar systems of previous operators of the aircraft.

Document	Description	Source
Performance and fuel consumption data provided by the aircraft or engine manufacturer	Data relating to the performance and fuel consumption of an aircraft that are held by aircraft or engine manufacturer and provided to the operator of the aircraft.	Held by the relevant aircraft operator and provided by the relevant aircraft or engine manufacturer.
Operations manual or exposition of the aeroplane's operator	A manual or set of documents for the use and guidance of the operations personnel of an operator.	Prepared by the relevant operator and given to CASA.
Aeroplane's flight manual	A book containing the information required to safely operate the specific aircraft.	Available to the aircraft operator from the relevant aircraft manufacturer.
Pilot's operating handbook for the aeroplane	A book containing the information required to safely operate the specific model of aircraft.	Available to the aircraft operator from the relevant aircraft manufacturer.
Performance data and fuel consumption data for the aeroplane obtained during of a flight test	Data relating to the performance and fuel consumption of an aircraft that are obtained from a flight test of the aeroplane that is carried out in a manner approved by CASA.	Available to the aircraft operator from the relevant aircraft manufacturer.

The definitions of *power-assisted sailplane* and *powered sailplane* in section 2 of the instrument incorporate the meaning of those terms in CAO 95.4 as at the date of commencement of this instrument. Otherwise, in accordance with subsection 98 (5D) of the Act, all of the above documents are incorporated as in force or existing from time to time. This ensures that each flight is conducted in accordance with current regulatory and operational requirements and using current data.

Many of the documents that are held by a manufacturer or operator of an aircraft are available to operators and pilots who are affected by the instrument but may not otherwise be publicly available. Other documents that are not freely available, such as ICAO Document 7488, are publicly available but subject to copyright. CASA has incorporated the documents in the instrument because aviation safety requires the use of the information and data in the documents by aircraft operators and pilots and because there are no freely available documents serving the relevant purpose.

The cost of obtaining a copy of a document is a matter for the operator of the aircraft. CASA has no effective control over those costs. However, where practicable, by prior arrangement with CASA, copies of those documents can be made available for viewing free of charge at any office of CASA. Given the large number of documents that fall within the classes of documents listed in the table, it is not practicable for many of these documents to be held and made available by CASA. CASA considers it extremely unlikely that the owner of the document would sell CASA the copyright, so that CASA could make the document freely available, at a price that would be an effective and efficient use of CASA funds.

Legislation Act 2003

Under subsection 8 (2) of the LA, if a primary law gives power to do something by legislative instrument, then, if the thing is done, it must be done by instrument, and that instrument is a legislative instrument. This instrument is made under subregulation 234 (1) of CAR, which

empowers CASA to issue a legislative instrument prescribing requirements relating to fuel for aircraft.

Additionally, paragraph 98 (5AA) (b) of the Act provides that an instrument issued under paragraph 98 (5A) (a) is a legislative instrument if the instrument is expressed to apply in relation to a class of aircraft. The instrument is expressed to apply to a class of aircraft, being all Australian aircraft other than those aircraft that are expressly excluded.

The instrument is, therefore, a legislative instrument, and is subject to tabling and disallowance in the Parliament under sections 38 and 42 of the LA.

Consultation

CASA consulted on the proposed legislative instrument with the Operations Standards Subcommittee and Standards Consultative Committee (**SCC**), which were forums of aviation community and CASA participants, between 12 and 26 August 2015.

On 20 January 2016, CASA published a draft instrument and a summary of the key changes introduced by the instrument (ref: CD 1508OS – Fuel and oil quantity requirements). CASA invited responses from the public by 16 March 2016.

The SCC and public consultation resulted in 63 responses. CASA has taken all the responses into account in finalising the instrument. Many respondents commented on the combined effects of the Amendment Regulations and the subordinate instrument, in the context of discussion around specific elements of the instrument.

Many respondents asserted that the quantity of fuel reserve stipulated in the proposed legislative instrument for private operation of light aeroplanes in day-V.F.R. conditions would be excessive. In consideration of the responses and the safety case for setting a minimum value of fuel reserve, CASA amended the proposed value from 45 minutes to 30 minutes.

CASA is satisfied that no further consultation is appropriate or reasonably practicable for this instrument for section 17 of the LA.

Office of Best Practice Regulation (OBPR)

OBPR assessed that the proposed Amendment Regulations and this legislative instrument will have minor impacts and that no further analysis in the form of a Regulation Impact Statement was required (OBPR ID: 21074).

Statement of Compatibility with Human Rights

The Statement of Compatibility with Human Rights at Attachment 1 has been prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*. This legislative instrument is compatible with human rights as, to the extent that it engages with applicable rights and freedoms, it promotes those rights and freedoms.

Making and commencement

The instrument has been made by the Acting Director of Aviation Safety, on behalf of CASA, in accordance with subsection 73 (2) and section 82 of the Act.

The instrument commences immediately after the commencement of the Amendment Regulations. The Amendment Regulation commences on 8 November 2018.

Statement of Compatibility with Human Rights

*Prepared in accordance with Part 3 of the
Human Rights (Parliamentary Scrutiny) Act 2011*

CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018

This legislative instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the legislative instrument

The legislative instrument prescribes requirements relating to fuel for aircraft including:

- matters that must be considered when determining whether an aircraft has sufficient fuel to complete a flight safely
- the amounts of fuel that must be carried on board an aircraft for a flight
- procedures for monitoring amounts of fuel during a flight
- procedures to be followed if fuel reaches specified amounts during a flight.

The legislative instrument is made under regulation 234 of the *Civil Aviation Regulations 1988*. This legislative instrument commences immediately after regulation 234 is amended, which is due to occur on 8 November 2018. After it is amended, regulation 234 will make it an offence for the pilot in command and operator of an aircraft to fail to comply with any requirement to which they are subject in this legislative instrument.

Human rights implications

The legislative instrument engages the rights in work (Article 7 (b) of the International Covenant on Economic, Social and Cultural Rights (*ICESCR*)).

Rights in work, set out in Article 7 of ICESCR, include safe and healthy working conditions. Aviation safety promotes the right to safe and healthy working conditions, especially for people working in the aviation industry. In the context of aircraft operations to which this instrument applies, the legislative instrument addresses risks to the life and health of passengers, pilots, cabin crew and people on the ground that could arise from aviation accidents and incidents. It does this by establishing appropriate safety requirements to be met relating to the carriage of fuel and procedures to be followed when the amount of fuel on an aircraft in flight falls below specified levels.

The legislative instrument does not engage any of the other applicable rights or freedoms.

Conclusion

This legislative instrument is compatible with human rights as, to the extent that it engages with applicable rights and freedoms, it promotes those rights and freedoms.

Civil Aviation Safety Authority



Australian Government
Civil Aviation Safety Authority

Instrument number CASA 29/18

I, GRAEME MILLS CRAWFORD, Acting Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 234 of the *Civil Aviation Regulations 1988*.

[Signed G.M. Crawford]

Graeme M. Crawford
Acting Director of Aviation Safety

17 May 2018

CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018

Contents

	Page
1 Name.....	1
1A Commencement.....	1
2 Definitions	2
3 Application.....	4
4 Usable fuel required for flight	5
5 The amount of fuel that must be carried for a flight	5
6 Determining and monitoring fuel quantity	6
7 Procedures in the event of fuel quantity below specified levels	7
8 Fuel requirements for AOC holders and Part 141 operators — operational variations	8
9 Fuel requirements for AOC holders — EDTO	9
10 Fuel requirements for AOC holders — passenger-carrying and medical transport aeroplane operations to remote islands.....	9
11 Fuel requirements for charter operation in certain sailplanes.....	10

1 Name

This instrument is *CASA 29/18 — Civil Aviation (Fuel Requirements) Instrument 2018*.

1A Commencement

This instrument commences immediately after the commencement of the *Civil Aviation Amendment (Fuel and Oil Requirements) Regulations 2018*.

2 Definitions

In this instrument:

additional fuel means the supplementary amount of fuel (if any) required to allow the aircraft, if engine failure or loss of pressurisation (if applicable), whichever results in the greater subsequent fuel consumption, occurs at the most critical point:

- (a) to proceed to an alternate aerodrome; and
- (b) to fly for 15 minutes at holding speed at 1 500 feet above aerodrome elevation in ISA conditions; and
- (c) to make an approach and landing.

Note Fuel planning in accordance with subsections 5 (2), (3) and (4) may place the aircraft in a fuel emergency situation if an engine failure or loss of pressurisation occurs as described above.

alternate aerodrome means an aerodrome:

- (a) to which an aircraft may proceed, when it becomes either impossible or inadvisable to proceed to, or land at, the destination aerodrome; and
- (b) where the necessary services and facilities are available; and
- (c) where aircraft performance requirements can be met; and
- (d) which is operational at the expected time of use.

Note Despite paragraph 13 (1) (b) of the *Legislation Act* 2003, the expression **alternate aerodrome** has a different meaning in this instrument to the meaning of that expression as defined in regulation 2 of CAR.

alternate fuel means the amount of fuel required to enable an aircraft to do the following in a sequence:

- (a) a missed approach at the destination aerodrome;
- (b) fly the expected routing to the destination alternate;
- (c) conduct the approach;
- (d) land at the destination alternate.

ATC means air traffic control.

CAO means Civil Aviation Order.

certificate holder means a Part 141 operator or a holder of an AOC.

decision point means a point en route at which an aircraft can:

- (a) if the flight arrives at the point with adequate fuel to complete the flight to the destination aerodrome while maintaining the required amount of fuel — continue to the destination aerodrome; or
- (b) otherwise — divert to an en-route alternate with adequate fuel to complete the flight to the en-route alternate while maintaining the required amount of fuel.

destination aerodrome means the aerodrome to which a flight is planned.

destination alternate means an alternate aerodrome at which an aircraft may land if it becomes either impossible or inadvisable to land at the destination aerodrome.

Note The aerodrome from which a flight departs may also be a destination alternate for the flight.

EDTO means an extended diversion time operation as defined in CAO 82.0 as in force from time to time.

en-route alternate means an alternate aerodrome at which an aircraft may land in the event that a diversion becomes necessary while en route.

Note The aerodrome from which a flight departs may also be an en-route alternate for the flight.

fixed fuel reserve means the amount of fuel:

- (a) required to fly at 1 500 feet above aerodrome elevation in ISA conditions for the period of time specified for the flight in column 3 of Table 1:
 - (i) for a helicopter conducting an I.F.R. flight, an aeroplane or an airship — at holding speed; or
 - (ii) for a helicopter conducting an V.F.R. flight — at range speed; and
- (b) calculated with the estimated weight on arrival at the destination alternate (or the destination aerodrome when no destination alternate is required); and
- (c) which is usable fuel remaining in the fuel tanks until completion of the final landing.

flight commencement means the moment an aircraft vacates its parking position (whether pushed back or on its own power), also known as off-block time, for the purpose of take-off.

holding fuel means the amount of fuel required to fly for the period of time anticipated to be required for holding (taking into account the operating conditions) calculated at the holding fuel consumption rate established for the aircraft for the anticipated meteorological conditions or ISA.

ISA, or **international standard atmosphere**, means the atmospheric standard as described in ICAO Document 7488 — *Manual of the ICAO Standard Atmosphere* as existing from time to time.

large aeroplane means an **aeroplane** with a maximum take-off weight of more than 5 700 kg.

necessary services and facilities means the services and facilities that are required under civil aviation legislation for the landing of the aircraft conducting the type of operation under which the flight is to be conducted.

operational variation means an alternative requirement to a requirement of this instrument.

power-assisted sailplane has the meaning given by subsection 2 of CAO 95.4 as at the date of commencement of this instrument.

powered sailplane has the meaning given by subsection 2 of CAO 95.4 as at the date of commencement of this instrument.

remote island means any of the following:

- (a) Christmas Island;
- (b) the Cocos (Keeling) Islands;
- (c) Lord Howe Island;
- (d) Norfolk Island.

RPT means regular public transport.

small aeroplane means an aeroplane with a maximum take-off weight of not more than 5 700 kg.

Table 1 means the table in subsection 5 (6).

taxi fuel means the amount of fuel expected to be used before take-off, taking into account local conditions at the departure aerodrome and auxiliary power unit consumption (if applicable).

Note For helicopter operations requiring a hover taxi to position to the take-off departure point, taxi fuel is the fuel expected to be consumed before the take-off for departure.

trip fuel means the amount of fuel required to enable the aircraft to fly until landing at the destination aerodrome taking into account the operating conditions, including (as applicable):

- (a) fuel for take-off and climb from departure aerodrome elevation to initial cruising level/altitude, taking into account the expected departure routing; and
- (b) fuel for cruise from top of climb to top of descent, including any step climb or descent from the initial cruising level/altitude mentioned in paragraph (a); and
- (c) fuel from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and
- (d) fuel for executing an approach and landing at the destination aerodrome.

unforeseen factors means factors that could have an influence on the fuel consumption to the destination aerodrome, including, without limitation, the following:

- (a) deviation of an individual aircraft from the expected fuel consumption data;
- (b) deviation from forecast meteorological conditions;
- (c) extended delays and deviations from planned routings or cruising levels.

variable fuel reserve means the amount of fuel that is the highest of:

- (a) the percentage specified in column 4 of Table 1 of the trip fuel for the flight; and
- (b) in the event of in-flight re-planning — the percentage specified in column 4 of Table 1 of the trip fuel, based on the consumption rate used to plan the in-flight re-planning trip fuel, from the point of in-flight re-planning to the destination aerodrome; and
- (c) for an RPT or charter flight in an aeroplane — an amount of fuel to fly for 5 minutes at holding speed at 1 500 feet above the destination aerodrome in ISA conditions.

Note 1 Other expressions used in this instrument have the same meaning as in the *Civil Aviation Act 1988*. For example, **AOC** is defined in section 3 of that Act.

Note 2 Other expressions used in this instrument have the same meaning as in CAR. For example, **I.F.R.** and **V.F.R.** are defined in regulation 2 of those regulations.

Note 3 Other expressions used in this instrument have the same meaning as in CASR. For example, **flight crew member** is defined in the Dictionary at the end of those regulations.

3 Application

- (1) Subject to subsections (2) and (3), this instrument applies to all Australian aircraft.
- (2) This instrument does not apply to a private operation in a power-assisted sailplane or a powered sailplane that complies with the conditions in CAO 95.4.
- (3) This instrument, other than section 11, does not apply to a charter operation in a power-assisted sailplane or a powered sailplane that complies with the conditions in CAO 95.4.

Note For AOC holders and Part 141 operators, the requirements of this instrument may be affected by section 8.

4 Usable fuel required for flight

In determining the quantity of usable fuel required by this instrument, the operator and the pilot in command must determine the quantity by reference to the following matters:

- (a) aircraft specific fuel consumption data, being:
 - (i) current aircraft specific fuel consumption data derived from a fuel consumption monitoring system (if available); or
 - (ii) fuel consumption data provided by the aircraft manufacturer;
- (b) operating conditions for the planned flight, including the following:
 - (i) anticipated weight of the aircraft;
 - (ii) NOTAMS;
 - (iii) meteorological reports and forecasts;
 - (iv) ATC procedures, restrictions and anticipated delays;
 - (v) the effects of any deferred maintenance items and configuration deviation, if applicable;
- (c) the potential for deviations from the planned flight because of unforeseen factors.

5 The amount of fuel that must be carried for a flight

- (1) The operator and the pilot in command must ensure that the aircraft carries at least the fuel required by this section.
- (2) The amount of usable fuel on board at flight commencement must include:
 - (a) taxi fuel; and
 - (b) trip fuel from take-off; and
 - (c) holding fuel (as required); and
 - (d) variable fuel reserve (if specified in Table 1); and
 - (e) alternate fuel (if required); and
 - (f) fixed fuel reserve; and
 - (g) additional fuel (if applicable).
- (3) The amount of usable fuel on board from a decision point must include:
 - (a) trip fuel from the decision point; and
 - (b) holding fuel (as required); and
 - (c) variable fuel reserve (if specified in Table 1); and
 - (d) alternate fuel (if required); and
 - (e) fixed fuel reserve; and
 - (f) additional fuel (if applicable).
- (4) The amount of usable fuel on board at any time to continue a flight safely must include:
 - (a) trip fuel from that time; and
 - (b) holding fuel (as required); and
 - (c) alternate fuel (if required); and

- (d) fixed fuel reserve; and
 - (e) additional fuel (if applicable).
- (5) If, after flight commencement, fuel is used for a purpose other than that originally intended during pre-flight planning, the pilot in command must reanalyse and, if applicable, adjust the planned flight.
- (6) Table 1 specifies factors for the fixed fuel reserve and variable fuel reserve by aircraft type, flight rules and class of operation.

Table 1 — Fixed fuel reserve and variable fuel reserve requirements

Item	Column 1 Aircraft	Column 2 Flight rules	Column 3 Fixed fuel reserve	Column 4 Variable fuel reserve
Other than RPT and charter				
1	Small aeroplane (piston or turboprop)	Day V.F.R.	30 minutes	N/A
2	Small aeroplane (piston or turboprop)	I.F.R. or night V.F.R.	45 minutes	N/A
3	Turbojet or large aeroplane (turboprop)	I.F.R. or V.F.R.	30 minutes	5%
4	Large aeroplane (piston)	I.F.R. or V.F.R.	45 minutes	5%
5	Helicopter	V.F.R.	20 minutes	N/A
6	Helicopter	I.F.R.	30 minutes	N/A
7	Airship	I.F.R. or V.F.R.	30 minutes	N/A
RPT and charter				
8	Piston aeroplane	I.F.R. or V.F.R.	45 minutes	10%
9	Turbojet or turboprop aeroplane	I.F.R. or V.F.R.	30 minutes	5%
10	Helicopter	V.F.R.	20 minutes	10%
11	Helicopter	I.F.R.	30 minutes	10%
12	Airship	I.F.R. or V.F.R.	30 minutes	N/A

Note For RPT and charter operations in aeroplanes, the variable fuel reserve is the higher of: (a) the specified percentage of the trip fuel; and (b) an amount to fly for 5 minutes in particular conditions (see definition of **variable fuel reserve** in section 2).

6 Determining and monitoring fuel quantity

Pre-flight fuel quantity determination

- (1) Before flight commencement, the pilot in command must ensure that a determination of the quantity of usable fuel on board the aircraft is conducted.

In-flight fuel quantity checks

- (2) During a flight, the pilot in command must ensure that fuel quantity checks are carried out at regular intervals and the usable fuel remaining is evaluated to:
 - (a) compare planned fuel consumption with actual fuel consumption; and
 - (b) determine whether the usable fuel remaining is sufficient to complete the planned flight in accordance with subsection 5 (3) (if applicable) and subsection 5 (4); and
 - (c) determine the expected usable fuel remaining on arrival at the destination aerodrome.

Instructions and procedures for recording fuel quantity — certificate holders

- (3) If the operation of an aircraft is authorised by an AOC or a Part 141 certificate, the certificate holder's operations manual must contain instructions and procedures for recording:
 - (a) before flight commencement, the quantity of usable fuel on board; and
 - (b) after each fuel quantity check conducted during a flight, the fuel quantity data evaluated and determined in accordance with subsection (2).

7 Procedures in the event of fuel quantity below specified levels

- (1) If, as a result of an in-flight fuel quantity check in accordance with subsection 6 (2), the usable fuel expected to be remaining on arrival at the destination aerodrome is less than the required alternate fuel plus fixed fuel reserve:
 - (a) the pilot in command must consider the traffic and the operational conditions prevailing at the destination aerodrome, at the destination alternate and at any other en-route alternate; and
 - (b) if insufficient fuel is available to account for the traffic or operational conditions at the destination aerodrome, then the pilot in command must ensure a safe landing can be made at the destination alternate or an en-route alternate with not less than fixed fuel reserve remaining.
- (2) The pilot in command must request delay information from ATC when unforeseen factors may result in landing at the destination aerodrome with less than the following:
 - (a) if alternate fuel is required — alternate fuel plus fixed fuel reserve;
 - (b) if alternate fuel is not required — fixed fuel reserve.
- (3) If, as a result of an in-flight fuel quantity check in accordance with subsection 6 (2), the usable fuel expected to be remaining on arrival at the destination aerodrome is less than the fixed fuel reserve (where no alternate aerodrome is required), then the pilot in command must take appropriate action and proceed to an en-route alternate so as to perform a safe landing with not less than the fixed fuel reserve remaining.
- (4) The pilot in command must advise ATC of a minimum fuel state when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome may result in landing with less than the fixed fuel reserve for the flight.

Note 1 The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than fixed fuel reserve. This is not an emergency

situation but an indication that an emergency situation is possible should any additional delay occur.

Note 2 Pilots should not expect any form of priority handling as a result of a MINIMUM FUEL declaration. ATC will, however, advise the flight crew of any additional expected delays as well as coordinate when transferring control of the aircraft to ensure other ATC units are aware of the flight's fuel state.

- (5) The pilot in command must declare a situation of ***emergency fuel*** when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the fixed fuel reserve for the flight. The pilot in command must declare an emergency fuel state by broadcasting MAYDAY, MAYDAY, MAYDAY FUEL.

Note The emergency fuel declaration is a distress message.

8 Fuel requirements for AOC holders and Part 141 operators — operational variations

- (1) A certificate holder's operations manual may include an operational variation relating to the calculation of any of the following:
 - (a) taxi fuel;
 - (b) trip fuel;
 - (c) variable fuel reserve;
 - (d) alternate fuel;
 - (e) additional fuel.
- (2) A certificate holder's operations manual may include an operational variation relating to the calculation of fixed fuel reserve for an aerial work operation in which the only occupants of the aircraft are flight crew members.
- (3) Subject to subsection (2), a certificate holder's operations manual must not include an operational variation relating to the calculation of holding fuel or fixed fuel reserve.
- (4) If the certificate holder's operations manual includes an operational variation mentioned in subsection (1) or (2), the certificate holder must give CASA evidence of at least 1 of the following which demonstrates how the operational variation will maintain or improve aviation safety:
 - (a) documented in-service experience;
 - (b) the results of a specific safety risk assessment conducted by the certificate holder that meets the requirements of subsection (5).
- (5) For paragraph (4) (b), a specific safety risk assessment must include at least the following:
 - (a) flight fuel calculations;
 - (b) the capabilities of the certificate holder, including:
 - (i) a data-driven method that includes a fuel consumption monitoring program; and
 - (ii) the use of sophisticated techniques for determining the suitability of alternate aerodromes; and
 - (iii) specific risk mitigating measures.
- (6) Subsection (7) applies if:
 - (a) the certificate holder's operations manual includes an operational variation mentioned in subsection (1) or (2); and

- (b) the certificate holder has met the requirement mentioned in subsection (4).
- (7) If, at a point in time, there is an inconsistency between a provision of this instrument and a provision of the certificate holder's operations manual, as it exists at the point in time, relating to the calculation of fuel in accordance with the operational variation, the provision of the certificate holder's operations manual prevails to the extent of the inconsistency.
- (8) Subsection (9) applies if, immediately before the commencement of this instrument, a certificate holder's operations manual contained an operational variation mentioned in subsection (1) or (2).
- (9) The certificate holder is taken to have met the requirement mentioned in subsection (4) for the operational variation until the earlier of the following:
 - (a) the certificate holder's current AOC or Part 141 certificate expires;
 - (b) 12 months after commencement of this instrument.

9 Fuel requirements for AOC holders — EDTO

For the avoidance of doubt, if the flight is an EDTO, the AOC holder must also comply with the requirements in clause 6 of Appendix 5 to CAO 82.0 as in force from time to time.

10 Fuel requirements for AOC holders — passenger-carrying and medical transport aeroplane operations to remote islands

- (1) The *minimum safe fuel* for an aeroplane undertaking a flight to a remote island is:
 - (a) the minimum amount of fuel that the aeroplane should carry on that flight, according to the operations manual of the aeroplane's operator; or
 - (b) if the operations manual does not make provision for the calculation of that amount — whichever of the amounts of fuel mentioned in subsection (2), worked out in accordance with subsections (3) to (7), is the greater.

Note AOCs authorising certain types of operations are subject to a condition that a passenger must not be carried on a flight to a remote island unless, when the flight commences, the aeroplane is carrying not less than the minimum safe fuel for the flight, see paragraph 3A.1 of CAO 82.0.

- (2) For paragraph (1) (b), the amounts of fuel are:
 - (a) the minimum amount of fuel that will, whatever the weather conditions, enable the aeroplane to fly, with all its engines operating, to its destination aerodrome on the remote island and then from the destination aerodrome to its destination alternate, plus any variable fuel reserve and fixed fuel reserve required under section 5; and
 - (b) the minimum amount of fuel that would, if the failure of an engine or a loss of pressurisation were to occur during the flight, enable the aeroplane:
 - (i) to fly to its destination aerodrome on the remote island or to its destination alternate for the flight; and
 - (ii) to fly for 15 minutes at holding speed at 1 500 feet above that aerodrome in ISA conditions; and
 - (iii) to make an approach and landing at that aerodrome.
- (3) Subject to subsection (6), if the aeroplane is a transport category aircraft, an amount of fuel mentioned in subsection (2) must be worked out using the

- performance data and fuel consumption data in the flight manual for the aeroplane.
- (4) Subsection (5) applies to an aeroplane that is not a transport category aircraft and for which:
- (a) the performance data:
 - (i) has been provided by the manufacturer of the aeroplane's airframe; or
 - (ii) is contained in the aeroplane's flight manual; or
 - (iii) is contained in the operations manual or exposition of the aeroplane's operator; or
 - (iv) is contained in the pilot's operating handbook for the aeroplane; and
 - (b) the fuel consumption data:
 - (i) is available from 1 of the sources mentioned in paragraph (a); or
 - (ii) has been provided by the manufacturer of the aeroplane's engines.
- (5) Subject to subsection (6), an amount of fuel mentioned in subsection (2) must be worked out using the performance data and fuel consumption data for the aeroplane obtained from the relevant source mentioned in subsection (4).
- (6) If any of the data mentioned in subsection (3) or (5) need to be amended because of the issue of a supplemental type certificate for the aeroplane, an amount of fuel mentioned in subsection (2) must be worked out using those data as so amended.
- (7) If neither subsection (3) nor (5) apply to the aeroplane, an amount of fuel mentioned in subsection (2) must be worked out using performance data and fuel consumption data for the aeroplane obtained during a flight test of the aeroplane carried out in an approved manner.

11 Fuel requirements for charter operation in certain sailplanes

The operator and the pilot in command of a power-assisted sailplane or powered sailplane engaged in a charter operation must ensure that the aircraft carries at least the fuel required to allow the aircraft's engine to be in operation during all times that the aircraft is out of gliding range of the aerodrome from which it took off.
