CIVIL AVIATION
SAFETY AUTHORITY
AUSTRALIA

CAAP 5.13-1 (0)

Civil Aviation Advisory Publication
September 2000

Private IFR rating

This publication is advisory only. It gives the preferred method for complying with the Civil Aviation Regulations (CAR 1988). It is not the only method, but experience has shown that if you follow this method you will comply with the CAR 1988.

Read this advice together with the appropriate regulation and Civil Aviation Order.

Contents ...

See listing on page 2

Relevant regulations and Orders

- CAR 1988 paragraph 5.13(ga)
- CAR 1988 subregulations 5.14(1) and (2)
- CAR 1988 regulations 5.17, 5.19, 5.20A, B and C.
- CAO 40.2.3

Why this publication was written

This CAAP has been written to explain the concept of the Private IFR (PIFR) rating, how it may be obtained and its practical application to flight under the IFR.

The information is targeted at pilots wishing to obtain the rating and persons and organisations who will be providing training and flight testing for the issue of the rating.

Status of this CAAP

This CAAP is intended to assist instructors, testing officers and applicants for the Private IFR rating in the initial stages of implementation. It is intended to incorporate any changes and/or additional explanatory material which may become evident as necessary during the initial period of operation. For this purpose, comments on the material contained in the CAAP are invited from users.

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Private IFR Rating

1. Introduction

1.1 The Private IFR Rating (PIFR) authorises the holder to act as pilot in command of flights under the IFR by day in single pilot aircraft having a MTOW not greater than 5700kg. There are four grades of PIFR, Single engine aeroplane, Multi-engine aeroplane, Single engine Helicopter and Multi-engine helicopter. A multi-engine rating authorises IFR flight in a single engine aircraft of the same category.

1.2 The rating allows for the whole of a flight to be conducted under the IFR but differs from the traditional instrument rating in that it limits the holder to flight in visual conditions, that is with a flight visibility of at least 5000 metres and clear of cloud when operating below LSALT. This means that climb and descent below LSALT, even though flown under the IFR, must be by visual reference.

1.3 Operations at or above the Lowest Safe Altitude (LSALT), Minimum Sector Altitude (MSA) or Minimum Vector Altitude (MVA) may be conducted in cloud. The ability to navigate using either NDB or VOR is essential for initial issue of the rating.

1.4 The rating allows for the holder to extend this capability by the addition of flight procedure authorisations (FPAs) which will allow for the use of additional types of navigation aids as well as night flying, instrument approaches and instrument departures.

1.5 FPAs may be obtained by passing the appropriate flight test at any time subsequent to the issue of the PIFR rating and will be endorsed in the pilot's log book. The full range of FPAs will enable a PIFR holder to undertake the same range of IFR procedures available to a Command Instrument Rating holder. However the rating may only be used in those categories of operation able to be flown by a private pilot.

1.6 All operations authorised by the PIFR are conducted under the IFR to the same procedures and standards which apply to other IFR aircraft conducting the same IFR operations.

1.7 The PIFR rating may only be used in those categories of operation which the holder of a Private Pilot Licence is authorised to undertake. PIFR holders may not use it to undertake any form of commercial operation under the IFR. The only exception is in the course of an aerial work flying training operation where the pilot is accumulating experience for the issue of a commercial pilot licence.

1.8 Because the rating does not conform to ICAO standards it is only available for use within Australia.

2. PIFR Rating and flight procedure authorisation (FPA) structure

2.1 The following table illustrates the grades of PIFR rating and flight procedure authorisations available. The ratings and flight procedure authorisations have been structured to ensure that PIFR holders have demonstrated competency in all of the operations which they are authorised to conduct under the IFR.

Rating	**Private IFR rating (PIFR)**
Grade of rating	Single-engine aeroplane (SEA) Multi-engine aeroplane (MEA) Single-engine helicopter (SEH) Multi-engine helicopter (MEH)
Type of activity	**Flight Procedure Authorisations (FPA)**
Navigation	Navigation using NDB, Navigation using VOR, Navigation using GPS, Navigation using DME.
Night flying	Night
Instrument Departures	Instrument departure (SE), Instrument departure (SE) SID Instrument departure (MEA), Instrument departure (MEA) SID Instrument departure (MEH), Instrument departure (MEH) SID
Instrument Approaches	IAL NDB, IAL VOR, GPS/NPA, DME or GPS Arrival, IAL ILS, IAL LLZ. (A visual circling FPA must be held before being issued with any instrument approach procedure FPA) (An MEA or MEH authorisation must be held to conduct any approach in that category of ME aircraft, as well as the appropriate rating)
Visual circling approach	Visual circling
Instrument approach in multi-engine aircraft	Instrument approach MEA Instrument approach MEH
STAR	STAR (To conduct STAR using aids for which a navigation FPA is held.)
Holding	NDB holding VOR holding GPS holding (Provides authorisation to conduct holding patterns when the particular instrument approach FPA is not held)

2.2 A FPA for navigation using either NDB or VOR must be obtained at the time of the PIFR flight test to be able to use the rating under the IFR.

2.3 However, a PIFR holder may add one or more flight procedure authorisations to enable the capability of the rating to be extended according to the holder's particular requirements. The full range of FPAs will provide an operational capability similar to the Command Instrument Rating for private operations.

2.4 FPAs gained on a single engine rating are also valid for use with a multi-engine rating, with two exceptions:

- A single-engine instrument departure FPA is not valid for use in a multi-engine aircraft. There are separate FPAs for multi-engine instrument departures for both aeroplanes and helicopters; and
- An instrument approach FPA is only valid for single-engine aircraft unless a multi-engine instrument approach FPA is also held. This FPA is a single authorisation covering engine failure procedures during an instrument approach and allows the holder to use any instrument approach FPA when flying multi-engine aircraft.

2.5 The FPA structure has been designed to ensure that competency is demonstrated for all procedures but to avoid duplication in testing wherever possible.

3. Requirements for rating issue

- Hold a PPL, CPL, ATPL, Special licence or Certificate of Validation.
- The minimum aeronautical experience for the issue of a PIFR rating is 20 hours instrument time, of which 10 hours must be dual instrument flight time in the category of aircraft for which the rating is sought. This 20 hours may include all instrument time accumulated in the course of training for a pilot licence, a NVFR rating or other type of instrument rating. Up to 10 hours may be accumulated in an approved synthetic flight trainer under instruction from an authorised flight instructor.
- Pass a written examination based on the aeronautical knowledge syllabus at Appendix 1 or pass the CASA IREX examination.

- Be recommended for the PIFR rating flight test by the Chief Flying Instructor of an approved instrument training flying school.
- Pass the PIFR rating flight test. Appendix 1 contains the PIFR syllabus of training and flight test forms for both the PIFR rating test and FPA tests.

Or

- Hold a command instrument rating, in which case a PIFR of equivalent grade and with equivalent FPAs will be issued without the requirement for a test.

Note: Holders of an expired CIR must pass the PIFR flight test.

4. Flying Training

4.1 The minimum aeronautical experience specified for the PIFR rating is 20 hours of instrument time which includes at least 10 hours of dual instrument flight instruction in the category of aircraft for which the rating is sought. The 20 hours may also include experience gained in the actual flight test, although this cannot be counted as dual instruction. Instrument time gained during training for a PPL, CPL, NVFR rating or CIR may be included in the 20 hours.

4.2 All training for the PIFR (other than that obtained while training for a licence or rating) must be conducted by an instructor who is authorised to conduct training for the Command Instrument Rating (CIR) in the appropriate category of aircraft and must be done in association with a flying school approved to conduct training for the CIR.

4.3 Training should be aimed at achieving the standard specified in the syllabus rather than within a minimum number of hours. The syllabus for the PIFR, written in competency format, is found at Appendix 1 of this CAAP. The standard is clearly defined and the basis of assessment is given in the assessment guide so that student and instructor are both aware of what has to be achieved in all elements required for the flight test.

4.4 It is recommended that as much training as possible be conducted under the IFR. Exposure to the IFR environment is particularly important as is exposure to actual IMC conditions during training. It is possible, due to varying circumstances, that a rating could be gained without the holder having flown in anything other than simulated IMC. Any pilot gaining a rating without actual IMC exposure would be well advised to seek an instructor or another experienced IFR pilot to accompany their first flight in real IMC.

5. Flight test standards

5.1 The rating test and all flight tests for FPAs must be conducted in an IFR aircraft of the appropriate category under the IFR. The flight test for a multi-engine rating must be conducted in a multi-engine aircraft of the same category.

5.2 The PIFR test may be conducted by an ATO approved to test for instrument ratings or a CASA FOI.

5.3 For initial issue of the PIFR rating, the only flight procedure authorisations which may be included in the flight test are navigation using NDB, VOR and DME. If the test is conducted at night, a night FPA may also be issued.

5.4 Additional FPAs may be tested subsequent to the initial issue of the rating but not during the actual PIFR rating test. There is no limit to the number of FPAs that may be tested in one flight after the rating has been issued.

5.5 The PIFR Syllabus at Appendix 1 contains two flight test forms. The first is applicable to the rating test and those FPAs which may be included in the test. The second form is used to record the test for the issue of additional FPAs to a PIFR holder. The flight test for each grade of PIFR rating must test all items listed on the form for the rating test regardless of other grades of rating held, however flight procedure endorsements do not need to be retested if already issued for another grade of rating.

6. Aeronautical knowledge standards

6.1 Prior to attempting a flight test for the issue of a rating or a FPA it is necessary to pass a written test in aeronautical knowledge relevant to the authorisation sought. A pass in the CASA IREX examination meets the requirement for the knowledge test for the PIFR rating and all FPAs.

6.2 Alternatively the CFI of the training school who issues the flight test recommendation may set a written examination for the grade of PIFR or the FPA to be tested.

6.3 Details of the knowledge syllabus and the written test are to be found in Part 3 of Appendix 1, the PIFR Aeronautical Knowledge Syllabus. Sample examination questions will be posted on the CASA website.

7. Issuing qualifications

7.1 A delegate under regulation 5.14 of CAR 1988 may issue a Private IFR Rating if the applicant meets all of the requirements for issue as specified in CAO 40.2.3, by entering the rating in the pilot's log book in the same way as other ratings are entered. The form of the entry must be:

- Private IFR rating- multi-engine aeroplane; or
- Private IFR rating- single-engine aeroplane; or
- Private IFR rating- multi-engine helicopter; or
- Private IFR rating- single-engine helicopter.

7.2 The following Flight Procedure Authorisations must also be entered in a Private IFR rating holder's log book when the holder has met the requirements for issue.

- Navigation using NDB;
- Navigation using VOR;
- Navigation using GPS;
- Navigation using DME;
- Night;
- Instrument departure (SE);
- Instrument departure (SE) SID;
- Instrument departure (MEA);
- Instrument departure (MEA) SID;
- Instrument departure (MEH);
- Instrument departure (MEH) SID;
- IAL NDB;
- IAL VOR;
- GPS / NPA;
- DME or GPS Arrival;
- IAL ILS;
- IAL LLZ;
- Visual circling;
- Instrument approach MEA;
- Instrument approach MEH;
- STAR;
- NDB holding;
- VOR holding;
- GPS holding.

8. Issue of PIFR to CIR holders

8.1 The holder of a current grade of command instrument rating may be issued with an equivalent grade of PIFR without a test. Application for the issue of a PIFR may be made using the PIFR flight test form. Equivalent FPAs will also be issued. The holder of a CIR may use the PIFR rating without having undertaken a PIFR flight review. However the CIR flight test does NOT automatically substitute for the PIFR flight review if the CIR expires. CIR holders who wish to allow their CIR to expire and continue to use the PIFR rating should ensure that

the person who conducts the CIR flight test also certifies their log book for the completion of a PIFR flight review at the same time.

8.2 The following tables list the FPAs which will be issued to a CIR holder.

FPAs which may be issued for grades of CIR

	All Grades of CIR	**CIR MEA**	**CIR MEH**
FPAs which may be issued for Grade of CIR	Navigation using NDB NDB Night NDB holding; Instrument departure (SE) Instrument departure (SE) SID Visual circling IAL NDB	Instrument departure (MEA) Instrument departure (MEA) SID Instrument approach (MEA)	Instrument departure (MEH) Instrument departure (MEH) SID Instrument approach (MEH)

FPAs which may be issued for CIR endorsements

CIR Endorsement	**Equivalent FPAs**
GPS/NPA	Navigation using GPS GPS holding GPS/NPA
ILS	IAL ILS IAL LLZ
LLZ	IAL LLZ
VOR	Navigation using VOR VOR holding IAL VOR
DME or GPS arrival procedure	DME or GPS Arrival

9. Add-on FPAs

9.1 PIFR holders will be able to add further Flight Procedure Authorisations to the PIFR rating by undertaking a separate flight test after initial issue of the rating. There is no limit to the number of FPAs held, nor is there any limit to the number that may be tested in one flight subsequent to the issue of the rating.

9.2 Some FPAs require that the pilot also hold another FPA. For example a pilot holding an instrument approach FPA must also hold a visual circling FPA before conducting an instrument approach under the IFR. The intent of such arrangements is to remove the necessity for testing procedures which are common to other FPAs more than once.

9.2 The content of the FPA flight tests is contained in the syllabus in Appendix 2 of this CAAP.

9.3 The following is a brief explanation of the various FPAs and what they authorise the holder to do.

9.3.1 NAVIGATION USING DME

Issuing the DME FPA will require demonstration of the ability to use DME to provide distance information while using another navigation aid for tracking and for meeting position fixing requirements. The ability to fly a DME arc must also be demonstrated. The FPA may be tested during the rating test for initial issue. DME homing procedures are not required to be demonstrated during the flight test but must be covered during training.

9.3.2 NAVIGATION USING GPS

The Navigation using GPS FPA may be issued using one of two procedures:

- issue the FPA on the basis of a flight test as specified in the Syllabus, or
- on the basis of a log book certification showing completion of the course of training specified in CAO 40.2.1 para 13.7(a) and (b).

Note: The FPA must be entered in the pilots log book. The certification under CAO 40.2.1 alone does not authorise a PIFR holder to use GPS for navigation.

9.3.3 NIGHT

(1) The night FPA will authorise flight under the IFR at night using the basic rating and other FPAs held, which are otherwise limited to daytime. The night FPA only authorises flight at night under the IFR and does not include NVFR procedures. However the holder of a NVFR rating will qualify for the night FPA without further test.

(2) The FPA may be issued on the basis of a PIFR rating test held at night or on the basis of a separate test of night flying. The test must include take-off, landing and baulked approach at an aerodrome remote from extensive ground lighting as well as IFR operations at night. This requirement is to ensure that the holder can control the aircraft at night solely by reference to instruments and without assistance from visual cues provided by ground lighting. This subject

is discussed further in the section on visual and sensory illusions

(3) Using the night FPA with the basic PIFR rating will require the pilot to conduct visual departures and arrivals, clear of cloud. Because terrain clearance has to be maintained visually, climb to and descent from LSALT must be conducted within the circuit area at night.

(4) The night FPA, once obtained, will apply to both the single and multi-engine PIFR. This is because the holder of a multi-engine PIFR will have already demonstrated competence in engine failure procedures by reference to instruments in the multi-engine PIFR test. Demonstration of engine failure on take-off at night will not be a requirement.

9.3.4 INSTRUMENT DEPARTURES

(1) The purpose of these FPAs is to allow PIFR rating holders to take-off using the standard take-off minima specified in AIP ENR 1.5 - 4 and climb in cloud to LSALT.

(2) Instrument departure FPAs from aerodromes without SIDs require the pilot to plan and fly a departure route which assures terrain clearance while climbing to LSALT in cloud.

(3) There are separate FPAs for multi-engine aeroplanes and helicopters because these aircraft have the additional requirement to be able to maintain terrain clearance with reduced climb performance in event of engine failure and to be able to proceed to another aerodrome or return to the departure aerodrome in that event. For the multi-engine FPA the pilot must also demonstrate the ability to cope with engine failure after take-off by reference to instruments.

(4) The SID/SRD FPAs cover the pilot's ability to fly published SID or SRD procedures in single or multi-engine aircraft while maintaining terrain clearance and allowing for engine failure in multi-engine aircraft.

9.3.5 HOLDING

(1) While the PIFR rating requires that the holder is able to conduct some form of holding procedure, it does not require the ability to fly a published holding pattern. PIFR holders flying routes in controlled airspace may be required by ATC to hold and will need to be able to carry out the published holding pattern to maintain separation from other aircraft.

(2) Therefore PIFR holders planning to enter controlled airspace must obtain a holding pattern FPA. Instrument approach FPAs include the ability to fly the relevant holding pattern, so a separate holding pattern endorsement is not necessary if the instrument approach FPA is held.

9.3.6 INSTRUMENT APPROACHES

(1) Each instrument approach FPA authorises the conduct of the instrument approach procedure in single-engine aircraft by day. To use any instrument approach procedure under the IFR, the separate visual circling FPA must also be held. This allows for the circling approach procedure to be tested once only and it is then applicable to all other instrument approach FPAs

(2) Similarly, the multi-engine FPA allows multi-engine instrument approach procedures to be tested once and then be applicable to all other instrument approaches.

(3) A night FPA will allow instrument approaches to be conducted at night, including night circling approaches.

(4) The flight test for an instrument approach FPA will include transition from the cruise phase of flight to the approach phase, which normally commences outside the 25nm radius of the approach aid. It will include sector entry and holding patterns, the approach procedure itself and the missed approach procedure.

9.3.7 VISUAL CIRCLING APPROACH

All instruments approaches allow for a visual circling approach to be performed from the circling minima if a straight in approach to the landing runway is not available. To remove the need to test this component for every instrument approach FPA, a separate FPA for visual circling has been included which only has to be tested once. To use any instrument approach FPA under the IFR, a PIFR holder must also hold a Visual Circling Approach FPA.

9.3.8 DME OR GPS ARRIVAL

The DME or GPS Arrival procedure is an instrument approach procedure using either NDB or VOR for tracking and either DME or GPS to give distance information. To conduct a DME or GPS Arrival procedure the pilot must not only hold the DME or GPS Arrival FPA but also the navigation FPA for each of the navigation aids being used. Therefore an FPA for navigation

using an NDB or VOR must be held to use either of these tracking aids for the approach. In addition, a DME FPA must be held to use DME for distance information or a GPS FPA to use GPS for this purpose.

9.3.9 MULTI-ENGINE INSTRUMENT APPROACH

Instrument approach FPAs are limited to use in single engine aircraft unless the appropriate FPA authorising instrument approaches in multi-engine aircraft is held. Again the intent is to test the multi-engine procedures required for instrument approach once only, rather than for every instrument approach FPA. Once the multi-engine FPA is achieved, all other instrument approach FPAs which the pilot holds may be flown in a multi-engine aircraft. The test for the multi-engine instrument approach FPA will include engine failure procedures during an instrument approach and a missed approach. There is a separate FPA for multi-engine aeroplanes and helicopters.

10. Operational planning requirements

10.1 The most important concept for PIFR holders to grasp is that the PIFR enables the flight to be planned and conducted wholly under the IFR. The visual segments below LSALT need to be flown under the IFR because above 3000 feet altitude (or above 1000 feet AGL) VMC requires 1000 feet vertical clearance from cloud. The PIFR authorises flight with less than this vertical clearance and such conditions constitute IMC. Such flight must therefore be conducted under the IFR even though the pilot will be flying by visual reference.

10.2 The other important concept is that the PIFR has not changed any IFR operational procedures and requirements. A PIFR holder will be operating to the same instrument flight rules and standards as other IFR aircraft conducting the same operations.

10.3 Aircraft used for PIFR operations must be authorised on the aircraft maintenance release for IFR operations and aircraft equipment must include serviceable instruments as specified in CAO 20.18 Appendix IV for private operations under the IFR.

10.4 Serviceable radio navigation and communication equipment must meet the requirements specified in AIP Gen 1.5-1 and AIP Gen 1.5-2 for private operations and be approved for IFR use.

10.5 A full pre-flight briefing as specified at AIP ENR 1.10 para 1 is essential to any IFR flight. The briefing must include as a minimum an area forecast covering the route to be flown and aerodrome forecasts (where available) for the aerodromes to be

used. The forecasts must be valid for the time of the flight and should be updated if obtained more than one hour before departure.

10.6 NOTAM briefing must be obtained for all aerodromes, radio navigation aids and airspace to be used.

10.7 Flight notification as specified for an IFR flight at AIP ENR 1.10 para 2 must be submitted.

10.8 The route to be flown must comply with the navigation requirements of AIP ENR 1.1 para 17.1 and the position fixing requirements of AIO ENR 1.1 para 17.4.6.

10.9 LSALT for route segments should be obtained from routes shown on ERC or for other routes by using the method specified in AIP 3.2-3. Where an aerodrome has a published instrument approach procedure, the published MSA may be used instead of route LSALT while the aircraft is established within the appropriate sector. If being radar vectored by ATC, the MVA may be used.

10.10 Pilots of aircraft not approved for flight in icing conditions should not plan to fly a route where freezing level is forecast to be below LSALT and the flight will have to cruise at a level which has more than forecast scattered cloud.

10.11 Pilots of multi-engine aircraft should not plan to fly over a route where LSALT is higher than the aircraft's single engine service ceiling.

10.12 Where ATC route limitations are shown on an ERC, an alternative route should be planned if the flight is within CTA unless prior approval has been obtained from ATC.

11. Flight Notification

11.1 Flight notification must be by way of an IFR flight notification as per AIP ENR 1.10 and safe practice is to plan the entire flight under the IFR. This allows time to plan all facets of the flight thoroughly and to obtain and review the meteorological forecasts and to carry sufficient fuel to allow for alternate and holding requirements.

11.2 An unplanned change from VFR to IFR category enroute is allowed, but thorough pre-flight planning makes IFR flight less stressful and important items are less likely to be overlooked.

11.3 A VFR flight may change to IFR category and vice versa by submitting the required flight notification by radio but the

pilot must also obtain the current met forecasts and NOTAMs applicable to the flight . Such in-flight category changes may be difficult on a congested frequency and may take some time for ATS to process.

11.4 All IFR flights operate to full position reporting procedures which means that SARWATCH is dependent on receipt of departure, enroute position and arrival reports at +/- 2 minutes of estimated times. Traffic information provided by ATS to and about other IFR flights is also dependent on receipt of accurate reports.

11.5 The standard domestic flight notification form requires pilots to nominate the radio navigation aids fitted to the aircraft which the pilot is qualified to use. For command instrument rating holders, nomination of a navigation aid indicates that the pilot is capable of conducting an instrument approach procedure using that aid. However this is not necessarily the case for the PIFR holder who may only have a navigation capability. There is no facility on the form for the PIFR holder to indicate that instrument approach capability is not available and therefore ATC will not be aware of this limitation unless informed by the pilot.

11.6 PIFR holders will be able to operate to and from aerodromes in controlled airspace but they will need to inform ATC when requesting a clearance if they are limited to visual procedures. When departing, a visual departure should be requested with airways clearance prior to take-off or prior to start up to avoid delays.

11.7 When arriving, pilots should request a visual approach with the airways clearance request before entering CTA. This will allow ATC to direct the flight to a position from which a visual approach may be conducted. Failure to notify ATC early may result in extended delays to the flight. PIFR holders must be familiar with the requirements for conducting a visual departure and a visual approach as specified in AIP.

11.8 PIFR holders must also understand that it is their responsibility to inform ATC when visual procedures are required and to decline clearances such as SID procedures or instrument approaches which they are not qualified to use. PIFR holders will need to be familiar with procedures for conducting visual approaches and visual departures as they apply in CTA.

12. Alternate and holding requirements

12.1 Operational (alternate and holding) requirements are a particularly important aspect of planning any IFR flight. Weather related operational requirements are designed to allow

for flight to a destination where weather is forecast to be close to or below the minimum altitude and/or visibility required to establish visual reference. In such a situation extra fuel is carried to allow for diversion to an alternate aerodrome or to hold until conditions improve.

12.2 PIFR holders must meet the same operational planning requirements that apply to other IFR flights. These are specified at AIP ENR 66.1 in regard to three areas of consideration:

- weather (AIP ENR 1.1-66.2)
- availability of radio navigation aids (AIP ENR 1.1-66.3); and,
- aerodrome lighting (for night operations) (AIP ENR 1.1-66.4)

12.3 For a PIFR holder who does not have an instrument approach FPA, the alternate requirement for the destination aerodrome will be that which applies to an aerodrome without a radio navigation aid or published instrument approach procedure.

12.4 For such an aerodrome, flight to an alternate must be provided for if the last route segment inbound to the destination has a forecast which includes more than 4 OKTAS of cloud at a height less than 500 feet above the LSALT/MSA for that route segment, or a flight visibility of less than 8000 metres. An aerodrome nominated as an alternate must not itself require an alternate, although a holding requirement is acceptable.

12.5 Holders of an instrument approach FPA may use the alternate minima shown on the appropriate instrument approach chart which are normally considerably lower than those based on the LSALT or MSA, thus permitting flight in more adverse conditions. For private operations, only one navigation aid is required at the destination which the pilot is able to use to conduct an instrument approach.

12.6 An alternate may be required for flight to an aerodrome at night due to the type of aerodrome lighting available. These requirements for aerodrome lighting are the same as those which apply to all other IFR and NVFR flights and are found at AIP 1.1 - 69 para 66.4

12.7 When calculating fuel requirements for a flight pilots should include all fuel required for flight to destination and alternate plus reserves and any holding fuel. CAAP 234-1(0) contains guidance in establishing the quantity of fuel required to meet these requirements. Careful operational planning is the

basis of IFR operations and requires careful study of all current forecasts and other information regarding the destination aerodrome.

12.8 In calculating fuel requirements it is important that the holding configuration for best endurance for the aircraft is known. Pilots should be aware of the fuel consumption rate achieved in the holding configuration and use it for fuel planning when holding is anticipated. Use of the appropriate holding configuration and fuel consumption rate can extend holding endurance considerably.

13. Operational Application of PIFR rating

This section outlines procedures which apply to a PIFR holder who does not hold any FPA authorising other than navigation using NDB, VOR, DME or GPS.

13.1 TAKE-OFF AND CLIMB PHASE

(1) The PIFR holder may conduct the entire flight from take-off to landing as an IFR flight. However while operating below LSALT the holder is limited to flight conditions of 5000 metres visibility and clear of cloud.

(2) PIFR holders should be aware that above 3000 feet AMSL (or up to 1000 feet AGL), VMC requires 1000 feet vertical clearance from cloud.

(3) Therefore, 5000 metres flight visibility and clear of cloud can constitute IMC, even though the pilot is flying visually. The vertical separation from cloud is intended to provide a buffer between VFR aircraft and IFR aircraft which may be descending through cloud. It is important therefore, for the provision of traffic separation from other IFR aircraft, that the climb and descent phases of flight be conducted to an IFR flight plan unless it can be conducted in actual VMC, including the 1000 feet vertical separation from cloud.

(4) The PIFR does not authorise take-off in IMC unless an instrument departure FPA is held. A PIFR holder operating to an IFR flight plan must take-off in VMC and climb to LSALT while maintaining 5000 metres flight visibility and clear of cloud. It is the responsibility of the pilot to ensure safe terrain and obstacle clearance as well as traffic separation while carrying out this procedure. The pilot should plan the departure track to meet this requirement.

(5) When departing from an aerodrome with ATC on an IFR flight plan the pilot must request a visual departure as specified in AIP ENR 1.1-6.

13.2 CRUISE PHASE

(1) All flight at or above LSALT for the route segment being flown may be conducted in cloud.

(2) Navigation is conducted in accordance with any of the navigation procedures specified for IFR at AIP ENR 1.1-17.1 and track keeping and position fixing is in accordance with AIP ENR 1.1-17.4.

(3) Flight must be conducted at IFR cruising levels and the pilot is responsible for separation with other IFR traffic when operating outside controlled airspace.

13.3 DESCENT PHASE

(1) Descent below LSALT requires visual reference from LSALT.

(2) The visual approach procedures of AIP ENR 1.5-1.12 apply to all flights operating under the IFR.

(3) If visual reference is not established inbound to destination a pilot should consider the following options depending on the circumstances:

- Divert to an alternate aerodrome; or
- Hold and wait for an improvement in conditions; or
- Fly on a different track where conditions may be better; or
- Fly on a different track with a lower LSALT; or
- Descend to MSA where available.

(4) When planning the flight, consideration should be given to providing for an alternate aerodrome even if forecast conditions may not require it. Consideration should also be given to which are the best available options for establishing visual reference at the particular destination aerodrome.

(5) The pilot should also be aware that other IFR traffic may be in the area and that any procedures adopted must include provision for maintaining separation.

(6) Under conditions where a pilot is attempting to establish visual reference, it is important to monitor the fuel state and

be aware of the latest time at which a diversion to an alternate aerodrome may be commenced.

(7) In an emergency request assistance from ATS and or other aircraft while sufficient fuel remains to take appropriate action.

13.4 DIVERSION

(1) The decision to divert must always be made in time to allow for sufficient fuel to reach the alternate aerodrome with required reserves and any holding fuel requirement intact.

(2) Diversion to an alternate aerodrome will require LSALT for that route to be established as well as the means of navigation.

(3) The alternate aerodrome should be one at which conditions are known to be suitable to establish visual reference and land without any requirement for an alternate for that aerodrome.

(4) When OCTA, ATS must be notified of diversion details in time to provide traffic information to aircraft affected. In CTA a clearance must be obtained.

13.5 OPERATIONS IN CONTROLLED AIRSPACE

(1) A PIFR holder who is a private pilot is limited to flying OCTA unless authorised by an appropriate logbook entry for the type of airspace. However all PIFR holders will be required to demonstrate competence in procedures for operating in CTA. This requirement is considered necessary because of the possible necessity for diversion into CTA, even for a flight which has not planned to enter it.

(2) Applicants for the PIFR rating will be required to demonstrate entry and exit from controlled airspace in the flight test. This requirement may be demonstrated in E airspace. There will also be a requirement to demonstrate arrival at a controlled aerodrome, however this aspect may be simulated during flight where the test is conducted in an area remote from a controlled aerodrome.

(3) The PFIR by itself does not authorise a PPL holder to operate in CTA, however it should make the holder eligible for the appropriate log book entries to be made.

13.6 HOLDING

(1) PIFR holders are not required to demonstrate proficiency in holding patterns. However IFR flight will inevitably require some form of holding procedure to be used while waiting for weather to clear or while making a decision whether or not to divert. Therefore the rating test will require demonstration of some form of holding procedure which can be safely used to hold for a period of time and to maintain safe clearance from terrain and other traffic. This may simply involve flying outbound from a navigation aid on a particular track for a given time or distance and then returning. However the pilot will be expected to be aware of his or her position at all times and to be able to arrange separation with other IFR traffic.

(2) Where a route is flown in controlled airspace and a holding pattern is shown on that route or at the destination, then the pilot will be required to have a holding pattern FPA to enable compliance with ATC procedures.

(3) The test for an instrument approach FPA will include a demonstration of the holding pattern associated with that instrument approach procedure and will also authorise the pilot to fly holding patterns using that aid.

13.7 TRAFFIC SEPARATION

(1) Maintaining separation from other traffic is an important aspect of IFR flight and IFR flight notification is the basis for providing this separation.

(2) PIFR holders must make IFR flight notification and operate on full position reporting procedures. In Class G airspace this enables ATS to provide traffic information to other IFR flights. Pilots are then responsible for arranging their own separation with conflicting traffic. However, ATS does not provide traffic information on or to VFR flights in G airspace, so IFR pilots must still maintain a lookout when operating in visual conditions.

(3) In Class C and D airspace, ATC will provide separation with all other flights but in Class E, separation will only be provided with other IFR traffic. Separation is not normally provided at all at GAAP aerodromes when conditions are VMC.

(4) The most congested airspace in Class G is likely to be in the vicinity of a radio navigation aid when weather conditions require an instrument approach at a particular aerodrome. In these conditions it is important to be on the alert for other

traffic inbound, holding or conducting an instrument approach procedure.

(5) Pilots should be aware that an aircraft conducting an instrument approach may well have to make a missed approach if visual reference is not obtained at minima. This will entail that aircraft climbing in the missed approach procedure back to the minimum altitude for holding.

(6) PIFR holders not capable of conducting an instrument approach should be ready to clear the area of the holding pattern to allow other aircraft above to descend through their level. This might entail flying outbound on a particular track which is clear of the holding pattern and approach procedure and should be arranged by radio as necessary with the other aircraft involved.

13.8 SEVERE WEATHER AVOIDANCE

(1) An instrument rating does not give immunity from severe weather. Flight in IFR conditions tends to increase the risk of exposure to such phenomena and most weather hazards still need to be avoided wherever possible.

(2) Thunderstorms should always be avoided if at all possible. The associated hazards, all of which may have severe consequences, are severe turbulence, hail, airframe icing and lightning. Pilots flying in cloud are at a disadvantage because embedded thunderstorms may be difficult to detect and avoid. Weather radar and storm detectors may help but are generally not available in smaller aircraft. The best precaution is to avoid flying in cloud where thunderstorms are forecast, in the clear they are easier to see and avoid.

(3) Pilots should be familiar with the correct flying technique if a thunderstorm is inadvertently entered. Power should immediately be reduced to achieve the specified turbulence penetration speed. If not listed in the flight manual, this will normally be the aircraft's manoeuvring speed. Flying at this speed provides the best compromise between the risk of exceeding structural load factors and that of a gust induced stall. Maintain a level flight attitude and allow altitude and airspeed to vary as necessary to minimise structural loads. Generally it is not wise to attempt to turn back out of the storm. Turning gives higher wing loadings and a greater risk of loss of control. Besides, the size of thunderstorms is such that a quicker exit will probably be made by maintaining heading rather than by turning back.

(4) Remember that hail is a risk with any thunderstorm and may be blown clear of the cell and encountered in clear air. For this reason it is good policy to maintain as much distance as possible from the storm, particularly downwind of a cell.

(5) Lightning may also be encountered outside the storm cell as the aircraft structure is a very good attractor of static electricity. A lightning strike may not be disastrous but could cause loss of radios and electrics and temporary blindness at night unless cockpit lighting is kept bright.

(6) The gust front associated with a thunderstorm can cause sudden wind changes at low level and severe windshear which is especially hazardous during instrument approach and landing.

(7) Microbursts, whether associated with thunderstorms or not are also potentially hazardous due to severe downdraughts which can easily exceed the climb performance of an aircraft. It should be recognised that the first indication of entering a microburst will usually be increased performance due to a headwind and rising air at the periphery of the burst. However this will quickly change to severe downdraught and windshear as the microburst is penetrated.

(8) Airframe icing is a particular hazard and must be avoided where possible at the planning stage of flight. Do not plan over routes where the freezing level is below LSALT and there is significant forecast cloud. If icing is encountered in flight, climb or descend quickly to avoid it and divert if necessary to a route where the LSALT is lower. Airframe icing can build up very rapidly in flight, often in areas like the tailplane which are not visible to the pilot, so take immediate action if you find yourself in this situation. Aircraft without anti-icing equipment should never be flown into known icing conditions and even aircraft with anti-icing or de-icing do not have equipment designed to cope with more than a moderate build up.

(9) Carburettor icing will be a particular hazard for pilots of smaller aircraft. Any flight in visible moisture (cloud) has the potential for carburettor icing. Pilots should always be on the alert and ready to apply full carburettor heat quickly in the event of any sign of icing. A carburettor temperature gauge is a good investment for any aircraft owner contemplating IFR flight in an aircraft fitted with a carburettor.

14. Maintaining competency and recency

14.1 IMC EXPERIENCE

The PIFR training syllabus allows all training for the rating to be undertaken under simulated instrument conditions. However, it is strongly recommended that PIFR holders seek to experience as much of their training as possible in IMC conditions or at least have exposure to real IMC with an instructor after rating issue, before undertaking solo flight in IMC.

14.2 RECENCY GUIDELINES

(1) The requirement for instrument rating holders to have recent experience before acting as PIC under the IFR is well accepted. However, because of the vast differences in the levels of experience and the types of operation likely to be undertaken by PIFR holders, the rating does not specify any particular recency requirements. The holder is solely responsible to ensure that he or she is fully competent to undertake any IFR flight.

(2) Recent experience is essential to competency in IFR operations because the skills required quickly degrade if not practised regularly. The recent experience requirements of the command instrument rating (CAO 40.2.1 para 11) should be used as guidance as to what minimum recent experience is likely to be required. Pilots are free to make use of synthetic trainers, personal computer simulation programs and any other activity in which appropriate skills are practised and these can be valuable aids to maintaining skill levels. However there is no activity which can fully substitute for actual flight experience, except perhaps full flight simulators, but these are generally not available or suitable for single pilots of light aircraft.

(3) Actual instrument flight under the IFR obviously provides recency, but only while flying by sole reference to instruments. Without such recent practice, PIFR holders may need to undertake recency flying with a qualified flight instructor, or under simulated conditions in VMC with a safety pilot. However when flying with safety pilot it should be quite clear who is pilot in command and the safety pilot must have an adequate view outside the aircraft in order to maintain visual separation from other traffic.

14.3 PRIVATE IFR FLIGHT REVIEW

(1) The PIFR remains valid as long as the holder maintains a valid pilot licence. However CAR 5.17A requires that a PIFR holder must have completed a Private IFR Flight Review in the 24 months prior to undertaking a flight as PIC under the IFR. The flight test for the grade of PIFR meets this requirement for the initial 2 year period but a flight test for an FPA does not. However a PIFR flight review may include a flight test for an FPA.

(2) The PIFR flight review must be conducted for the grade of PIFR rating and for the FPAs held by the pilot. If a pilot holds a multi-engine aeroplane grade of rating, the flight review must be conducted in a multi-engine aeroplane and cover all those elements relating to multi-engine aeroplanes.

(3) A flight test for a CIR does not automatically substitute for the private IFR flight review. However the ATO who conducts the CIR flight test may enter successful completion of a PIFR flight review in a PIFR holder's log book based on the successful completion of the CIR test. PIFR holders who wish to use the CIR flight test as a PIFR flight review should ensure that the ATO makes the appropriate entry in the log book.

(4) The Private IFR flight review must consist of a review of all the items in the PIFR rating flight test and those applicable to each FPA held. The review is not a test and additional training may be given on any item during the review until the required standard is achieved.

(5) The review must be conducted by a person authorised to conduct aeroplane or other flight reviews who is also authorised to give instruction for the command instrument rating.

(6) The instrument flight review does not, by itself, substitute for other flight reviews such as the aeroplane flight review. However, at the discretion of the person conducting the review, any additional items applicable to, say, the aeroplane flight review may also be covered and both flight reviews accomplished in the one flight. Each review would then be separately entered in the pilot's log book.

15. Human factors

15.1 ERRORS

It must be recognised that errors are an inevitable part of human behaviour. IFR flying demands that pilots develop and use standard operating procedures and checklists to guard against

and to identify any errors or omissions which might be expected to occur, before safety of flight is affected.

15.2 SITUATIONAL AWARENESS

(1) Situational awareness is the knowledge of all the factors which may affect or be likely to affect the flight and requires the pilot to monitor all sources of relevant information and the ability to use this information to make appropriate decisions.

(2) Pilots should use all sources of information available by obtaining thorough pre-flight briefings, and seeking information from ATS or other aircraft as necessary during flight. Wherever possible instrument indications, particularly navigational and altitude information should be cross-checked to confirm accuracy. Avoid fixating on one particular facet of the operation to the exclusion of others.

15.3 SINGLE PILOT TASK MANAGEMENT

(1) The task of flying single pilot IFR in a light aircraft is probably one of the most demanding in aviation and requires pilots to be able to plan ahead to avoid periods of workload which would exceed the pilot's capability. Pre self briefing before commencing any complex procedure is essential to safe operation. Take-off or commencing an approach are two examples of situations where the pilot must develop a standard format for determining the exact procedures which will be followed prior to commencement.

(2) In periods of high workloads pilots must be able prioritise tasks so that the most important are not overlooked. There are many instances of accidents caused by pilots fixating on one task to the exclusion of basic items like monitoring altitude or fuel remaining. The old adage "aviate, navigate, communicate in that order" still holds good.

(3) The most immediate task for any IFR pilot is to know what heading and altitude to maintain at any given time.

15.4 STRESS/FATIGUE

(1) PIFR holders should be able to recognise the symptoms of stress and fatigue as they affect them personally and whether such symptoms relate to an acute or a chronic

condition. Avoid flying when such factors exist until the condition has been alleviated.

(2) Pilots can avoid fatigue by getting adequate rest before a flight and realising that IFR flying can be demanding and stressful. For instance, do not expect to be able to do a full day's work and then be able to undertake a demanding IFR flight without your performance being adversely affected.

(3) Try to avoid situations where external pressures from business or personal commitments demand that the flight be conducted absolutely to schedule. Make arrangements which allow for proper flight planning, unexpected adverse weather or aircraft unserviceabilities. You will then be in a situation which allows you to make a decision on the continuation of the flight based on the essential operational factors rather than external pressures.

(4) It goes without saying that drug and alcohol consumption should be absolutely avoided before and during a flight. This includes prescription drugs or other medication unless approved by your DAME.

15.5 SENSORY ILLUSIONS

(1) Pilots flying in IMC without, or with only limited, visual reference are likely to experience both sensory and visual illusions. These illusions can be very powerful and any pilot intending to fly under the IFR should be familiar with the sensations involved and be able to overcome them.

(2) Sensory illusions are caused by the balance mechanisms of the body being unable to distinguish between normal gravitational forces and those produced by the accelerative forces acting on the aircraft in normal and abnormal flight.

(3) The primary means of overcoming sensory illusions during instrument flight is to ignore physical sensations and to maintain orientation by reference to the flight instruments. Correct instrument scanning technique is crucial to the success of this strategy. The attitude indicator or artificial horizon should replace the natural horizon as the primary source of attitude information. The performance instruments (ASI, ALT and VSI) are used in the same way as in visual flight to confirm that the attitude being maintained is producing the desired aircraft performance.

(4) When using the attitude indicator the pilot should be positively aware that when the instrument is functioning

correctly the horizon bar will always be level with the horizon and the aircraft symbol will correspond to the attitude of the aircraft in roll and pitch. Pilots should be on their guard to avoid a reversal of this interpretation which can have disastrous results. Using the attitude indicator correctly is a very effective way of overcoming sensory illusions.

(5) Light aircraft being flown under the IFR in the private category need only be equipped with one attitude indicator and one power source (normally a vacuum pump) to power that gyroscopic instrument. If either fails then the pilot has no direct source of attitude indication. PIFR holders should ensure that they acquire and maintain the skills required to fly on limited panel instruments without an attitude indicator and a directional indicator.

15.6 VISUAL ILLUSIONS

(1) Visual illusions normally occur when flying at night or in limited visibility and many accidents have been caused as a result. There is one effective method of avoiding or overcoming disorienting visual illusions. When flying at night or in limited visibility the attitude indicator should be used as the primary flight reference. Outside visual cues may be used to position the aircraft in the circuit at night or in transitioning from an instrument approach, but the pilot should never attempt to control the aircraft by outside visual reference unless the actual horizon can be clearly distinguished.

(2) Perhaps the most critical aspect of IFR operations is the transition from instrument to visual flight, particularly from an instrument or a visual circling approach. In a situation where the pilot finally sights the runway in weather conditions close to the minima there can be an illusion of being too high accompanied by a strong urge to reduce power and steepen the approach path. This has resulted in many accidents where aircraft have contacted the ground well short of the runway. The correct technique in this situation should be to continue with the stable aircraft approach configuration and rate of descent. Large changes to power and rate of descent should be avoided late in the approach and are usually unnecessary if a stabilised approach has been maintained to this point.

(3) Night flying at aerodromes with little or no other ground lighting in the vicinity can induce the same type of illusory effect of being too high in relation to the runway flarepath.

To avoid or overcome this illusion, the pilot should determine the minimum altitude at critical points in the circuit such as the turn onto base leg and onto final. The aim should be to establish the aircraft on a stable approach path, controlling the aircraft by reference to instruments, while carefully monitoring altitude and rate of descent so as not to descend below the minimum heights established.

15.7 DECISION MAKING

(1) IFR pilots must be constantly on guard against developing a mindset towards the completion of a flight or procedure regardless of the circumstances. This is the IFR equivalent of the "pressonitis" familiar to VFR pilots. It manifests itself in the pilot who continues descent below minima even though visual reference has not been achieved or by the pilot who persists in making approach after approach until insufficient fuel remains to fly to an alternate aerodrome. Correct decision making requires consideration of all the possible alternatives and by knowing the latest point at which the decision to discontinue the present course of action must be made so that the alternative can still be successfully completed.

(2) Prior to commencing every let down in IMC where there is any doubt as to whether visual reference will be achieved, the IFR pilot must fully consider all the options available if it is not obtained by the nominated minima. The pilot must be committed to initiating a missed approach should it not be achieved at this point. Expecting to make such a decision with the split second timing required at minimum altitude is inviting the wrong decision every time.

(3) Another trap to avoid is the temptation, during an approach in IMC, to deviate from the procedure due to what may appear to be a break in the clouds or a glimpse of lights on the ground. Abandoning the standard procedure in an unconsidered attempt to acquire visual reference as quickly as possible is a decision which has led to disaster on many occasions.

(4) Safe instrument flight demands strict adherence to standard procedures and rational decision making whilst retaining a suitable alternative course of action. Deviation from these imperatives can lead to disaster much more quickly and easily than in visual flight where there is generally a much greater margin for error.

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