

OPERATIONAL DOCUMENT

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ALPHA FLYING GROUP – PILOT HANDLING NOTES

PA32R-301 PIPER SARATOGA (VH-OAZ)

1. PRE-FLIGHT

Before leaving home

Log into FSP (FLIGHT SCHEDULE PRO) to check if previous flight has checked in (send them a friendly reminder message if they have forgotten to) and if they have logged any defect notices that may prevent your flight.

Arriving at the Hangar

Alpha aircraft are housed in the Bankstown Flying School hangar (Ph: 9707 3822). Door codes are communicated to members separately and any changes will be advised by a separate note. The locker key safe code is **0156**. In the right hand locker is the Pilot Sign Out Folder, the two aircraft flight bags with documents and keys, cleaning products, spare oil, life jackets, spare headsets. In the left locker is, vacuum, overnight covers and tie down kits and other miscellaneous items.

Signing Out the Aircraft

When you arrive at the airport access the locker and remove pencil case for the aircraft you are about to fly and check the MR prior to anything else (you don't want to have pulled out an aircraft and preflight checked it to find out there's a major issue on MR and you cant fly it). Check the aircraft out on FSP (it will inform you of anything the previous pilot may have identified as major on MR or minor that may effect your flight and have not been reported on the MR). Pull the aircraft out for preflight checks, refuelling and sign the MR when you are satisfied.

If you identify a major issue that prevents the aircraft from being airworthy please note on MR the issue (write "aircraft not airworthy" if major safety defect) and remove the pencil case and place it in the other locker and make note of defect of FSP. Select the switch in FSP on the defects page that the aircraft should be grounded if this is the case. Notify Paul Littman 0414 446 822 or Joseph Dagher 0404 632 451 that you have removed the pencil case and the nature of the defect.

Preparation for Flight

Open the hangar doors from the inside and use the petrol powered tug, Millwaukee battery handheld tug or the handheld tow handle to move the aircraft out to the hard stand between the hangars. **Do not use the white Bankstown Flying School electric tugs. Make sure wing tips are clear of the hangar doors and other aircraft. Stop and check as you move the aircraft or use a second person as a spotter.** Immediately chock the wheels or apply the parking brake and return the tow bar to the hangar. **If you have not used the petrol powered tug before contact Paul Littman for instruction prior to your flight.**

If you are heading away for a longer flight, including overnight trips, the doors must be locked from the inside with the PIC exiting the hangar from the airside door next to the toilets.

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Be aware that if the doors on the adjacent hangar (Coulson Aviation) are fully open, there is not enough clearance for OAZ to pass. **Ask the Coulson staff to do this, or if there is no Coulson staff there, move the door yourself.** These doors need to be closed a few metres flush to the hangar walls to allow safe passage.

For overnight flights away from YSBK, ensure you take sufficient oil, Mr Sheen, tie down kits, solar guards and/or overnight covers and the jumper pack.

The PIC is responsible for conducting the pre-flight and signing off the Maintenance Release.

Note: Even for VFR and daytime flights, the pitot heat and lights must be checked as part of the pre-flight and reported if not serviceable.

Fuel and Oil

Fuel at YSBK is ordered from World Fuel Services with payment on account or via card. During business hours call via phone and advise account name (Alpha), location (taxiway HOTEL), registration (OAZ) and type of fuel (AVGAS) to have the tanker come to you. You can also use the 24hr self-serve bowser paying with the WFS card.

World Fuel Services: Phone: (02) 9790 2144 / 0412 585 550 VHF: 119.1

Oil is kept in the right hand cupboard inside the hangar with the PIC responsible for recording the oil added on the Maintenance Release and the fuel uploaded on the Flight Time Sheet. Please advise the Flight Captain should oil supplies be low. Current oil used is Victory 100AW SAE 50 delivered in 1 US quart bottles.

Total oil capacity for OAZ is 12 quarts although the aircraft is never operated at this level. The operating oil level is to be **kept at 8 quarts**. Filling above 8 quarts will result in unnecessary discharge through the breather and apparent high oil usage. Minimum oil quantity is 6 quarts.

2. AVIONICS SUITE

OAZ has an avionics suite incorporating:

- a. Aspen EFD 1000 Pro (Electronic Flight Display)
- b. Avidyne IFD540 (GPS, Radio and Nav)
- c. STEC 3100 (2 axis Auto Pilot)
- d. JPI EDM 830 (Engine Monitor)
- e. Garmin GI 275 (Back up MFD)

The PIC must be fully knowledgeable with the new avionics suite for the aircraft. Pilot reference guides are available in the cockpit **or can be downloaded from the OEM or Alpha Aircraft web sites.**

Useful tips:

Both the STEC and Aspen have aural callouts to warn of deviation from the command 'bug'. Keep all modes and bugs consistent across the two units in order to avoid spurious warnings.

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There are 3 altimeters (Aspen, Garmin and analogue altimeter). The PIC should ensure the current QNH is correctly set on all 3 altimeters at all stages of flight.

Aspen EFD 1000 Pro

Speed Bug – is advisory only and not connected to the autopilot.

- On departure – Suggest set Vr (rotate). Vx and Vy are pre-set on the speed tape
- On approach – Suggest set Vref (threshold crossing speed). Gear and flap limit speeds are pre-set on the speed tape

ALT – is advisory only and not connected to the autopilot. It is recommended to keep commanded altitude consistent across the Aspen and STEC to avoid spurious callouts.

Avidyne GPS

RAIM is checked under AUX and then CALCULATORS tabs.

DEST – ensure the AD is loaded (e.g YMDG) and not the aid (MDG) to avoid LOW TERRAIN alarms on final.

STEC Auto Pilot

If the flight director is not being used, the AP will hold the existing Roll and Pitch attitude when first engaged. If intending to climb or descend using the AP, first select the desired altitude (on the Aspen and STEC) before changing the vertical mode. It is good practice to use IAS for climbs, and VS for descent.

The IAS for the AP is taken from the GI275. The GI275 indicates circa 5 kts slower than the Aspen. To cruise climb at 110kts requires 105kts to be set on the AP.

Disengaging – first press of the disconnect switch on the yoke disengages the AP. Second press disengages the FD. Or alternatively, press the switch for 1.5 sec to disengage both together.

Emergency Level Mode – pushing the **LVL** button in any mode or aircraft attitude will immediately engage the AP servos and command the aircraft to a wings level, straight and level attitude. This could be potentially lifesaving in the event of pilot spatial disorientation.

JPI 830 Engine Monitor

Monitor immediately after initialisation to enter or confirm total fuel onboard at start-up. If you miss this, there is a procedure in the manual for entering the start-up fuel once you are enroute. The JPI is smart enough to back-calculate and will then display the correct inflight FOB.

As OAZ is now 'very electronic, monitoring the alternator and battery voltages is critical. Push the STEP button once to stop the monitor cycling through the parameters. Repeatedly push STEP again until the system voltage is shown in big white numbers on the bottom of the display. It is suggested to leave this voltage field displayed for the entire flight for pilot monitoring.

3. ENGINE START PROCEDURES

Recommended starting procedures and checklists are supplied in the aeroplane. The Avionics Master Switch is to be turned on after engine start with all avionics self-tests to be satisfactorily completed prior to taxiing.

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The first instrument to check upon start up is the JPI engine monitor. The PIC is to enter or confirm the fuel contents when prompted soon after the instrument has initialised.

4. FUEL SYSTEM AND MANAGEMENT

The total useable capacity is 386 litres (102 US gal.), or 193 litres either side (51 US gal.). OAZ has two interconnected fuel cells in each wing with a filler cap over each outboard cell. There are two fuel pumps, one engine driven and one electric. The electric pump is controlled by the PIC. The electric pump should always be used during take-off and landing, when changing tanks and at any time when in-flight fuel supply problems are suspected.

There are two fuel gauges for each tank – one in the wing above each tank for visual inspection by the PIC on the ground and the other in the cockpit. The wing gauges are only to be used as a guide and indicate approximate fuel quantity ranging from 5 to 35 US gal.

The JPI is the most accurate measure of fuel flow, however it will not detect fuel leakage. The panel gauges are the most accurate measure of fuel contents at all times. Immediately after engine start, the PIC is to enter the fuel contents for both tanks into the JPI engine monitor. Unless both tanks are full, it is recommended to reduce estimated fuel contents by 25 litres per tank when inputting fuel contents into the JPI engine monitor.

There are three (3) fuel drain points in the fuel system, one below each main tank adjacent to the main gear and the third in the fuel strainer located under the fuselage in the vicinity of the wing spar. The strainer sump is drained by depressing a lever located behind the co-pilot seat. The fuel tank selector should be cycled for about two seconds in each position (OFF, LEFT and RIGHT). Drained fuel is not to be returned to the aircraft tanks and should be placed in the fuel tank of the petrol powered tug. There is a plastic juice bottle and funnel in the tub in the nose baggage compartment. Use this to collect the under fuselage fuel sample.

OAZ cannot draw fuel from both tanks simultaneously. It is therefore a good practice to ensure that fuel can be drawn from both tanks before take-off and before either tank runs dry. A good practice is to start and taxi to the runup bay on the lowest tank, and change to the fullest tank for runups, take-off and the first 30 minutes of flight. This ensures that fuel can be drawn from both tanks prior to take-off and, and if there are any problems early in the flight the PIC has the option of quickly returning to the departure airport.

5. FLYING OPERATIONS

SPEED & SETTINGS

Rotate:	75-80 KIAS
Gear Up:	Positive ROC and <110 KIAS
Climb Out:	90kts and 25/25
Cruise:	21-22"/24
Descent:	Plan for no more than 500 feet pm
Gear Down:	Max 132 KIAS

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Downwind: 1900 RPM & 90 KIAS
Approach: 1500 RPM & 80 KIAS
Final: 80 KIAS
Final approach speed (full flaps): 80 KIAS
GLIDE SPEED GEAR AND FLAPS UP: 80 KIAS
Turbulence Penetration Speeds are: Fully Loaded – 134kts and Empty – 105kts.

PRE-LINE UP

F = FUEL ON

I = INSTRUMENTS aligned

S = SWITCHES ON - Fuel pump, landing light, and strobes (pitot heat if required)

T = TRANSPONDER to ALT

TAKE-OFF

- Set the Mixture to rich, propellor to full fine, Fuel Pump on and Flaps at desired setting
- Open the throttle slowly to full power (approx. 2700 RPM)
- Check Temps and Gauges are Green (Oil and Fuel Pressure)
- Back pressure should be applied to achieve a position rotation at 75-80 kts
- Ensure a positive rate of climb and retract the gear before 110 kts
- Record Wheels OFF time

CLIMB

- Reduce the throttle to 25" MP and set the RPM to 2500 (25/25)
- Turn off Fuel Pump (not below 300' AGL)
- Recommended Cruise Climb is 110 kts for efficient engine cooling

LEANING

It is recommended that OAZ remains on full rich for the duration of the climb. Once established in the cruise, the aircraft can be leaned by reference to the JDI engine monitor.

CRUISE

The recommended cruise power setting is 2400 RPM with a maximum 22.2" MP

DESCENT

Plan descents at 500 feet pm with the mixture progressively moved to Rich. Avoid sudden large power reductions which can cause shock cooling of the engine. Plan on reducing MAP by 1" per 1000ft (at 500 fpm descent that is 1" MAP every 2 minutes). Aim to be joining the circuit at 19" MAP.

Example – cruising at 8000' with 23"/2400 RPM, and about to start descent into a sea-level airport. 7000' of altitude to lose to circuit height and 4" MAP to lose (or 4000'). Cruise power reduction can be delayed until 5000' (circuit altitude + MAP reduction). Commence descent reducing throttle to maintain the cruise MAP (it will rise if you don't do anything), until reaching 5000', then reduce by 1" to 22", then 21" at 4000', then 20" at 3000', then 19" at 2000. Cruise

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down to 1000' at 19", fly level (if required) reconfigure and then slowly reduce power further turning base as required.

LANDING

Maintain 15" MP during approach (D/W 100 kts, APP 90 kts, FINAL 80 kts)

Pre-Landing Checks

B = Brakes (check parking brake off and test brake pedal pressures)

U = Undercarriage Down and Locked (3 Greens)

M = Mixture Rich and Mags on BOTH

F = Flaps as appropriate, Fuel on fullest tank

I = Instruments checked

S = Switches on as required (landing light and fuel booster pump)

H = Hatches and Harnesses secure

Short Finals (approx. 300' AGL)

P = Pitch fully fine

U = 3 greens

F = Full Flaps

C = Clearance to Land

GO-AROUND

Check propellor full fine, apply power smoothly and retract landing gear. When positive rate of climb is established, gradually remove flat and accelerate to the desired speed. Set climb power (25/25) and complete post take-off checks (fuel pump and landing light off)

Best Rate of Climb Speed: Gear Down – 80 kts

Gear Up – 91 kts

Best Angle of Climb Speed: Gear Down – 76 kts

Gear Up – 80 kts

Enroute Climb: 110 kts

POST LANDING (after exiting RWY)

F = FLAPS - identify and retract

R = RADIO - change to GRD freq (or report clear of all active runways if CTAF)

O = Check Oil Temps

S = SWITCHES - turn off fuel booster pump, landing light and strobes

T = TRIM, TRANSPONDER & TIME - return Trim to neutral position, Transponder to STBY and record Wheels ON time

6. LANDING GEAR

In the event of an engine failure the best glide speed is 80 kts.

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The landing gear in OAZ is held in the retracted position by hydraulic pressure. Loss of hydraulic pressure will cause the wheels to drop into the down and locked position (the nose wheel is spring loaded). Emergency gear extension simply involves releasing hydraulic pressure. Normal gear operation requires electrical power. Without power the gear cannot be retracted.

NB: Panel gear lights (3 greens) will not be visible during day with the Panel lights on. If on checking for 3 Greens the lights are not illuminated, check the Panel lights first.

7. EMERGENCY GEAR EXTENSION

If 3 Greens don't illuminate, carry out the Emergency Gear Extension procedure:

1. LEAVE gear selector DOWN
2. CHECK Master switch is ON
3. CHECK circuit breakers are IN
4. CHECK Panel Lights are OFF
5. CHECK bulbs in the 3 Greens by tapping any unlit lamps and switching them around

If all of the above are unsuccessful:

6. CHECK airspeed is below 92 kts
7. CHECK gear selector is DOWN
8. ENGAGE Emergency Override
9. Hold the Emergency Gear Lever in the EMERGENCY DOWN position

If still unsuccessful, as a last resort and at a safe height:

10. Hold Emergency gear level in EMERGENCY DOWN position AND fish-tail the aircraft with rudder.

NOTES: If the aircraft is set up in a landing configuration you don't have 3 greens and the stall warning doesn't beep – you can assume the gear is down and locked.

In the event of alternator failure, battery power should be conserved, and a landing made without delay.

If the battery is flat, landing gear will have to be extended by the Emergency Gear procedure. The gear lights will not illuminate with a flat battery.

8. POST FLIGHT ACTIONS

Engine Shutdown

1. Switch off Aspen Master (green switch on the left) and Avionics Master
2. Conduct pre-shutdown magneto checks
3. Fully lean to idle cut-off until engine stops
4. Turn off Master and manually shutdown Garmin.
5. Remove keys and place on dash in view of persons outside the aircraft

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Post-Flight Procedures

1. Ensure SARWATCH / SARTIME is cancelled by the most appropriate means. (CENSAR Ph: 1800 814 931)
2. Record the flight times on the Flight Docket and Maintenance Release (note for the MR only actual flight time is to be recorded in decimal HH.MM from Wheels OFF to Wheels ON)
3. Sign aircraft back in in FSP
4. Take photos of the Flight Sheet and Maintenance Release and email to:
accounts@alphaaviation.com.au
5. Clean the interior of rubbish (vacuum if required) and use Mr Sheen to wipe down the windscreens and leading edges
6. Ensure hangar doors and locker are secured

Ensure MASTER and Brakes are OFF, Wheels CHOCKED, Pitot Tube, and Air Intake Covers are ON.