

HOW WELL DO YOU KNOW THE RULES?

Q. What must be recorded in a maintenance release if an aircraft suffers a major defect or major damage, and by whom?

A. A signed endorsement noting the particulars of the major defect or major damage must be entered in part 2 of the maintenance release with the words "this aircraft is unairworthy".

The endorsement can be made by the aircraft's certificate of registration holder, operator, LAME or flight crew – CAR 47.

Major damage is defined in CAR 2 as "damage of such a kind that it may affect the safety of the aircraft or cause the aircraft to become a danger to person or property".

Q. In commercial operations, what persons are required to be provided with a

copy of an operations manual by an operator?

A. An operator shall provide copies of the operations manual to such as his or her personnel "as the operator considers necessary, to CASA and to such other persons associated with the operator's operations as CASA considers necessary and directs." – CAR 215(6). Section 2.5 of CAO 82.1 directs that operators must provide copies of the operations manual to all operating crew members employed by the operator.

An operating crew member is defined as any person who is on board an aircraft with the consent of the operator and has duties in relation to the flying or safety of the aircraft – CAR 2.

Q. Are aeroplanes conducting agricultural aerial work operations subject to the take-off weight limitations specified in CAO 20.7.4?

A. No. Aeroplanes conducting agricultural aerial work operations are not subject to take-off weight limitations. Most approved flight manuals of aeroplanes conducting such

operations provide that operation of the aeroplane at gross weights in excess of the agricultural gross weight for take-off will be at the discretion and on the responsibility of the pilot.

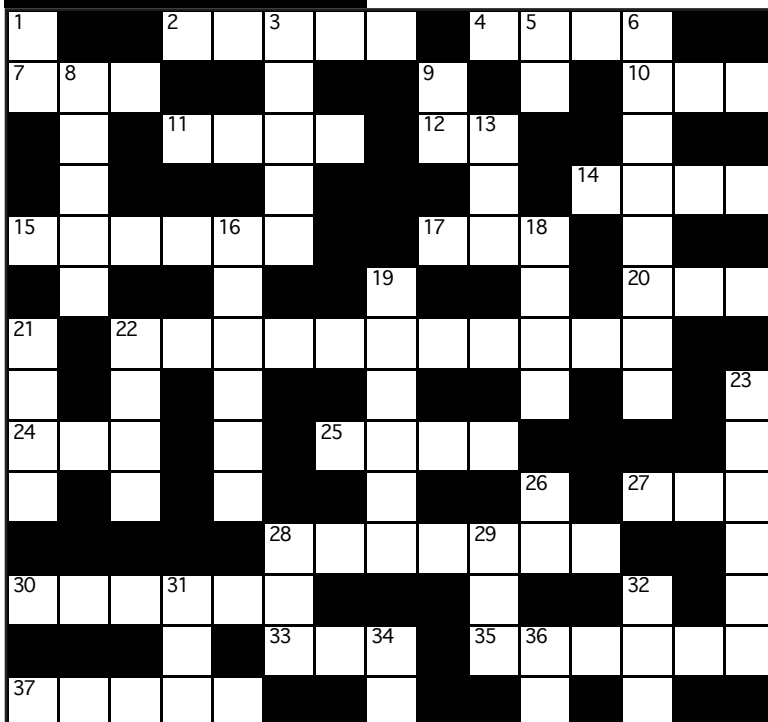
CAR 138(4) provides that a pilot in command of an aircraft shall comply with all the requirements and limitations with respect to the operation of an aircraft set out in the flight manual. Pilots should be aware that the aircraft's strength, durability, handling and performance have not been assessed at these excessive weights.

CAR 92(1)(d) provides, in part, that an aircraft shall not take-off from any place unless the place is suitable for use as an aerodrome, having regard to all the circumstances of the proposed take-off, including prevailing weather conditions.

Q. Who can apply for a special flight permit?

A. Civil Aviation Regulations 1998 21.196 provides that any person may apply for a special flight permit.

CROSSWORD no. 10



Send your completed crossword by 20 October 1999 to the editor, Flight Safety Australia, PO Box 2005, Canberra ACT 2601 for a chance to win \$100 worth of aviation publications. The winner will be selected from a draw of correct entries. Answers will be published in the next issue.

Across

2. An outer casing.
4. A common traffic advisory frequency (abbrev).
7. Instrument landing system (abbrev).
10. Ultra high frequency (abbrev).
11. Material which can be burned to release its energy.
12. ILS outer marker (abbrev).
14. A surface depression.
15. An imperfection or flaw.
17. Pilot in command (abbrev).
20. Australian Ultralight Federation.
22. A form of anti-friction (2 words).
24. Dorsal ____.
25. Short take-off and landing (abbrev).
27. Variable (abbrev).
28. Sensation of dizziness when in a spin.
30. To stop a flow (2 words).
33. Rate of climb (abbrev).
35. A moderate speed of travel.
37. Vertical.

Down

1. Cirrus (abbrev).
3. To shoot out of aircraft.
5. Traffic advisory (abbrev).
6. Body of an airplane.
8. Horizontal condition.
9. One of the 3 positions on a VOR flag.
13. Moving target indicator (abbrev).
16. A raised ring or flange of material on the head or shank of a fastener.
18. Controlled flight into terrain (abbrev).
19. Part of a circle.
21. Australian Association of Flight Instructors (abbrev).
22. To tilt an aircraft around its longitudinal axis.
23. An arrangement of struts supporting a second wing.
26. Fog (abbrev).
28. Visual flight rules (abbrev).
29. Bad weather (abbrev).
31. Standard unit of electrical resistance.
32. Strong heavy framework used to hold a component being assembled.
34. Cirrostratus
36. Rain (abbrev).

FLYING OPS QUIZ

- The stalling speed (IAS) of an aeroplane in level flight will increase if:**
 - Flaps are extended.
 - Ice forms on the aerofoil surfaces.
 - Power is increased.
 - Weight is decreased.
- If the centre of gravity is moved aft:**
 - Longitudinal stability will decrease.
 - Longitudinal stability will increase.
 - The stalling angle will increase.
 - The indicated stalling speed will increase.
- If the oil filter on an aeroplane engine becomes blocked the oil is then:**
 - Fed to a metering jet.
 - Forced through a bypass valve.
 - Returned immediately to the oil tank.
 - Regulated by the pressure relief valve.
- An item of passenger briefing which is mandatory before all take-offs is the:**
 - Location of fire extinguishers.
 - Position of the body in the event of a crash landing.
 - Action you would take in the event of a crash landing.
 - Location of emergency exits.
- What effect will an increase in surface air temperature have on take-off distance required?**
 - Distance required is unchanged.
 - Distance required decreases.
 - Distance required is unchanged but take-off speed is increased.
 - Distance required increases.
- You observe another aircraft that appears to be flying towards you. What is an indication that you may be on a collision course with this aircraft? Relative to your field of vision, the other aircraft appears to:**
 - Move at a constant speed.
 - Move rapidly.
 - Be stationary.
 - Move slowly.
- After cruising at or below the transition altitude, the change from Area QNH to the local QNH of the destination shall be made, unless otherwise directed by ATC, at:**
 - 30nm from the destination.
 - Commencement of descent.
 - Descent through the LSALT or MSA, whichever is highest.
 - The initial approach fix or the commencement of a visual approach.
- The last portion of the VHF aerodrome lighting (PAL) illumination cycle will give which of the following indications: -**
 - The flashing of the runway lights.
 - The flashing of the threshold lights.
 - The flashing of the wind indicator lights.
 - The flashing of all aerodrome lights.
- When ATC issues an instruction to a pilot to change level, when must that change of level be commenced?**
 - Immediately.
 - As soon as possible, but no later than 1 minute after receipt of instruction.
 - As soon as possible, but no later than 2 minutes after receipt of instruction.
 - Any time within the next 2 minutes.

Answers on page 61

TOOLING UP

- A directional gyroscopic instrument operates on the principle of:**
 - Progression.
 - Precession.
 - Topple effect.
 - Rigidity in space.
- An altimeter receives its control air source from?**
 - The pitot system.
 - The static system.
 - The vacuum pump.
 - The cabin pressure regulator.
- What is the main advantage of an alternator over a generator?**
 - The alternator current does not need rectifying.
 - No brush is needed to transfer the electrical current to the load.
 - There is no requirement for current or voltage control.
 - There is no need to have any battery.
- What would be the effects of a leaking (hole) float valve in a fuel contents (float type) indicating system?**
 - System would only indicate full or empty.
 - System would indicate full only.
 - Indications may be inaccurate through the complete range of operation.
- If an engine has been rated for 100/130 fuel only, but 80/87 is all that is available. What would be the effect of using this fuel?**
 - No effect, provided aviation kerosene is not used.
 - No effect if the fuels are not mixed.
 - Possible detonation.
 - Possible fuel pump damage.
- What is the effect of a very low float level in a float type carburettor on the engine?**
 - A lean mixture and high CHT.
 - A rich mixture and low CHT.
 - A lean mixture and low CHT.
 - A rich mixture and high CHT.
- What is the purpose of the fuel boost pump?**
 - To supply fuel for all engine operation.
 - To act as a transfer system only.
 - To supply additional fuel when required.
 - For emergency supply only.

Answers on page 62



Destination: Hobart



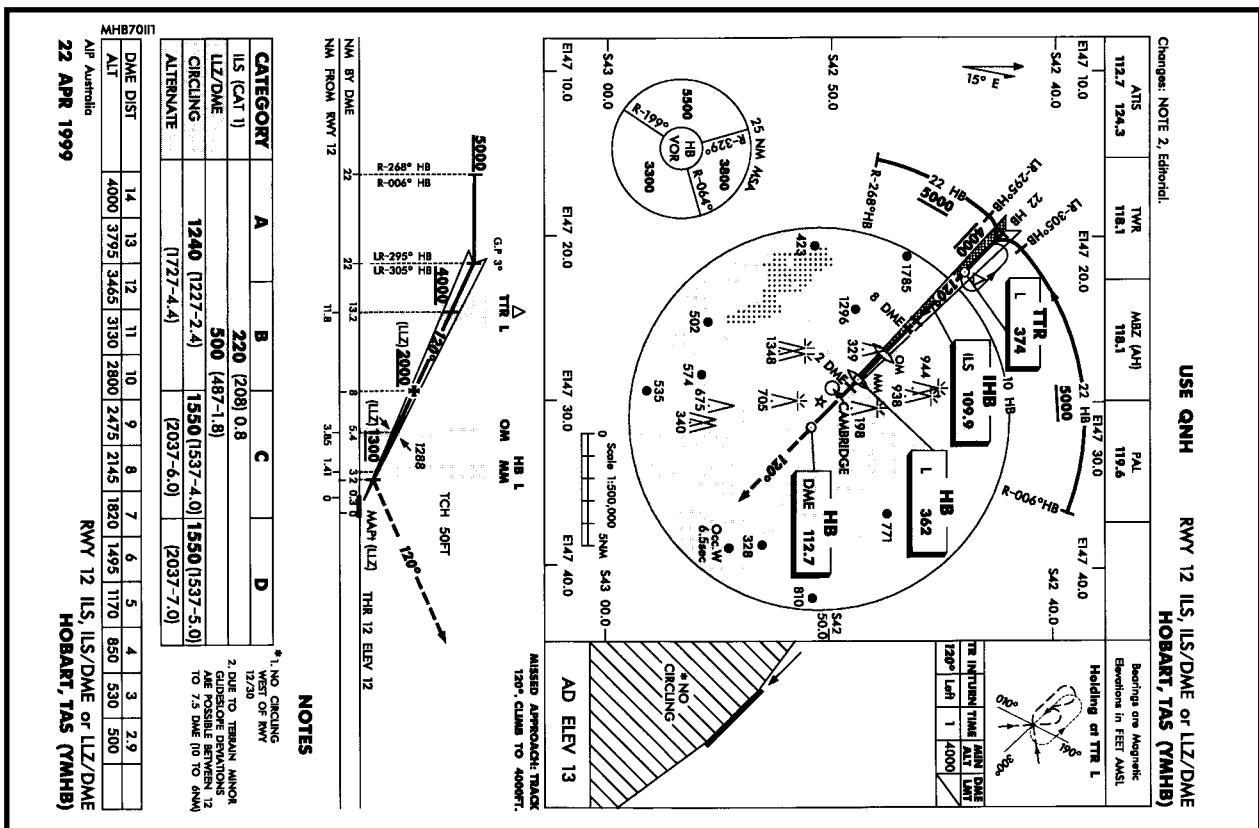
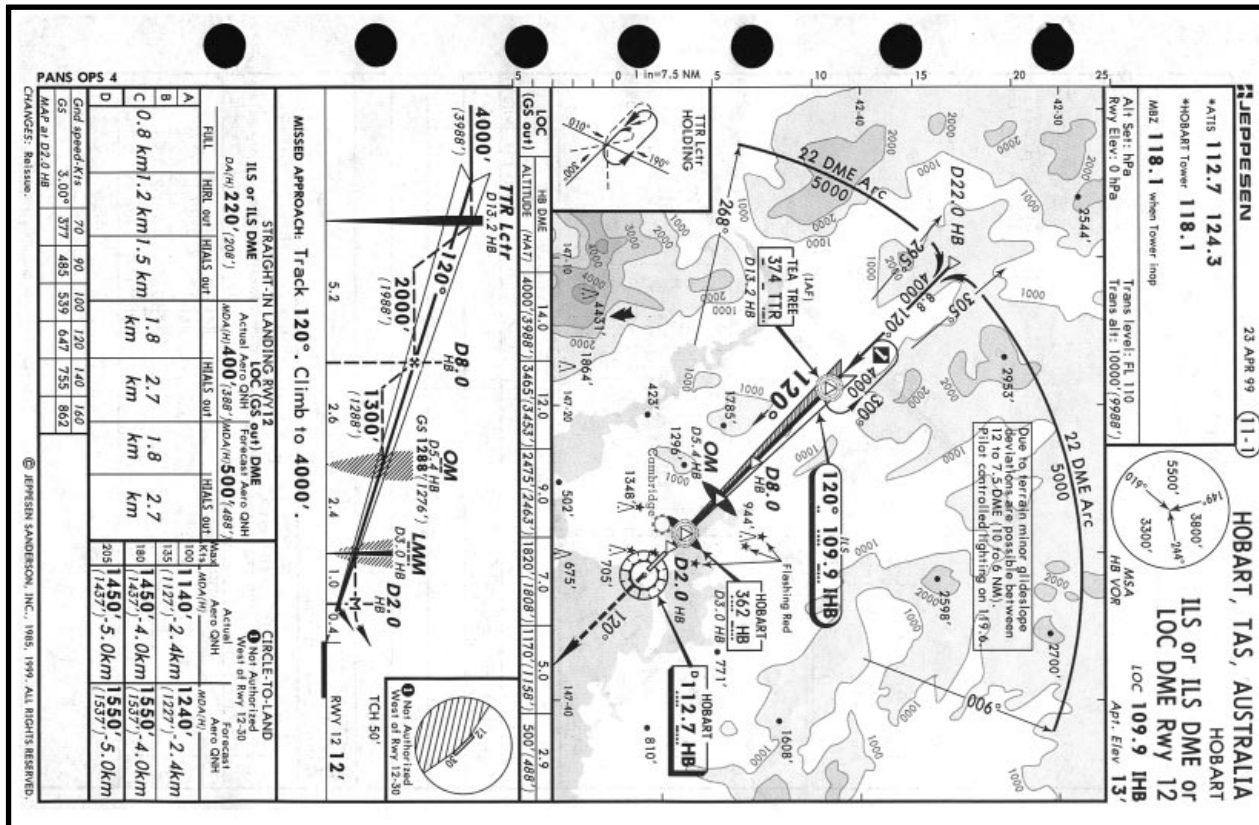
The following questions relate to an IFR flight to Hobart. You are flying a category A aircraft not equipped for flight into known icing conditions. It is fitted with all IFR-approved navigation aids including an IFR-approved GPS.

Refer to the Jeppesen or AIP approach plate for Hobart (opposite page).

For question 1 refer to ERC LL.

1. **You plan an IFR trip from Strahan (YSRN) to Hobart (YMHB). The area forecast valid for your flight includes BKN NS 5000/12000 and a freezing level of 7300ft. At what level should you plan the flight?**
 - a) No safe level available.
 - b) A050.
 - c) A070.
 - d) A090.
 - e) 6200ft.
2. **On the descent into YMHB, you join the 22 DME arc for a Runway 12 ILS approach. What is the location or the bearing and distance to YMHB of the final approach fix or point for this procedure?**
 - a) 120° at 8 DME.
 - b) 120° at 22 DME.
 - c) TTR locator.
 - d) Outer marker.
3. **On the DME arc you are instructed to make a pilot intercept of the localiser and report established when:**
 - a) You have half scale deflection on both the glide slope and localiser indicators.
 - b) You have half scale deflection on the glide slope and full scale deflection on the localiser.
 - c) You have half scale deflection on the localiser only.
 - d) You have half scale deflection on the glide slope only.
4. **With a ground speed of 100kt, the rate of descent necessary to maintain the glidepath would be closest to:**
 - a) 180 fpm.
 - b) 300 fpm.
 - c) 400 fpm.
 - d) 540 fpm.
5. **You are established on the ILS approach and cleared for runway 12. At 9DME the maximum speed allowed for your Cat A aircraft for this approach is:**
 - a) 150kt till 1300ft then 100kt.
 - b) 150kt.
 - c) 100kt till visual.
 - d) 130kt till visual.
 - e) 150kt till 8 DME then 100kt.
6. **At the outer marker you note that the altimeter reading is 1268ft. Assuming the glide slope indicator is centred and pressure error is zero, the lowest permissible decision altitude to which you can now descend is:**
 - a) 220ft.
 - b) 200ft.
 - c) 400ft.
 - d) 240ft.
7. **Your aircraft PEC is 20ft. You have received ATIS. If during the approach the glidepath became unserviceable, what would be your landing minima?**
 - a) 240ft.
 - b) 400ft.
 - c) 520ft.
 - d) 420ft.
 - e) 220ft.
8. **If not visual by the DA, the missed approach must be commenced at:**
 - a) 0.4 DME .
 - b) 2 DME.
 - c) The middle marker.
 - d) 220ft.
9. **Not visual at the DA you conduct a missed approach, and arrive back at Tea Tree on a heading of 280°(M). What entry procedure would you make to establish yourself in the holding pattern?**
 - a) Sector 3 (direct entry).
 - b) Sector 2 (off-set entry).
 - c) Sector 1 (parallel entry).
10. **While in the Tea Tree holding pattern at 4000ft, what is the maximum IAS which may be flown without ATC approval?**
 - a) 170kt.
 - b) 240kt.
 - c) 230kt.
 - d) 220kt.
 - e) 265kt.
11. **While conducting the Hobart ILS at night you become visual at 12nm. If the glide slope is unserviceable, at what distance from Hobart may you descend below your LSALT/MSA for a visual approach?**
 - a) Within the circling area.
 - b) 3 nm from the ARP.
 - c) 5 nm and aligned with the runway centreline and established not below 'on slope' on the VASI.
 - d) 7 nm and aligned with the runway centreline and established not below 'on slope' on the VASI.
 - e) 10nm and established on the LLZ.

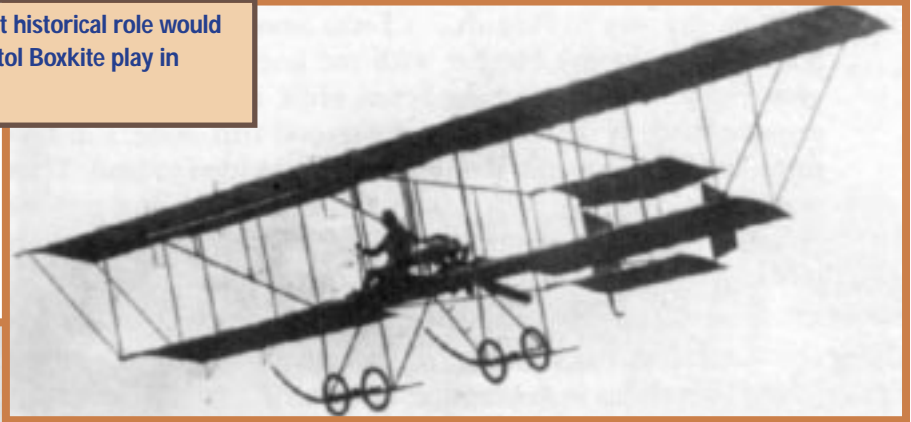
Answers on page 61



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PICK THE PIC

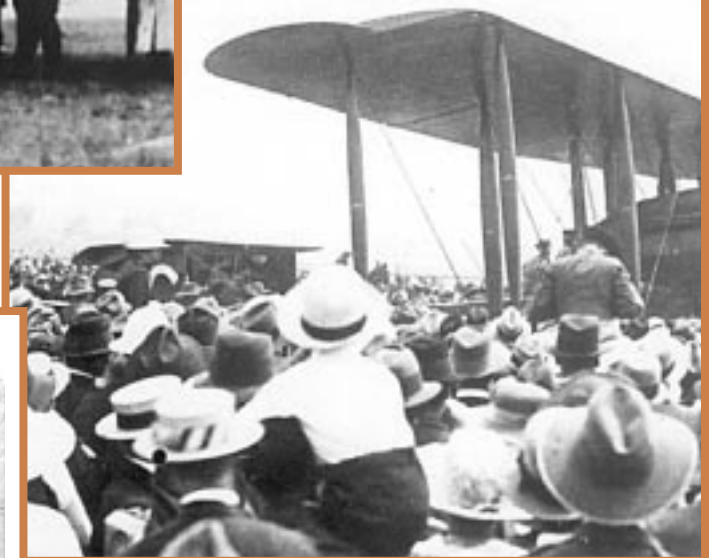
Q1. What historical role would this Bristol Boxkite play in 1914?



Q2. Australia's first recognised flights were undertaken by a man world famous for his ability to escape difficult situations. Who was he?



Q3. Why is this crowd gathered at Mascot aerodrome on 14 February, 1920?



Q4. What new service is this leaflet promoting?

Aeroplane Passenger Services

NORTHERN TERRITORY AND QUEENSLAND

AERIAL SERVICES, LTD.

Will commence operations early in December as Passenger Carriers

Between the Railheads of Central-West Queensland.

The Machines to be employed in these Services are:

- 1 "Avro" Triplane Limousine (100 h.p. Beardmore Engine), with accommodation for 7 Passengers, with baggage.
- 2 "Avro" 3-Seater Biplanes (100 h.p. Sunbeam "Duck" Engines).

For Passenger and Freight Rates apply—

Secretary, N. T. & Q. Aerial Services, Ltd. Winton, Queensland.

We have the Sole Agency in Queensland for all
A. V. ROE & CO.'S Machines and Products.

Q5. Who is this woman (centre, front) and what is she famous for?



Answers on page 62.

WHAT'S THE MESSAGE?



In 25 words or less, tell us what you think is the message to be inferred from this photo. The best entry will be published in the next issue. The winner will receive \$50 worth of safety education products. Send your entries to the editor, Flight Safety Australia, GPO Box 2005, Canberra ACT 2601 by 1 November 1999.

How did you rate?

Chart quiz on the HOBART ILS - pg 58

1. c). The LSALT SRN-HBA is 6200ft. The track is 100°M therefore we must plan odds. The next altitude above 6200ft is 7000. Next we must check the freezing level. Unless the aircraft is suitably equipped, planning above the freezing is not permitted. FZL is 7300ft, therefore 7000 is okay.
2. a). The final approach symbol is indicated by the Maltese Cross.
3. c). AIP ENR 1.6 - 3 Para 3.16. Note Jepps ATC AU-1002.
4. d). To approximate the rate of descent to maintain the glide path, use the rule of thumb of 5 times the ground speed. For a more accurate figure, refer to the Gradient To Rate Table in DAPS.

5. e). For a Category A aircraft in the Initial Approach Segment the max Speed is 150kt to the Final Approach Fix (at 8 DME), then from the final approach fix max speed is 100KT.

6. a). The check height at the outer Marker is 1288ft and the DA must only be adjusted if, at the OM, your altimeter reads high. As the altimeter is reading low, the lowest permissible DA remains at 220ft. (Precision approaches require the DA to be adjusted to allow for pressure error when calculating aircraft landing minima (ALM). Operators may apply aircraft pressure error correction – which in this case is zero – or, alternatively, add at least 50ft to the published DA. - AIP ENR 1.5-11 para 1.17.1)

7. b). If the glide path becomes unserviceable we can continue with a non precision LLZ/DME approach. PEC is only to be adjusted for a Precision Approach and need not be adjusted for a non-precision approach. We have ATIS so we use the

actual QNH (on the Australian Charts reduce the MDA by 100ft). Therefore, the MDA is 400ft.

8. d). The MAPT on a precision approach is the point of intersection of an electronic glide path with the applicable DA. In this case 220ft.

9. c).

10. a). AIP ENR 1.5 - 17 Para 3.2.1a Jepps TERMINAL AU-5 Para 2.1a

11. d). AIP ENR 1.5 - 9 Para 1.12b(5). Jepps TERMINAL AU-18 Para 3.11b(5) VISUAL APPROACHES

Flying ops quiz - pg 57

1. b). Ice, frost, damage can have a disastrous effect on stall speed.

2. a).

3. b). Dirty oil is better than no oil, land and get it fixed.

4. d). CAO 20.11 14.1.1

5. d). Environmental factors which affect

take-off distance are temperature, pressure and humidity. An increase in temperature or humidity will result in increased take-off distance. Conversely, an increase in ambient pressure will result in a reduction in take-off distance.

- 6. c). A constant line of bearing to the other aircraft is an indication of a collision risk.
- 7. b). AIP ENR 1.7-4 (figure 1)
- 8. c). ERSA INTRO-10
- 9. b) AIP ENR 1.7-6 (4.1.1)

Tooling up - pg 57

- 1. d) The axis of rotation of a freely mounted gyroscope tends to remain rigidly fixed in space and is the principal property used in a gyroscopic compass. Precession is another property of a gyroscope and this is utilised in devices such as turn and slip indicators.
- 2. b) An altimeter is basically an aneroid barometer measuring the atmospheric (static) pressure and translating this to an instrument calibrated in feet.
- 3. b) An alternator uses a slip ring, whereas a generator uses brushes, to create the electrical current. The lack of sliding parts in an alternator in producing the output leads to less wear, and generally better reliability than a generator.
- 4. c) Depending on the size and position of

the hole, and how much fuel enters the float, indications may be inaccurate through the complete range of operation.

- 5. c) 100/130 fuel is designed for use in high compression engines. It has a higher lead content (and other anti-detonation agents) than 80/87 fuel to assist in suppressing detonation. Using the lower octane 80/87 fuel in a high compression engine would increase the chance of detonation and possibly cause damage to the engine.
- 6. a) A low float level would restrict the amount of fuel released to the engine through the carburettor valve seat. This would lead to a leaner mixture than otherwise required and, consequentially, a higher CHT.
- 7. c) The fuel boost pump ensures an adequate supply of fuel is available when required. For more information, refer to the Aircraft Flight Manual.

Pick the pic - pg 60

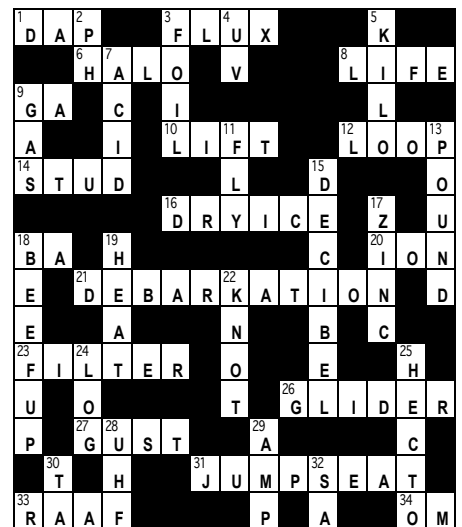
- 1. It was the first military aircraft to fly in Australia, on 1 March 1914.
- 2. American Harry Houdini (internationally famed for his achievements as an illusionist) became the first aviator ever to fly in Australia, in 1910. Several flights were completed by Houdini in his Voisin biplane at Diggers Rest, beginning on 18 March, 1910. His most successful effort came on 21 March, when the pilot remained airborne for 7 minutes and 37 seconds, attaining a

maximum altitude of 100ft.

- 3. To celebrate the completion of Ross and Keith Smith's historic flight from England to Australia in their Vickers Vimy. The flight took 28 days from London to Darwin.
- 4. The arrival of QANTAS passenger services, commencing December 1920.
- 5. Amy Johnson. She was the first woman to fly solo from England to Australia.

Crossword – last issue

The first correct entry drawn was received from Vernon Benjamin of Morley, WA. Vernon receives a voucher for \$100 worth of aviation products from Airservices publications centre.



The winner of last issue's What's the message is James Barber, of Mukinbudin, WA.

“That’s great F.O. but in future ‘touchdown at 1505’ will be a reference to TIME.”

Near misses:

- “Honey, how many times have I asked you not to bring your work home!”
– Tim Whelan
- “I know the Skipper’s in a hurry to get home, but this is the worst case of ‘Get-home-itis’ I have ever seen!”
– Clive Harman
- “I thought you said there *wasn’t* a house on the runway.”
– Anonymous

