

RAAP 1 TYPE TRAINING

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Recreational Aviation Advisory Publication

RECREATIONAL AVIATION ADVISORY PUBLICATION (RAAP) 1 – TYPE TRAINING REVISION

Get appropriate transition training before you fly an unfamiliar aircraft.

A must read

Responsibility for ensuring safe operation of an aircraft rests with the pilot in command. This RAAP is intended to raise awareness of the challenges facing pilots when flying an unfamiliar aircraft for the first time.

A review of RAAus accident data indicates lack of competence and familiarity with an aircraft is a common factor in a significant proportion of accidents including Loss of Control (LoC), near misses and controlled airspace incursions. In addition, insurance and liability issues potentially exist should pilots operate an aircraft with which they are unfamiliar without undertaking appropriate transition training.

RAAus Pilot Certificates are issued for a specific aircraft Group, being Three Axis (Group A), Weightshift Microlight (Group B) or Powered Parachute (Group D). Along with gaining a Certificate, the pilot must also undertake training to gain competence for an aircraft design endorsement or operational endorsement. Examples of aircraft design endorsements include retractable undercarriage, waterborne floats or hull or in flight adjustable propeller and operational endorsements would include passenger or cross country endorsements.

Once all training is achieved to the required competence, an RAAus pilot is legally entitled to operate any RAAus registered aircraft in that Group up to the organisational or aircraft MTOW and with the appropriate endorsements to operate the aircraft design features or operational requirements.

Pilots should make use of all available resources to ensure they are well prepared before flying an unfamiliar aircraft as pilot in command. Recommended actions include:

- Review the Pilots Operating Handbook (POH) for the aircraft to ensure understanding of the required speeds for various operations, emergency procedures and systems familiarity, rather than relying on anecdotal advice or unconfirmed information, after all the manufacturer will provide the most accurate information for operating the aircraft;
- Seeking the advice and assistance of experienced instructors or pilots experienced with the type;
- Ensuring you understand how the aircraft differs in performance characteristics and responses from aircraft you have flown before;
- Ensure you know how to use all the equipment aboard, are familiar with the location and operation of all buttons, levers, dials, etc. before flight;
- If necessary, have someone experienced with the type fly with you before you fly the aircraft as PIC

Type Training was introduced in Flight Operations Manual Issue 7 in response to aircraft accident analysis which revealed a large number of accidents relating to fuel mismanagement such as exhaustion or starvation due to incorrect use of fuel shut off valves and Runway - Loss of Control accidents during landing or take-off (R-LOC). Assessment of these accidents revealed pilots may not have had sufficient time on, or have not have been completely familiar with the aircraft type. The analysis revealed pilots had initially trained on one aircraft type at a Flight Training School and then privately purchased a different type. They then operated away from the oversight of a CFI, at a private airfield or strip. Incorrect use of fuel taps, mismanagement of fuel systems and R-LOC accidents occurred due to unfamiliarity with the aircraft type and its systems, to pilots with relatively low hours, lack of recency and currency and particularly, lack of competence in management of slow speed flight.

Other accident examples included aircraft with unusual design elements not covered by RAAus endorsement requirements, such as dive brakes fitted to motor gliders. These types of aircraft were not being operated as recommended by the manufacturer in the Pilot Operating Handbook (POH), resulting in aircraft mishandling.

Further analysis revealed pilots were more likely to be involved in accidents if taught to operate only a specific aircraft type and refer to location specific references at their home airfield, rather than learning to fly any aircraft at any location and referencing the aircraft POH for relevant operational information.

Considerations

Pilots should consider a wide variety of factors when flying a new aircraft type. These may include ensuring familiarity with aircraft instrumentation differences, whether this be 'glass cockpit' or 'steam gauges', clear understanding of fuel and trim systems, or understanding the different performance characteristics of different wing types.

As an example, familiarity with one style of instrumentation (traditional gauges versus multi-function displays) may lead to confusion when operating different instrumentation, including correctly adjusting subscale changes for barometric pressure, operating different radios with the dual monitoring capabilities and Com settings, setting codes in transponders or programming flight paths in GPS. Even using different hands for throttle and control inputs in different aircraft types can result in control issues if not considered and managed appropriately.

RAAus recommends pilots consider initially conducting a flight in a new aircraft type with an Instructor and after initial take-off, pilots should consider climbing to a safe altitude to explore aircraft slow speed flight and stall characteristics, familiarise themselves with the aircraft handling in the landing configuration, best climb and glide speeds and control responsiveness at various speeds.

The pilot should then conduct circuit training in calm conditions to fully familiarise themselves with all aspects of operations in the new type, before extending the flight operations to include more challenging conditions and flight regimes such as crosswinds and short field operations.

A pilot may elect to review the POH, discuss the new aircraft type and any handling characteristics or differences with an experienced Instructor or pilot and sit in the cockpit of the new type to familiarise themselves with the aircraft cockpit and panel layout prior to flight, and therefore may decide an Instructor is not required.

First of Type

If a Pilot Certificate holder intends to fly a new type of aircraft, and in reasonable geographical proximity there is no-one with experience on that aircraft type, the pilot should take all reasonable steps to ensure they have recent experience on a similar performing aircraft, including utilising the aircraft design endorsements required for the flight. Use of an experienced Instructor or CFI as a safety pilot is also a recommendation.

After consultation of the aircraft POH, the Instructor or CFI may elect to fly the aircraft solo initially in order to ensure they are competent on the type. Due to the wide range of experience held by the majority of Instructors or a CFI it is reasonable to assume they hold sufficient recency and currency to ensure safe operations on a new type of aircraft.

Education

RAAus has concentrated on aspects of ensuring a pilot is trained appropriately to fly any aircraft, along with making the pilot solely responsible for seeking additional training and assistance when converting to a new type.

A multi-faceted education campaign has been implemented, aimed at three levels. Firstly, ensuring CFIs and Instructors teach students general aircraft handling techniques rather than specific aircraft type or aircraft characteristics.

Secondly, students and pilots have been educated to ensure adequate management of slow flight elements, particularly when landing and taking off. The RAAus Syllabus of Flight Training will be revised in 2021 to more adequately focus attention on adequate management of slow flight elements.

Finally, pilots continue to be educated to reference the aircraft Pilot Operating Handbook (POH) to ensure they adequately understand and manage flight in a new aircraft type, rather than rely on “hangar talk”, assumption and anecdotal information.

None of the information above is new, but RAAus has focussed on these key areas in recent years. Pilots must be fully aware of the potential problems possible when flying a new aircraft type, and that is the purpose of this RAAP.

Summary

- The RAAus Flight Operations Manual clearly places all responsibility for ensuring safe operations of a new aircraft squarely where it should be, on the pilot in command
- Pilots should also make use of experienced Instructors and CFIs to gain confidence and competence in a new aircraft type as required
- Insurance and liability issues potentially exist should pilots operate an aircraft type they are unfamiliar with, without seeking appropriate assistance from experienced CFIs or Instructors

Definitions

To assist pilots to understand differences changing from one aircraft to another can include, the following summary of potential differences and definitions have been provided relevant to each aircraft Group.

In the case of Group D aeroplanes;

- aeroplanes of a similar canopy type (box or elliptical)
- similar control type for wing and throttle (foot or hand)
- nose wheel type (steerable or fixed).

Aircraft characteristics

Three axis (Group A)

- **Aircraft performance** – High speed 100 knots +, intermediate speed 60 - 100 knots, slow speed < 60 knots
- **Avionics** - Glass cockpit, traditional gauges, combinations, GPS type, radio and transponder programming and use
- **Wing configuration** – high lift and high camber wings versus high speed wings
- **Fuel system** – taps, including operation and location, potential cross-feeding issues, header tank capacity and minimum amount, unusable fuel amounts, proven fuel burn, auxiliary pump systems engine operation of fuel injection versus carburettor
- **Ancillary flight controls and lift devices** - Flaps (electric or manual, location and ease of access), dive brakes, trim (electric or manual, indicator location, speed of operation), cowl flaps, carburettor heat, slots, vortex generators
- **Undercarriage type** – tailwheel, nosewheel, tyre pressures, landing characteristics, go-around actions
- **Pre-flight considerations** – aircraft construction – metal, composite, fabric, combinations
- **Cockpit ergonomics** – yoke or control stick, position of ancillary controls, seat adjustment and access, door or canopy securing systems.
- **Critical operating speeds** including expected flight envelope, approach and climb speeds (e.g. high drag/low drag with consideration of inertia)

Weightshift Microlight WSM (Group B)

Wing

- Strut wing versus wire braced
- Control input required
- Control responsiveness
- Single surface or dual surface wing
- Setup
- Inspection
- Flight behaviour differences
- Bar pressure
- Roll rates
- Acceleration in normal and extended flight manoeuvres
- Stall characteristics
- Rigging, de-rigging and packing procedures
- Yaw stability and oscillation control differences
- Trimming and reflex control systems

Engine

- Two stroke or four stroke
- Torque
- Power management and pod reaction

Base

- Steering and braking system differences
- Avionics - Instruments and systems
- Seatbelt and security

Powered Parachute PPC (Group D)

Wing

- Elliptical or Box wing
- Input responsiveness
- Flight behaviour differences
- Glide performance
- Drag differences
- Landing and take-off distances
- Wing setup and inspection
- Control input pressure
- Roll rates
- Acceleration in normal and extended flight manoeuvres
- Emergency response action for line breaks
- The effect of turbulence on differing wing types

Base

- Foot steering and hand throttle or hand steering and foot throttle
- Steerable or fixed nose wheel
- Parachute attachment points
- Solo versus dual payload performance
- Rigging and setup
- Wing layout and inflation differences

RAAus has developed advisory publications to provide clear plain English guidance for members to conduct safe, professional and compliant operations consistent with RAAus Manuals and Policies.

These publications provide interpretive information for members to better understand and conduct flight or ground operations whether they fly or maintain an aircraft, or teach other members to fly or maintain an aircraft.

RAAPs **DO NOT** replace specific requirements contained in the Flight Operations or Technical Manuals or Flight Operations Bulletins, Service Bulletins or Technical Advisories that may be issued.

That's a WRAP!