

Civil Aviation Advisory Publication

Revised September 2010

This publication is advisory but it is a CASA preferred method for complying with the Civil Aviation Regulations (CARs) 1988.

It is not the only method but experience has shown that if you follow this method you will comply with the Civil Aviation Regulations.

Always read this advice in conjunction with the appropriate regulations.

Contents

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Flight Crew Licensing Flight Reviews

The relevant regulations and other references

- Civil Aviation Regulations (CAR) 5.17A, 5.81, 5.91, 5.99, 5.108, 5.110, 5.124, 5.133, 5.154, 5.169, 5.171 and 5.178.
- Civil Aviation Orders (CAO) 40.2.3 and 40.1.7.
- Civil Aviation Safety Authority (CASA) Flight Crew Licensing Procedures Manual available at http://www.casa.gov.au/.
- Federal Aviation Administration (FAA) guide to *Conducting an Effective Flight Review* available at http://www.faa.gov/.
- FAA Advisory Circular (AC) 61-98A Currency and Additional Qualification Requirements for Certificated Pilots at http://www.faa.gov/.

Who this CAAP applies to

This Civil Aviation Advisory Publication (CAAP) applies to all private, commercial and air transport pilots.

Why this publication was written

Flight reviews have been a requirement to exercise the privileges of all licences since 1980. With the introduction of the Private Instrument Flight Rules (PIFR) rating in 2000, a flight review became a condition for the use of the privileges of that rating.

This CAAP provides guidance to licensed pilots, flight instructors authorised to conduct flight reviews, Approved Testing Officers (ATO) and CASA Flight Operations Inspectors (FOI) about how flight reviews should be conducted. All these personnel are referred to as 'assessors' in this CAAP.

Status of this CAAP

This is the first revision of this CAAP.

For further information

For application and policy advice contact CASA's Flight Crew Licensing Branch (Telephone 131 757).

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1. Acronyms

 \mathbf{AC} **Advisory Circular** Air Operator's Certificate **AOC ATO Approved Testing Officer ATPL** Air Transport Pilot Licence **CAAP** Civil Aviation Advisory Publication CAO Civil Aviation Order Civil Aviation Regulation CAR Civil Aviation Safety Authority CASA **Command Instrument Rating** CIR **CPL** Commercial Pilot Licence ETP equi-time point Federal Aviation Administration FAA FOI Flight Operations Inspector instrument flight rules **IFR** meteorological report **MET NOTAM** Notice to Airmen **PICUS** pilot-in-command under supervision private instrument flight rules **PIFR PNR** point of no return PPL Private Pilot Licence TEM threat and error management USA United States of America visual flight rules **VFR**

2. Definitions

Airspace cleared procedure Collision avoidance must always be practiced and a procedure followed to ensure a collision does not occur. This procedure is performed before all turns and manoeuvres. A commonly used technique for this procedure is:

- when turning left 'Clear right, clear ahead, clear left-turning left': or
- when turning right 'Clear left, clear ahead, clear right-turning right'.

If an object is closing and remains on a line of constant bearing (stays at the same point on the windscreen) a collision will occur if avoiding action is not taken.

Bi-annual Twice a year.

Biennial Once every two years.

Checklist A checklist derived from information set out in the Flight Manual/Pilot Operating Handbook (POH), placards or other documents provided with the aircraft, necessary to ensure the <u>safe</u> operation of the aircraft.

Controlled corrective action Timely and coordinated use of controls without abrupt manoeuvring is made to achieve specified performance.

Errors Action, or inaction, that results in deviation from appropriate intentions.

Human factors Optimising the relationship within systems between people, activities and equipment.

Safe(ly) A manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the standards specified by CASA.

Stakeholders Any person involved with, or affected by, the flying operation to be performed.

Standard operating procedures Any procedure included in the operations manual of an Air Operator's Certificate (AOC) or Operating Certificate (OC) holder.

Threats Events or hazards whose occurrence is outside the control of the pilot(s) and which may threaten the safety of the flight.

Undesired aircraft state Undesired aircraft states are flight-crew induced aircraft position or speed deviations, misapplication of flight controls, or incorrect systems configuration, associated with a reduction in safety margin.

3. Why this CAAP is issued

- 3.1 This CAAP is issued to all persons who undergo or conduct flight reviews. The aim is to explain the philosophy and intent of a flight review and to provide guidance to pilots undertaking a flight review and instructors, ATOs and CASA FOIs who may conduct a review.
- 3.2 Another purpose of this CAAP is to achieve consistency and standardisation with flight reviews to ensure a good safety outcome without incurring unreasonable expense. Flight reviews for all licences and categories of aircraft are addressed in this CAAP.

4. Philosophy and intent of a flight review

- 4.1 The concept of flight reviews was an initiative of the Federal Aviation Administration (FAA) of the United States of America (USA) to ensure that pilots maintained proficiency The USA's flight review system is industry managed, and monitored by the regulator, and Australia has adopted a similar arrangement.
- 4.2 Commercial Pilot Licence (CPL) and Air Transport Pilot Licence (ATPL) holders are often part of a system that involves some form of training and checking, whereas the average private pilot is not. With the passage of time and lack of practice some skills and knowledge can degrade. A flight review affords the opportunity to restore these degraded skills and gain new knowledge.

- 4.3 The flight review must be seen in the context of a broader aviation safety philosophy. The flight review, although important (and required by legislation), is one process that contributes to continuing pilot proficiency and consequently the safety of flight. A flight review every two years does not, in itself, ensure safety. Safety is achieved when each pilot takes responsibility for a continuing process of hazard identification and risk management for their own aviation activities. In addition to the flight review, this continuing process could include:
 - maintaining existing knowledge;
 - increasing knowledge;
 - regularly practicing piloting skills;
 - setting personal limits;
 - applying robust human factors practices; and
 - actively applying threat and error management (TEM) concepts and principles.

In this continuing process of hazard identification and risk management, the two key aspects of a flight review are:

- to provide an opportunity for pilots to refresh their flying skills and knowledge; and
- to provide an independent assessment of a pilot's skills and knowledge.

These two aspects are fundamental to the goal of keeping aviation safety risks for the pilot at, or below, an acceptable level. Both aspects (refreshing skill and knowledge, and the independent assessment) are equally important and the process should be a collaborative endeavour between the pilot undergoing the review and the assessor conducting it.

4.4 To be a successful collaboration, the person undergoing the review and the assessor have a shared responsibility. This responsibility requires an honest statement of the flying activities that have been undertaken over the past two years, and more importantly an indication of what type of flying the pilot anticipates performing during the next two years. CASA recommends the inclusion of a navigation exercise in each flight review. In determining whether to conduct a navigation exercise the assessor should take into account if the previous flight review included a navigation exercise.

The assessor should then plan an appropriate flight review for the pilot's prevailing circumstances, and be willing to commit time and effort to identify deficiencies in skills and knowledge, and then to provide remedial instruction and advice as required.

4.5 Ideally the assessor should aim to make the event something that pilots look forward to, rather than dread. This can be achieved by establishing good communications, clearly identifying the requirements of the flight review and committing to ensuring that the pilot will benefit from the exercise. Assessors should endeavour to provide positive feedback and, where deficiencies are identified, rectify the problems without making the pilot feel inadequate.

5. So, what is a flight review?

- 5.1 In this CAAP the process of undertaking a biennial assessment of a pilot's skills and knowledge is referred to as a flight review. In Australia the terms Aeroplane Flight Review (AFR) and Biennial Flight Review (BFR) are commonly used. However, the intention is to address flight reviews for all licences, categories of aircraft and appropriate ratings. Although the CAAP is numbered after CAR 5.81, it is not limited to the Private Pilot Licence (PPL) and aeroplanes. The current regulations specify flight reviews for all licences and for the Private Instrument Flight Rules (PIFR) rating.
- 5.2 Appendix A of this CAAP summarises the range of skills, knowledge and behaviours to be assessed.
- 5.3 When a pilot holds more than one category of licence, a flight review must be conducted on each aircraft type; for example aeroplane and helicopter.

6. Who may conduct a flight review?

- 6.1 A flight review in an aeroplane may be conducted by:
 - a Grade One aeroplane flight instructor who holds an endorsement for the aeroplane;
 - a Grade Two aeroplane flight instructor who holds an endorsement for the aeroplane, has 400 hours of instructional experience and has the written approval of a chief flying instructor to conduct a flight review;
 - an ATO who holds an endorsement for the aeroplane; or
 - a CASA FOI who holds an endorsement for the aeroplane.
- 6.2 A flight review in a helicopter may be conducted by:
 - a Grade One helicopter flight instructor who holds an endorsement for the helicopter;
 - an ATO who holds an endorsement for the helicopter; or
 - a CASA FOI who holds an endorsement for the helicopter.

- 6.3 A flight review in a balloon may be conducted by:
 - a balloon flight instructor who holds the appropriate balloon endorsement;
 - a CASA FOI who holds the appropriate balloon endorsement; or
 - an authorised person.
- 6.4 A flight review in a gyroplane or an airship may be conducted by:
 - a flight instructor who holds an endorsement for the aircraft used to conduct the flight review;
 - an ATO who holds an endorsement for the aircraft; or
 - a CASA FOI who holds an endorsement for the aircraft.
- 6.5 The CAR definition of an **authorised flight instructor** states that the flight instructor must either hold an AOC or be employed by, or instruct under, an arrangement with an AOC holder that authorises flying training.

7. Substitutes for a flight review

- 7.1 Any licensed aeroplane or helicopter pilot, or commercial balloon pilot may substitute a flight review, if, within a period of two years before the proposed flight, they have:
 - passed a flight test for the purpose of the issue of a licence, or issue or renewal of a pilot rating;
 - satisfactorily completed a proficiency check and the conducting organisation has made an entry to that effect in the pilot's log-book; or
 - satisfactorily completed aeroplane, helicopter or balloon conversion training conducted by the holder of a grade of instructor rating that allows them to conduct a flight review.
- 7.2 Any licensed gyroplane pilot may substitute a flight review, if, within a period of two years before the proposed flight, they have:
 - passed a flight test for the purpose of the issue of a licence, or issue or renewal of a pilot rating; or
 - satisfactorily completed a proficiency check and the conducting organisation has made an entry to that effect in the pilot's log-book.
- 7.3 Any licensed airship pilot may substitute a flight review, if, within a period of two years before the proposed flight, they have:
 - passed a flight test for the issue or renewal of an airship grade of night Visual Flight Rules (VFR) rating;

- satisfactorily completed a proficiency check and the conducting organisation has made an entry to that effect in the pilot's log-book; or
- satisfactorily completed airship conversion training by the holder of a grade of instructor rating that allows them to conduct a flight review, and the instructor enters into the pilot's log-book that a successful flight review was completed.
- 7.4 This means that if, for example, a pilot renewed an instrument rating, undertook a proficiency check or completed training for the issue of an aircraft endorsement within a two year period since the last review, they would not be required to do another review until two years after that date for the category of aircraft in which the assessment flight was conducted.
- 7.5 There is provision in the regulations for single place aircraft to be used for a flight review or proficiency check. For example an agricultural pilot could be observed from the ground by a suitably qualified ATO or FOI while conducting or simulating an agricultural operation. Additionally CASR 137.240(10) states that an agricultural proficiency check can serve as a flight review.
- 7.6 A command instrument rating initial issue or renewal also covers a PIFR flight review.
- 7.7 Conversely, a flight review satisfies the requirement for ATPL or CPL holders over the ages of 60 and 65 respectively who conduct commercial operations, to complete an annual or sixmonthly proficiency check.
- 7.8 However, common sense should also prevail. If a person is within the two-year period following a flight review, but intends to undertake a flight in an aircraft they have not operated for some time or, for example, navigate in a remote area, it would be prudent to complete a flight with a flight instructor to ensure competence, confidence and safety.

8 How should a flight review be conducted?

8.1 It is now pertinent to restate the purpose of a flight review: to ensure that the pilot is safe to operate an aircraft. In this CAAP 'safe' means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the standards specified by CASA. If we analyse this definition, the term 'without injury or damage' requires no explanation. However, 'breach of aviation safety regulations' and 'meeting standards specified by CASA' does need clarification.

Pilots rarely breach safety regulations intentionally, but sometimes, through lack of knowledge or inattention, this may occur. The same concept applies to meeting the CASA flight standards (or skills and knowledge). These standards are those specified in the relevant syllabus or CAO. Few pilots intentionally fail to meet the skills and knowledge standards, but lack of practice or currency can lead to this outcome.

- 8.2 In the time available to conduct a flight review, it would be unrealistic to attempt to assess all of a pilot's skills and knowledge. However, it is possible and important to evaluate and guide a pilot through those safety-critical items of skills and knowledge or elevated risk that, if deficient, could result in 'damage to aircraft and/or injury to persons'. Sequences that, if not conducted properly, could lead to damage or injury (unsafe flight) are:
 - management of engine failures leading to forced landings or auto-rotations;
 - asymmetric operations in multi-engine aeroplanes;
 - cross-wind operations;
 - steep turns and slow flight;
 - stall recognition and recovery;
 - take-off, approach and landing;
 - missed or aborted approaches and landings;
 - helicopter operations on rough or sloping ground;
 - approach and operations in confined areas;
 - awareness and avoidance of adverse aerodynamic situations such as stall, helicopter-vortex ring and dynamic rollover, operating a gyroplane behind the power curve, or balloon pilot awareness of power lines and obstructions;
 - competent operation of all aircraft systems;
 - management of emergencies; and
 - application of threat and error management and human factors practice.
- 8.3 Misapplication of certain aspects of aeronautical knowledge could result in dire consequences. It is important to ensure that a pilot is able to:
 - interpret and apply meteorological and Notice to Airmen (NOTAM) information;
 - calculate weight and balance and aircraft performance;
 - demonstrate a sound understanding of weight, balance and performance limitations on an aircraft and any degrading effects on normal operations;
 - apply robust checklist procedures;
 - understand and operate all aircraft systems;

- understand and comply with air traffic requirements and procedures;
- understand airspace structure, procedures and any changes;
- recall critical emergency procedures; and
- interpret and certify a maintenance release and perform a daily inspection.
- 8.4 The two lists above are not comprehensive, and assessors should design a flight review that is appropriate for the pilot under review. The assessor should establish clear and open communication and endeavour to draw from the pilot any information, including relevant details from the pilot's log-book, which will help him or her to design an appropriate flight review.

To properly inform the task of designing the flight review, the pilot under review should accurately detail what flying they have completed over the last two years, and what flying they anticipate they will undertake in the future. They should also explain any areas of skills or knowledge where they feel deficient. A pilot usually knows if he/she is uncomfortable or not confident with some flight sequences or aeronautical knowledge—in this case, they should tell the assessor and clarify areas of doubt by asking questions.

- 8.5 Once the assessor has determined what the flight review will involve, it should be clearly explained to the pilot. It would also be appropriate to advise the pilot to review the aircraft flight manual and other applicable publications. The assessor should then plan the exercise to ensure the most benefit to the pilot under review.
- 8.6 The decision to include a navigation exercise in a flight review should be seen as an opportunity to develop the pilot's knowledge and professionalism. Flight planning should be a collaborative effort and generate discussion. The assessor can lead the pilot to identify possible threats and propose solutions to ensure a safe outcome to the flight. Different scenarios can be utilised to demonstrate alternate planning requirements, fuel planning, calculation of equi-time point (ETP) and point of no return (PNR). Consideration of these items can lead to a better understanding of their application and justify their use.
- 8.7 The pre-flight discussion should investigate and enhance the pilot's knowledge over a broad range of subjects, and be used to identify any weaknesses that could affect the safety of flight. As a basic consideration, the assessor should concentrate on information that, if not known, could result in unsafe flight. For example, to be unaware of changes to airspace structure or procedures could lead to a dangerous violation of controlled airspace and subsequent collision. Assessors should be prepared to explain these changes and confirm that the pilot's knowledge is up-to-date.

During pre-flight planning, weight and balance and aircraft performance should be calculated. This will provide an opportunity to see if the pilot can apply this information in a practical sense. Aircraft system knowledge and familiarity with emergency procedures should also be explored. It is possible that pilots who do not fly regularly may pay little attention to these aspects.

Responsibility for determining any deficiencies in aeronautical knowledge, then refreshing the pilot's knowledge and confirming their understanding rests with the assessor.

The assessor may choose to use a written questionnaire to assist in assessing a pilot's underpinning knowledge.

- 8.8 The flight component of the review could vary significantly from pilot to pilot. If the pilot flies regularly, maintains currency and is competent, the review may just be a check with minimal instruction required. On the other hand, if a pilot flies infrequently, more flight instruction may be required to restore lost skills and bring the pilot up to a safe standard. However, it is very important to ensure that those flying sequences which, if mishandled, could cause an accident, are examined and addressed where required. For example, pilots often forget to apply a plan to a forced landing and the results can be spontaneous or 'hit or miss', rather than a thought-out and logical event. When assessors identify this type of deficiency, they should take the time to ensure the pilot's flying and operating techniques are of an acceptable standard.
- 8.9 Another important area that demands attention is threat and error management (TEM) and human factors (see Appendix A of this CAAP). TEM is discussed in more detail later and human factors are the 'mind skills' that are applied to TEM. These skills include:
 - maintaining effective lookout;
 - maintaining situation awareness;
 - assessing situations and making decisions;
 - setting priorities and managing tasks; and
 - communications and interpersonal relationships.
- 8.10 Assessors should discuss these subjects with pilots before flight and assess their airborne performance in the application of these skills. Most aircraft accidents can be traced to deficiencies in human factors skills, rather than poor handling or technical failures. Pilots should be aware of the implications of deficiencies in these important skills. Assessors conducting a flight review should be able to objectively assess these single-pilot human factors by observing the pilot's behaviour and the outcome of his or her flight activities and decisions.

- 8.11 When designing a flight review to suit the particular needs of an individual pilot, assessors should address those items considered 'obligatory' as they could, if mishandled, lead to unsafe flight; and include any other aspects that may be appropriate to the individual pilot. The flight review forms at Appendices B to H have attempted to identify these items and a space is left on the forms for the assessor to enter any other appropriate items. However, it should be remembered that a flight review should be a collaborative endeavour between the reviewing pilot and the person undergoing the review, with the aim of providing maximum benefit, including training where appropriate, to the pilot being assessed.
- 8.12 In summary, it is important to note that a flight review is not a flight test. Consequently, the assessor is both permitted and expected to provide instruction, when required. Nevertheless, assessment of competency is the outcome required by a flight review. Accordingly, after conducting remedial training in whichever sequences are necessary, the pilot must be able to demonstrate competency in that sequence in observed conditions. In other words, a flight review should be neither solely training, nor only assessment, but an appropriate blend of the two. The final outcome is the pilot being assessed as competent to exercise the privileges of his or her licence.

9. Private IFR Rating flight review

- 9.1 The holder of a PIFR must undertake a flight review every two years. However, if the PIFR holder also has a Command Instrument Rating (CIR) a flight review is covered by a CIR issue or renewal. Additionally, a multi-engine aeroplane or helicopter PIFR also covers the equivalent single-engine aircraft, but the reverse does not apply.
- 9.2 PIFR flight reviews may be conducted by:
 - a CASA FOI;
 - an ATO holding a delegation authorising the conduct of a flight test for the issue of a CIR; or
 - a flight instructor authorised to conduct a flight review and training for the issue of a CIR in the appropriate category of aircraft.
- 9.3 A PIFR flight review should examine the holder's knowledge of:
 - flight management and operational fuel planning;
 - management of pre- and post-flight actions; and

- all the Flight Procedure Authorisations endorsed in the holder's log-book.
- 9.4 The in-flight element of the review should assess the holder's skills in:
 - the conduct of flight using IFR procedures;
 - compliance with air traffic rules and procedures;
 - the management of emergency procedures;
 - task management;
 - the conduct of instrument flight using full and limited panel; and
 - the relevant flight procedures in the holder's log-book.
- 9.5 Detail of PIFR flight review requirements is available in CAO 40.2.3 Appendix 1.
- 9.6 As with a flight review for a licence, the pilot undertaking the review and the person conducting the review should take every opportunity to enhance the pilot's knowledge and skills. This would be an excellent opportunity to refresh any lapsed instrument flying skills. Successful completion of a flight review must be entered into the pilot's log-book by the assessor.
- 9.7 PIFR flight review forms for aeroplanes and helicopters are at Appendices G and H.

10. How long should a flight review take?

- 10.1 A flight review for a licence, which does not involve a navigation exercise, should take approximately two hours. This would entail an hour of discussion and questions and one hour of flight time. Realistically, a pilot should set aside at least half a day to meet this requirement. If time is a factor, there is nothing to prevent a flight review from being conducted over a number of days.
- 10.2 An additional 1.5 to 2.0 hours of flight time should be allowed for when the assessor deems a navigation exercise necessary.
- 10.3 A PIFR flight review would also require a flight time of about 2.0 hours, with the additional time allocated to pre-flight discussion and planning.

10.4 Notwithstanding all of the above, any pilot should approach the exercise as an opportunity to improve their skills and knowledge, re-acquaint themselves with the aviation safety culture and enjoy the experience. Dedicating one day every two years to this event should not be seen as a great price to pay to maintain the privileges of the licence.

11. How should I choose a person to conduct a flight review?

- 11.1 When choosing a person to conduct a flight review, pilots should select someone from whom they feel they will gain the most benefit. It is important to ensure the person communicates well and is able and willing to provide good flight instruction. Previous experience with an assessor is probably one of the more reliable guides, but word of mouth is also a method to select a suitable assessor.
- 11.2 In many cases, because of remoteness or unique circumstances, the availability of persons qualified to conduct a flight review may be limited. However, pilots should not take flight reviews lightly; it is an opportunity to maintain an acceptable level of safety for the pilot under review and their passengers; and to learn.

12. What aircraft should I use?

12.1 The CARs clearly state that a flight review must be conducted in the aircraft in which the pilot had flown the most flight time during the last ten flights undertaken. In most circumstances this would probably represent the flying activities that the pilot generally conducts.

However unique situations may occur where, for example, a pilot may have completed one flight of 5.5 hours in one aircraft type and 5.0 hours on nine other flights in another type. The person conducting the review may choose to use the latter aircraft for convenience or aircraft availability. The decision about which aircraft to use can be made by the assessor.

12.2 If a pilot operates both single-engine and multi-engine aircraft, logic dictates that the multi-engine aircraft should be used as it is the more complex aircraft and has unique single-engine characteristics that should be reviewed. As a guide the assessor should refer to the definition of safe, and decide if he or she is confident that the pilot being reviewed could operate both types of aircraft safely during all aspects of normal and abnormal flight.

12.3 A CASA approved synthetic flight trainer may be used for a flight review.

13. Logging of flight time

13.1 The person conducting a flight review is pilot-in-command. In the majority of cases, a private pilot will receive some flight instruction and should log the flight time as dual. CAR 5.40 precludes private pilots from logging any flight time as pilot-in-command under supervision (PICUS). However, a commercial or air transport pilot licence holder, undergoing a proficiency check could log PICUS time as long as all the applicable conditions in CAR 5.40 are satisfied.

14. Log-book entries for flight reviews

- 14.1 When a pilot successfully completes a flight review, the person conducting the review must make an entry into the pilot's log-book stating that he or she has successfully completed the flight review. If the pilot completes a proficiency check or aircraft conversion training, he or she is deemed to have completed a flight review, and an entry should be made to that effect in the pilot's log-book by the organisation or person who completed the training. The wording on the 'cut off' sheets on the forms at Appendices B to H could be used. Notwithstanding the previous sentences, it is not mandatory to make an entry in the pilot's log-book for a rating issue or renewal or conversion training, other than the appropriate 'sticky strip'.
- 14.2 The forms in the appendices may be used by assessors. It is important to complete the form and CASA recommends that the assessor retains the form and gives a copy to the pilot who is assessed. All the items covered in the 'pre-flight', airwork' and 'navigation/FPA' columns should be addressed and assessors can add any other information or sequences they think appropriate. Additionally, the back of the form could be used to detail any further training or other information that could benefit the pilot undertaking the flight review.
- 14.3 When pilots have an electronic log-book, they must also compile a bound, printed version that can be signed by the person who conducted the flight review.

14.4 The flight review forms at Appendices B to H have cut off sections that may be stuck into the pilot's log-book if desired. CASA recommends that the person conducting the flight review retains the form for at least three years. Flying schools are required to maintain a record of all flight reviews conducted, for a minimum of three years.

15. Unsatisfactory completion

- 15.1 If a pilot is unable to successfully complete a flight review, their log-book must not be certified. In such a case the person conducting the flight review should provide guidance to the pilot on what action to take to achieve a safe standard.
- 15.2 When a pilot is still within the two-year period of the previous review, he or she may continue to act as pilot-in-command for operations where qualified. Subsequent flights should be limited to improving the pilot's skill to ensure a satisfactory outcome of a later flight review.
- 15.3 If the two-year period since the last successful flight review has expired, the pilot can no longer conduct a flight as pilot in command. Further flights must be with an authorised flight instructor.

16. Difference between PPL and CPL/ATPL

- 16.1 When conducting a flight review an assessor must clearly determine the different standards required of PPL and CPL or ATPL holders. Refer to the CASA Day VFR syllabus for the applicable aeronautical knowledge standards as a guide.
- 16.2 A private pilot should demonstrate that control of the aircraft or procedure is maintained at all times but if the successful outcome is in doubt corrective action is taken promptly to recover to safe flight.
- 16.3 A commercial or air transport pilot should demonstrate that control of the aircraft or procedure is maintained at all times so that the successful outcome is assured.

17. Threat and error management and single-pilot human factors

17.1 The International Civil Aviation Organization (ICAO) has recommended that threat and error management becomes an integral component of all pilot training. CASA introduced TEM and single-pilot human factors into pilot training in early 2009, and flight instructors, ATOs and FOIs should develop their assessing and teaching skills to incorporate these items into flight reviews.

The Guild of Air Pilots and Navigators (GAPAN) conducted courses throughout Australia in 2008, to train flight instructors to apply TEM techniques when training pilots. Flight standards for TEM and single-pilot human factors (entitled 'Manage Flight') are available at Appendix A of this CAAP.

17.2 TEM is an operational concept applied to flight that includes the traditional role of airmanship and provides a structured and proactive approach that pilots can take to the identification and management of threats and errors that could affect the safety of flight. An inseparable link exists between TEM and crew resource management or single-pilot human factors.

The single-pilot human factors are listed in paragraph 8.9 of this CAAP; assessors are required to develop methods to explain how human factors are applied to TEM. For example, how to apply the components of situation awareness (awareness of aircraft systems, external environment, time) and decision making (problem definition and diagnosis, option generation, risk assessment and option selection, outcome review) to managing threats and errors. Practical scenarios should be developed as a means of both teaching and assessing.

17.3 The flight review forms at Appendices B to H have in the 'Pre-flight' column of the table, under 'Discussion and Application', a list of the single-pilot human factors. Persons conducting flight reviews should take the time to address these items in both the pre-flight discussion and during the flying component of the review.

Appendix A to CAAP 5.81-1(1)

Generic Range of Variables

Range of Variables

- Performance standards are to be demonstrated in flight in an aircraft of the appropriate category equipped with dual flight controls and electronic intercommunication between the applicant and the instructor or examiner.
- Consistency of performance is achieved when competency is demonstrated on more than one flight.
- Flight accuracy tolerances specified in the standards apply under flight conditions from smooth air up to, and including, light turbulence.
- Where flight conditions exceed light turbulence appropriate allowances as determined by the assessor may be applied to the tolerances specified.
- Infrequent temporary divergence from specified tolerances is acceptable if the pilot applies controlled corrective action.
- Units and elements may be assessed separately or in combination with other units and elements that form part of the job function.
- Assessment of an aircraft operating standard also includes assessment of the threat and error management and human factors standards applicable to the unit or element.
- Standards are to be demonstrated while complying with approved checklists, placards, aircraft flight manuals, operations manuals, standard operating procedures and applicable aviation regulations.
- Performance of emergency procedures is demonstrated in flight following simulation of the emergency by the instructor or examiner, except where simulation of the emergency cannot be conducted safely or is impractical.
- Assessment should not involve simulation of more than one emergency at a time.
- **Private pilots** should demonstrate that control of the aircraft or procedure is maintained at all times but if the successful outcome is in doubt, corrective action is promptly taken to recover to safe flight.
- Commercial and air transport pilots should demonstrate that control of the aircraft or procedure is maintained at all times so that the successful outcome is assured.
- The following evidence is used to make the assessment:
 - The applicant's licence and medical certificate as evidence of identity and authorisation to pilot the aircraft.
 - For all standards, the essential evidence for assessment of a standard is direct observation by an instructor or examiner
 of the applicant's performance in the specified units and elements, including aircraft operation and threat and error
 management.
 - Oral and written questioning of underpinning knowledge standards.
 - Completed flight plan, aircraft airworthiness documentation, appropriate maps and charts and aeronautical information.
 - Aircraft operator's completed flight records to support records of direct observation.
 - Completed achievement records for evidence of consistent achievement of all specified units and elements of competency.
 - The applicant's flight training records, including details of training flights and instructors comments, to support assessment of consistent achievement.
 - The applicant's log-book for evidence of flight training completed.
- For licence and rating issue:
 - Completed application form, including, licence or rating sought, aeronautical experience, Chief Flying Instructor's recommendation and the result of the flight test.
 - Completed flight test report indicating units and elements completed.
 - Examination results and completed knowledge deficiency reports.

Unit C6: Manage Flight – Flight Standard

Unit Description: Skills, knowledge and behaviour to plan, direct and control all aspects of a flight.

Element	Performance Criteria			
C6.1 Maintain effective lookout	• Maintains lookout and traffic separation using a systematic scan technique at a rate determined by traffic density, visibility and terrain.			
	• Maintains radio listening watch and interprets transmissions to determine traffic location and intentions of traffic.			
	• Performs <u>airspace cleared procedure</u> before commencing any manoeuvres.			
C6.2 Maintain situation	Monitors all aircraft systems using a systematic scan technique.			
awareness	Collects information to facilitate ongoing system management.			
	 Monitors flight environment for deviations from planned operations. 			
	• Collects flight environment information to update planned operations.			
C6.3 Assess situations and	Identifies and analyses problems.			
make decisions	 Identifies solutions and assesses solutions and risks. 			
	• Decides on a course of action.			
	• Communicates plan of action and allocates tasks, if appropriate.			
	Takes actions to achieve optimum outcomes.			
	Monitors progress against plan.			
	• Re-evaluates plan to achieve optimum outcomes.			
C6.4 Set priorities and manage tasks	Organises workload and priorities to ensure completion of all tasks relevant to the safety of the flight.			
	• Puts the safe and effective operation of the aircraft ahead of competing priorities and demands.			
	Plans events and tasks to occur sequentially.			
	 Anticipates critical events and tasks to ensure safe completion of the task or flight. 			
	• Uses technology to reduce workload and improve cognitive and manipulative activities.			
	• Avoids fixation on single actions, tasks or functions.			
C6.5 Maintain effective communications and interpersonal relationships	• Establishes and maintains effective and efficient communications and interpersonal relationships with all <u>stakeholders</u> to ensure the <u>safe</u> outcome of the flight.			
	• Defines and explains objectives to applicable/involved stakeholders.			
	• Demonstrates a level of assertiveness that ensures the <u>safe</u> completion of the flight.			
	• Encourages passengers to participate in, and contribute to, the safe outcome of the flight.			
	Range of Variables			
All flight and ground operatio	ns.			
• Interaction with stakeholders.				
• Single- or multi-engine aircraft.				
Underpinning Knowledge				
N/A				
11/11				

Unit C7: Threat and Error Management – Flight Standard

Unit Description: Skills, knowledge and behaviour to recognise and plan, direct and control threats and errors.

Element	Performance Criteria			
C7.1 Recognise and manage threats	• Identifies relevant environmental or operational <u>threats</u> that are likely to affect the <u>safety</u> of the flight.			
	Develops and implements countermeasures to manage <u>threats</u> .			
	Monitors and assesses flight progress to ensure a <u>safe</u> outcome or modifies actions when a safe outcome is not assured.			
C7.2 Recognise and manage errors	Applies <u>checklists</u> and <u>standard operating procedures</u> to prevent aircraft handling, procedural or communication errors; and identifies committed errors before <u>safety</u> is affected or aircraft enters an <u>undesired aircraft state</u> .			
	Monitors aircraft systems, flight environment and crewmembers, and collects and analyses information to identify potential or actual errors.			
	• Implements countermeasures to prevent <u>errors</u> or takes action in the time available to correct <u>errors</u> before the aircraft enters an <u>undesired aircraft state</u> .			
C7.3 Recognise and manage	Recognises undesired aircraft states.			
undesired aircraft states	Prioritises tasks to ensure management of undesired aircraft states.			
	Manipulates aircraft controls or systems, or modifies actions or procedures, to maintain control of the aircraft and return to normal flight operations in the time available.			
Range of Variables				
• All flight and ground operation				

All flight and ground operations.

Underpinning Knowledge

- Explain the principles of threat and error management by detailing a process to identify and mitigate or control threats and errors during multi-crew operations.
- Give an example of how an undesired aircraft state can develop from an unmanaged threat or error.
- Identify the aspects of multi-crew operations that can prevent an undesired aircraft state.
- Explain how the use of checklists and standard procedures prevents errors.
- Give an example of a committed error and how action could be taken to ensure safety of flight.
- Explain how prioritising and managing workload can reduce the occurrence of errors.
- Explain how establishing and maintaining interpersonal relationships can ensure safety of flight.
- Explain how checklists and standard operating procedures can help to recognise, prevent and/or correct errors.

Appendix B to CAAP 5.81-1(1)

Aeroplane Flight Review

Name		ARN		Date
Address				
Aeroplane type and registr	ation	Licence held		Flight time
Flight route	Assessor			
Flying completed last two yea				
Flying anticipated next two yea				
Signature of reviewed pilot	T		T	
Pre-flight	Airwork		Naviga	tion (Recommended)
Maintenance release use Calculate weight & balance Calculate aircraft flight performance Interpret and apply meteorological report and Notice to Airmen (MET/NOTAM) Airspace knowledge Airspace procedures Aircraft systems knowledge Discussion and Application Threat & error management Lookout Situation awareness Decision making Task management Communications and interpersonal relationships	Forced landing Instrument flyi Emergency pr Other (enter)	ge ne (R/T) ne (R/T) nf and landing after take-off nding ach/landing n and recovery g ng ng	Navigati Map rea Airspace Diversion Lost pro Fuel pla Alternat PNR ETP Other (e	organisation
Satisfactory √	Unsatisfactory	, X		essed N
	stick in pilot's lo	g-book		
has successfully completed a			ARI	Nlight review on

Appendix C to CAAP 5.81-1(1)

Helicopter Flight Review

Name		ARN		Date		
Address						
Helicopter type and registra	Licence held		Flight time			
Flight route		Assessor				
Flying completed last two year	rs:					
Flying anticipated next two ye						
Signature of reviewed pilot						
Pre-flight	Airwork		Navigati	on (Recommended)		
Maintenance release use	Pre-flight prepar		Flight pla			
Calculate weight & balance	Checklist usage			rganisation		
Calculate aircraft flight	Use of power ar		Navigation technique			
performance	ground		Map reading			
Interpret and apply	Normal take-off	_	Airspace management & procedures			
meteorological report and	Engine failure a	fter take-off □	Diversion procedure			
Notice to Airmen	Forced landing		Lost proc			
(MET/NOTAMS)	Steep turns		Fuel plan			
Aircraft systems and limitations	Remote area la	nding \square		requirements		
knowledge Discuss vortex ring/reduced	Slope landing		PNR			
power operations/dynamic		perations (multi-	ETP			
rollover	engine helicopte		Other (en			
Discussion and Application Eligine lattice at novel						
Threat 8 amon managerity procedures						
Lookout						
Situation awareness						
Decision making						
Task management	_					
Communications and	Communications and					
interpersonal relationships						
Satisfactory √	X	Not asses	ssed N			
	-					
	stick in pilot's log	J-DOOK				
NameARN						
has successfully completed a single/multi-engine (delete N/A) helicopter flight review on						
(Date)						
Reviewing pilot's signatureARNARN						

Appendix D to CAAP 5.81-1(1)

Gyroplane Flight Review

Name		ARN	Date		
Address		<u> </u>	I		
Gyroplane type and registration	on	Licence held	Flight time		
Flight route		Assessor	1		
Flying completed last two years:					
Flying anticipated next two years	:				
Signature of reviewed pilot					
Pre-flight	Airwork		Navigation (Recommended)		
Maintenance release use Calculate weight and balance Calculate aircraft flight performance Interpret and apply meteorological report and Notice to Airmen (MET/NOTAMS) Aircraft systems knowledge Discussion and Application Threat and error management Lookout Situation awareness Decision making Task management Communications and interpersonal relationships	Normal take Glide appro- Cross-wind Cross-wind Steep turns Slow flight Forced land Emergency Other (enter	re after take-off re-off and landing ach take-off landing	Flight planning Cockpit organisation Navigation technique Map reading Airspace management and procedures Diversion procedure Lost procedure Fuel planning Alternate requirements PNR ETP Other (enter)	 	
Satisfactory √	Unsatisfacto	ory X	Not assessed N		
Namehas successfully completed a gy Reviewing pilot's signature	yroplane flig	ht review on	ARN(Date)		

Appendix E to CAAP 5.81-1(1)

Balloon Flight Review

Name	ARN	Date				
Address						
Balloon type and registration	Licence held	Flight time				
Flight route	Assessor					
Flying completed last two years:						
Flying anticipated next two years:						
Pre-flight	Airwork	Navigation (Recommended)				
Maintenance release use Calculate weight and balance Calculate balloon flight performance Interpret and apply meteorological report and Notice to Airmen (MET/NOTAMS) Balloon systems knowledge Explain actions in event of gas leak Explain actions in event of fire airborne Discussion and Application Threat and error management Lookout Situation awareness Decision making Task management Communications and interpersonal relationships	Check-list usage Balloon inflation Passenger management Take-off balloon Land balloon Balloon deflation Avoid power lines Conduct aborted landing					
Satisfactory √	Unsatisfactory X	Not assessed N				
Name						
has successfully completed a balloon flight review on						

Appendix F to CAAP 5.81-1(1)

Airship Flight Review

Name		ARN	Date		
Address					
Airship type and registration		Licence held	Flight time		
Flight route		Assessor			
Flying completed last two years:					
Flying anticipated next two years:					
Signature of reviewed pilot					
Pre-flight	Airwork		Navigation (Recommende	ed)	
Maintenance release use		oreparation	Flight planning		
Calculate weight and balance	Checklist u		Cockpit organisation		
Calculate aircraft flight	To be com		Navigation technique		
performance		,			
			Airspace management and		
		procedures			
(MET/NOTAM)			Diversion procedure		
			Lost procedure		
			Fuel planning		
			Alternate requirements		
Lookout			PNR		
Situation awareness			ETP		
Decision making					
Task management			Other (enter)		
Communications and interpersonal				□	
relationships					
				□	
Satisfactory √	Unsatisfac	tory X	Not assessed N		
st	ick in pilot's log-	-book			
NameARN					
has successfully completed an airship flight review on(Date)					
Reviewing pilot's signatureARNARN					

Appendix G to CAAP 5.81-1(1)

Private IFR Rating Flight Review (Aeroplane)

Name		ARN	Date		
Address					
Aeroplane type and registration		Licence held	Flight time		
Flight route		Assessor			
Flying completed last two years:					
Flying anticipated next two years:					
Signature of reviewed pilot					
Flight planning Maintenance release use Calculate weight and balance Calculate aircraft flight performance Flight management and operational and fuel planning Management of pre- and post- flight actions Discussion and Application Threat and error management Lookout Situation awareness Decision making Task management Communications and interpersonal relationships	Flight Rules Compliance procedures Managemen procedures Task manag Conduct of using full pa Conduct of instrument p Other (ent	age flight using Instrument f(IFR) procedures with air traffic rules and int of emergency gement instrument flight anel flight using limited banel	FPAs held		
Satisfactory √	Unsatisfacto	ory X	Not assessed N		
stick in pilot's log-book					
NameARN					
has successfully completed a single/multi-engine (delete N/A) aeroplane PIFR flight review					
Date					
Reviewing pilot's signature					

Appendix H to CAAP 5.81-1(1)

Private IFR Rating Flight Review (Helicopter)

Name	ARN		Date			
Address	I					
Helicopter type and registrati	on	Licence held	Flight time			
Flight route		Assessor				
Flying completed last two years:						
Flying anticipated next two years:						
Signature of reviewed pilot.						
Pre-flight	Airwork		light Procedure uthorisations (FPAs)			
Flight planning Maintenance release use Calculate weight and balance Calculate aircraft flight performance Flight management and operational and fuel planning Management of pre- and post- flight actions Discussion and Application Threat and error management Lookout Situation awareness Decision making Task management Communications and interpersonal relationships	Cockpit organisation Checklist usage Conduct of flight using Flight Rules (IFR) proc Compliance with air tra rules and procedures Management of emerg procedures Task management Conduct of instrument full panel Conduct of flight using instrument panel Other (enter)	Instrument edures effic ency flight using limited	PAs held			
Satisfactory √	Unsatisfactory X	N	ot assessed N			
Namehas successfully completed a s	ingle/multi-engine (delet	e N/A) helicopter	ARN			
Reviewing pilot's signature ARN ARN						