



# Unitas Flying Club

## Student Guide



Date: 2001/12/13



# Unitas Flying Club

## Checklist Procedures, Vital Actions and Useful Information

This manual is being provided as an easy reference for the pilot, and does not in any way supersede the ANRs, CATs, CARs, operations manual or the pilot's operating handbook. It covers procedures specifically related to Unitas Flying Club and the Cessna 172\*. If any information contained in this manual conflicts with any of the aforementioned publications, those publications should take precedence.

\* The vital actions will apply to most general light aircraft

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**Licence Number** \_\_\_\_\_

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Date: 2006/09/30



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## Message from the Chairman

Dear Member,

Welcome to the Unitas Flying Club.

This booklet has been compiled in order to provide a comprehensive, easy to use reference of some critical information that you will require during and after your initial training.

Planning is possibly the most important factor for safe flying and this booklet should prove to be very useful for pre-flight preparation.

Whilst this booklet is as comprehensive and up to date as possible, it is imperative that pilots keep themselves current with changes as published in Notams, AIC's and AIP supplements.

Unitas holds regular seminars at which various safety topics are discussed. These seminars are required by the CAA and all members are requested to make every effort to attend these.

Any suggestions to improve on the detail contained herein will be welcomed.

I take this opportunity to wish you every success in your training and hope that you will have a long and enjoyable membership at our club.

Best Regards,

Stewart Brophy.

Chairman.

January 2002





## Introduction

When you start with your flying training, your instructor will be introduced to you, and he will start immediately preparing you for your flying experience. A number of issues will receive attention.

First, basic issues like clothing, attitude, aircraft bookings, ground school, the air experience, the syllabus, some of the efforts expected of you, and possibly many other matters will probably be discussed. Here is a guideline as reference for you to keep in mind concerning everyday issues relating to the Unitas Flying Club. These items are not necessarily listed in order of importance.

Before you can start any flying training, you will be required to join the Unitas Flying Club. Training may not be given to a person who is not a member of the club. For this reason you will be required to fill in an application form, and you will have to pay the necessary joining fees and subs.

Another item which is also required to be paid for before any flying lessons can commence, is the Excess Insurance Coverage. This is to cover you for the huge excesses required whenever insurance payouts are made on the aircraft. At this stage (at the writing of this handbook) the excess payment required on JTC is something like \$5000! I don't think anyone can afford such a sum of money if he/she should be responsible for the repairs to the plane! With excess insurance this is covered, except for some nominal amount that you may have to put up yourself, depending on the circumstances.

You will be furnished with a flying kit, or pilot's bag. This will contain all the basic items required to complete your course. Amongst the items in the bag will be the Club Rules. You are required to familiarize yourself with these rules.

Each lesson you receive, up to a point, consists of a ground briefing before the actual air exercise is done. It is probably true to say that you will be at the airfield for at least three hours in order to fly one hour. This allows time for the briefing, the pre-flight inspection of the aircraft, the necessary documentation to be completed, the flying exercise as well as the debriefing and other paperwork afterwards. Then you also have to buy your instructor a drink, of course (just kidding!).

Remember to make a booking for the airplane on a day and time that will suit you. This, of course, is dependant on the availability of the aircraft. The bookings are normally made with the AFIS operator in the tower. Check with your instructor to make sure he/she is available for the same time.

Some times during your training there will be exams for you to write. These are required by law, and is to ensure that you have the required theoretical as well as practical knowledge for each stage of your training.

Whenever you book the aircraft for a one hour lesson, the aircraft will have to be booked for at least a half hour extra, to allow for pre-flight and stowing. And you will have to turn up at the airfield AT LEAST one hour before that, for the ground briefing. Now don't be afraid - the briefings will not necessarily precede EVERY flying lesson. Your instructor will prepare you for when and when not these brief-



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## Introduction (continued)

ings will be necessary. Normally, they will be unnecessary after about the sixth to eighth lesson and then resume only again some time after going solo.

It is best you should be prepared for every lesson. You have a student's handbook, supplied in your flight bag. Probably the Jim Davis or the Trevor Thom. These books describe each lesson in fair detail. In fact, the better you are prepared, the shorter will be your briefing sessions. It is to your own advantage to ensure that you have a good knowledge about what you are going to do during each lesson you receive.

Once the briefing session is completed, the necessary authorization documents have to be completed. This will be demonstrated to you by your instructor. Now you are going to get yourself over to where the aircraft is. The big moment in every lesson is at hand.

But first, the aircraft has to be carefully inspected to ensure that it is fit for flying. Your instructor, once again, will teach you the step-by-step routine for doing this. Amongst the things he will show you, is some more important paperwork: checking the Hobbs and the Tacho readings. (Don't worry, you will be shown. Q.E.D.) You will have to check that the aircraft still has flying time left. Yes, flying time can expire! You will be shown how to know this. It is important that you, the pilot, should check this (amongst all the other things).

While you are learning to fly an aeroplane, your instructor will remain the responsible person for the flight. For this reason, he will expect a report from you after your inspection. Report the following items to him, before you board the aircraft:

- A) The fuel endurance available in the tanks. Once again, your instructor will explain to you how this is done.
- B) The quantity of oil in the engine.
- C) The number of hours remaining before MPI (yes, explanation will be forthcoming)
- D) Any condition that you have spotted that you may want to bring to your instructor's attention.

When you are ready to start the aircraft, your flying lesson will begin. Enjoy.

After the lesson, you may have to refuel the aircraft, or just leave it outside for the next student booked on it, as the case may be. But whatever the case may be, if the aircraft is to be stowed after the flight, it will be your responsibility to ensure that it is done. Make sure that you know what situation is called for. (Yes, yes—the instructor will....)

When you return to the clubhouse, a debriefing session will follow. This is to ensure that you are aware of what you have achieved, and where mistakes have occurred, if any. Commonly made mistakes will also be discussed during this session, to make you aware of things relating to DOs and DONTs. During this session your instructor will write comments and details into your training file. Your log book is also updated during this stage.



## Introduction (continued)

Finally, the autho-sheet has to be completed. Remember to fill in the take-off and landing times on the sheet. Your instructor will help you with the cost calculations for payment. Unless other arrangements have been made, you will pay for each lesson at the completion of that lesson.

If you should have any kind of problems at any time during your training, such as disputes of some kind—perhaps with your instructor or with the back office or...—then you must feel free to discuss this with your assigned committee member. On joining the club, a committee member is assigned as your “guardian” - as it were. You may feel free to discuss any matters concerning the club and your training with this person at any time.

A niggling matter concerns cancellations. If the aircraft has been booked by you and, for some reason you cant make it, please ensure that you cancel at least 24 hours before the time , unless, of course, you happen to have an emergency. Even so, do not simply fail to turn up for your lesson—a no-show fee will be raised, as well as the instructors time will be billed to you. I’m sure you can understand the reasoning behind this. Also, remember to cancel the booking as well as canceling with your instructor.

Lastly, some pep-talk. Flying is a wonderful experience. Man has been dreaming about it since the earliest ages when he first saw the birds flying. Technology has finally given us this ability—to soar amongst the clouds. But! (isn’t there always a BUT?) It is not an easy world to be in—there are many dangers awaiting the unwary and unprepared. Your instructor has the very large responsibility of ensuring that you do not become one of the casualties; his job is to give you the best preparation possible. You are bound to get to a stage where it may all feel a little too much for you—most students experience this at some time during their training. The right thing is, of course, to work through this and not allow yourself to become discouraged. Rest assured that one day you will suddenly find everything coming together! Then you won’t even understand why you had been feeling on the down side. From then on you will enjoy your flying even more!

Good luck!

The Unitas Flying Club Committee.



## Preparation for the Lesson

Your instructor will tell you everything that is required from you as preparation for the exercise to be done during each lesson. You will receive ground schooling as preparation for each NEW exercise you are going to execute. This is known as Pre-flight Briefing.

You will be required to fill in the necessary documentation before EACH flight. Make sure that both yourself and your instructor have signed the flight authorization BEFORE the flight.

Take with you the necessary tools for each flight; your instructor will brief you on this. Amongst the items that you are required to have with you are the aircraft's flight bag, your own flight bag, your license (if available), a PEN, a notebook or scribbling pad, perhaps a set of headphones (if available). It is also a good idea to carry some rags with you to clean the aircraft windshield if it is dirty.

When leaving the school building to make your way to the aircraft, note the wind - be prepared for which runway to use. Also, do not simply walk up to the aircraft and start preparing for the flight: note the position of the aircraft - it may need shifting before starting. Note the condition of the tyres, the cleanliness of the aircraft (maybe the windshield needs cleaning). By the way, who cleans the aircraft? The answer is: the owners. Question: who are they? Answer: the club members - this means you! If the aircraft seems dirty, organize a cleaning session! Do it yourself, if need be.

Apart from all the above, the following items are of utmost importance:

Carry with you a positive and willing attitude.

Be prepared for each lesson. Do not leave the airfield simply to forget about your lesson until you turn up for the next lesson. You will have plenty of homework to keep you occupied before your next lesson.

Now go and enjoy the lesson!



Date: 2001/12/13



## Flight Deck Preparation

1. Aircraft Documents Check
  - A. Certificate of Airworthiness.
  - R. Certificate of Registration.
  - R. Radio Station License.
  - O. Approved Operators / Flight Manual.
  - W. Approved Weight & Balance Data.
  - C. Certificate of Release to Service.  
Crew Licenses.
2. Park brake as required.
3. Record Hobbs and Tach readings.
4. Magnetos OFF, key on dash.<sup>1</sup>
5. Undercarriage switch in DOWN position.
6. Avionics OFF.
7. Fuel Selector on required tank – normally least or left.
8. Gust/Control lock removed.
9. Trimmers checked for full and free movement, set neutral.
10. Masters ON.
11. Fuel gauges – check contents.<sup>2</sup>
12. Check instrumentation panels for serviceability.
13. Flap selection as required for pre-flight inspection.
14. Check all lights and avionics as required for planned flight conditions.<sup>3</sup>
15. Check stall warning indicator.
16. Masters OFF.
17. Execute exterior pre-flight inspection as per aircraft manual.<sup>4</sup>

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<sup>1</sup> It is VERY IMPORTANT to ensure that the magnetos are switched off. A live magneto can cause the engine to fire when the propeller is moved during inspection. You could lose an arm or a head!

<sup>2</sup> Report the aircraft's fuel quantity to your instructor in terms of flight time available. Discuss with your instructor the criteria for calculating the available flight time.

<sup>3</sup> If you are going to fly at night, it is imperative that all the lights are operational.

<sup>4</sup> Suggested External Check Procedures are described in Appendix 1 of this Manual



## Engine Start

1. Doors closed.
2. Passenger Briefing.
3. Flaps retracted (Check symmetrically. For aircraft with electrical flaps, such as the C172, this requires the Master Switch to be on at this stage, of course).
4. Seats and Harnesses secure.
5. Instruments checked. (Adjust Altimeter & D.I. to approximate settings—See footnote for Altimeter setting procedure).
6. Alternate static source normal.
7. Cabin heater controls closed.
8. Park brake on.
9. Radios and avionics off.
10. Fuel selector to least (or left) tank.
11. Key in magnetos, set as required.
12. Throttle friction nut loose, exercise throttle and set to 1 cm.
13. Mixture exercise and set full rich.
14. Carburetor heat exercise and set to cold.
15. Circuit breakers checked.
16. Prime if necessary
17. Master switch on.
18. Rotating beacon on.
19. Fuel pump on if applicable.
20. Proper lookout, shout **Clear Prop!**.
21. Operate starter.
22. Set to holding RPM once started, avoiding engine overrev.

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### *Altimeter setting procedure:*

When on the apron at an airfield, you should know what the correct altimeter setting for that airfield is. This means that you can set the altimeter correctly at that point. When you make radio contact with the controllers in the tower (if there is one) they will give you a QNH to set on your altimeter. This QNH is the subscale reading that should be visible on your altimeter. If the tower QNH does not agree with your current setting, then it does not mean that you should adjust your altimeter to an incorrect reading to comply with the QNH—rather it means that you should note the difference between tower QNH and your own, so you can compensate when doing your next altimeter adjustment.



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## After Start Checks

1. Set idle RPM as per aircraft manual. (Referred to as **holding RPM**)
2. Check oil pressure registers within 30 seconds in summer, 1 minute in winter.
3. Check voltage and ampere indicators on electrical system.
4. Lean mixture as necessary to avoid plug fouling.
5. Dead-cut check on magnetos. (Engine revs below 1000 rpm; not done near fuel pumps. See appendix 8 for explanation of dead-cut)
6. Fuel pump off.
7. Check and set all instruments, circuit breakers and systems for proper operation.
8. Radios on, five point check.<sup>1</sup>
9. Navigation aids set and checked as necessary.

- <sup>1</sup> Check radio settings:
1. Transmitter (XTER) set to proper Com;
  2. Com output set to speakers or earphones, as required;
  3. Frequency set to Tower frequency (122.1 for Vereeniging);
  4. Volume set two thirds;
  5. Squelch adjusted to confirm radio active and set to proper volume.

## Taxy Checks

1. Obtain taxy clearance.
2. Select other or fullest fuel tank.
3. Lookout, clear all around.
4. Release brakes, get aircraft rolling, close throttle and check brakes. <sup>1</sup>
5. Check flight instruments whilst in motion.
6. Rudder full and free.

<sup>1</sup> Do not apply brakes while engine is under power. Always close throttle before braking.





## Before Take-Off Power Checks

1. Aircraft in runup position, into wind or facing oncoming traffic <sup>1</sup>, check behind.
  2. Throttle set to holding RPM.
  3. Park brake on.
  4. Fuel tank select fullest or opposite tank.<sup>2</sup>
  5. Mixture full rich.
  6. Temperatures and pressures checked.
  7. RPM as required for power checks.
  8. Carb heat check.
  9. Set mixture according to prescribed procedure.
  10. Propeller Pitch – exercise three times if cold, once if warm.
  11. Magnetos – check left and right for minimal drop.<sup>3</sup>
  12. Alternator checked.
  13. Set direction indicator to compass.
  14. Suction in green band.
  15. Idle check between 600 – 800 rpm.
  16. Back to holding rpm.
- *Power checks complete.*
  - *Now do Vital Actions Before Takeoff.*

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<sup>1</sup> When positioning Aircraft for power checks (runup) always position the aircraft facing into the wind if the wind is stronger than approx. 5 knots. Otherwise it is prudent to position the aircraft so that oncoming traffic is clearly visible.

<sup>2</sup> Cessna 172 select both.

<sup>3</sup> In the Cessna 172 the maximum drop on any magneto is 125 RPM. The difference between the two magnetos should not exceed 50 RPM.



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## Vital Actions Before Take-Off

*Holding Point at Runway (Too Many Pilots Go Flying In Heaven)*

Holding RPM set

- T**oo - Temperatures checked.  
- Throttle friction nut finger tight.  
- Trim set for takeoff.  
- Test controls (**confirm** proper operation of all control surfaces).
- M**any - Masters on.  
- Magnetos on both.  
- Mixture Set.
- P**ilots - Pitot cover removed. Check visually.  
- Pressures all ok.  
- Primer locked. Pull to check.  
- Pitch full fine.
- G**o - Gyros:  
    Artificial horizon checked erect and steady.  
    Turn indicator checked wings level.  
    Direction indicator aligned with compass and checked.  
    Gyro suction adequate.  
- George (auto pilot) off.  
- Gills (cowl flaps) open.
- F**lying - Fuel: check quantities and set to appropriate tank, fuel pump as required.  
- Flaps: set as required for take off.
- I**n - Instruments & Electrics. Check all instruments left to right, top to bottom.  
    Air speed indicator at zero checked.  
    Altimeter set to aerodrome altitude (Vereeniging 4846').  
- Electrics: Circuit Breakers checked.  
    Radios checked (5 point check).
- H**eaven - Hatches and harnesses secure (check passenger side as well).

**Crew briefing .....deliver at this point.**



## Line Up Checks

*Line up with the centre line of the runway for take off (LADTS checks)*

1. **L** - Landing lights as required.
2. **A** - Avionics (Comms) adjust (set louder for flight).  
**A** - Avionics (Transponder) set as required.  
**A** - Altimeter set and reading within 50 ft of published elevation.
3. **D** - Direction indicator lines up with runway direction. (Not Compass).<sup>1</sup>
4. **T** - Time: note take-off time
5. **S** - Safety and security re-checked.

<sup>1</sup> After lining up on the runway for take-off, the direction indicator is checked to ensure that the direction indicated corresponds with the runway direction. This will warn the pilot if there is excessive error on the compass readout, since the direction indicator has already been aligned with the compass during the power checks.

## Checks During Take-Off Run

1. Check wind sock, stick into the wind.
2. Full power on counting 1-2-3. (“Crocodile” count)
3. Check engine RPM.<sup>1</sup>
4. Temperatures and pressures remain in green.
5. Air speed indicator increasing.
6. Maintain aircraft on centre line using rudders.
7. Pull back on control column when rotate speed<sup>2</sup> is reached.

<sup>1</sup> The engine RPM should be able to indicate that the engine is delivering proper power at this stage. JTC – 2250 RPM. If the required RPM is not reached, the engine is not delivering it’s maximum power and some problem may be indicated.

<sup>2</sup> JTC: 60 - 65 kts



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## After Take-Off Checks

*Having established a positive rate of climb and insufficient runway<sup>1</sup> is remaining:*

- B - Brakes applied.
- U - Undercarriage up.
- M - Manifold pressure (throttle) top of green (JTC - simply full throttle and ensure carb heat off).
- P - Pitch set (RPM set to top of green).
- M - Mixture set as required.<sup>2</sup>

*At a minimum of 200 ft AGL:*

- B - Brakes.
- U - Undercarriage locked in up position.
- M - Manifold: confirm setting.
- P - Pitch: confirm setting.
- M - Mixture: confirm setting.
- F - Fuel pump off and selection checked on both or as required, i.e. mains or fullest.
- F - Flaps retract if necessary.
- I - Instruments: temperatures and pressures ok.
- E - Electrics: landing lights off, strobe lights on.
- H - Hatches and harnesses secure.

*Climb to 500 ft, lookout and begin 15° to 20° climbing turn to crosswind leg. Speed 65 kts (JTC).*

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<sup>1</sup> *Insufficient runway remaining* means that, should an engine failure occur after take-off, the runway remaining is not adequate to land back onto and stop.

<sup>2</sup> The Pilot's Operating Manual must be consulted for the proper method of setting the mixture at this time. Quite often this is also "Top Of Green".



## Flying The Cross-Wind Leg

*Climb to 1000ft and level out . Whenever the proper position has been reached for the downwind leg, lookout and turn onto the downwind leg.*

## Down-Wind Leg

(Cessna 172: Speed 75 kts ; 2200 to 2250 rpm).  
*Abeam upwind threshold do radio call.*

- B - Brakes checked and free.
- U - Undercarriage down and locked.
- M - Mixture set as required.
- P - Pitch set to top of green.
- M - Manifold set as required (JTC 2200 rpm).
- G - Gyros: Direction indicator set to compass.
- F - Fuel: check quantities and set to both or as required.
- F - Flaps: first stage ( $10^\circ$ ).<sup>1</sup>
- I - Instruments & Electrics:
  - Temperatures & Pressures (Ts & Ps).
  - Landing lights on, strobe lights off.
- H - Hatches and harnesses secure.

*Level turn onto base leg at  $45^\circ$  angle to holding point.*

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<sup>1</sup> Before applying flaps, ensure airspeed is within white arc (Flap operating speed).



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## Base Leg Checks

- C - Carb heat on.
- P - Power: Reduce power to base leg setting<sup>1</sup> and speed as for final approach.
- F - Second stage flaps (Cessna 172: 20°).
- T - Trim for proper speed as per manual.

Adjust descent for 300 to 500 ft per minute.

*Look out, descending turn to finals at or above 500ft AGL and as soon as runway seems to be in correct position (This is a judgment call).*

<sup>1</sup> 1700 to 1800 RPM on Cessna 172, airspeed 60 to 70 Knots.

## Final Approach Checks

- R - Radio call.
- P - Pitch full fine.
- U - Undercarriage down and locked (lights on 3 greens).
- F - Fuel selection checked, fuel pump on.
- F - Flaps as required.
- C - Carb heat off as soon as runway within gliding distance.

*Watch runway aiming point, remain fixed in the windscreen.*

*Control airspeed with elevator, flight path with power.*

*If power is increased, raise the nose to maintain airspeed.*

*If power is reduced, lower the nose to maintain airspeed.*

*If undershooting, increase power to regain flight path.*

*If overshooting, decrease power or increase flaps.*



## Overshoot / Go-Around

1. Engine Power Full
2. Immediately assume a climb attitude, being careful to watch your airspeed.
3. Smoothly reduce flaps to recommended MAOC setting.<sup>1</sup>
4. Position yourself to the dead side of the runway.
5. Accomplish normal after take-off checks.
6. Inform ATC / other aircraft of your intentions.

<sup>1</sup> Note that full flaps setting has no advantage in a climb. In fact, a reasonable rate of climb may not be possible with full flaps extended. In this case level flight may be necessary while the flap setting is initially reduced. If only an early stage of flap is extended, a reasonable climb can be entered without delay.

## Landing

- Round-out - cut power and raise nose into level position .  
Hold-off - lift the nose as aircraft sinks and wait for the main wheels to touch the ground.  
Touch-down - control with rudders to maintain aircraft on centre line of runway.  
Landing run - control with rudders and brakes as required.

*Note: The round-out and hold-off are manoeuvres that require a lot of practice in order to perfect them. Your instructor will be demonstrating this to you and allowing you to try it yourself while monitoring your actions carefully until you have mastered it to his / her satisfaction.*



Date: 2006/09/30

## After Landing Checks

*When clear of the runway, stop the aircraft a safe distance from the runway and complete the following checks:*

1. Radio call when clear of runway.
2. Carb heat off (cold).
3. Landing lights off, strobe lights off.
4. Fuel selection checked, fuel pump off.
5. Flaps fully retracted.
6. Trimmers set to neutral.
7. Landing Time noted.
8. T's and P's checked.
9. If possible, check with your instructor whether the aircraft should be refuelled before stowing. (Check refueling procedures on page 43 of this manual).

## Shutdown Checks

1. Brakes as required.
2. Holding RPM.
3. Avionics off.
4. Dead cut check on magnetos.
5. Mixture I.C.O. (Idle Cut-Off).
6. Throttle as required for the shutdown.
7. Magnetos off, key on dash.
8. Electrics off (leave rotating beacon on).
9. Masters off.
10. Fuel selector off.
11. Note Hobbs and Tacho readings.
12. Fill in required documents before leaving the aircraft (Aircraft Flight Log - Flight Folio). Report any snags.
13. Execute a general walk around, checking for damage, forgotten items, fuel and hydraulic leaks.





## Stowing The Aircraft

1. Remember! Aircraft have looooong wings and loooong tails! They tend to catch onto and bump into things.
2. If stowed in a hangar, carefully manoeuver aircraft into position, leave park brakes OFF.
3. If stowed outside, make sure chocks are placed, control locks are in place and tie ropes are secured to the ground.
4. Also cover the windows against the sun if aircraft will be standing in the sun.
5. Ensure pitot cover and other port covers installed as required.
6. Put Flight Folio into aircraft flight bag.
7. And dont forget to lock the aircraft and put the keys also into the aircraft flight bag..
8. Finally, if it is your responsibility to lock the hangar, make sure it is done.
9. Complete the authorisation sheet, including time landed.
10. Report any snags you may have encountered.
11. Return aircraft flight bag to office staff, ensuring that it contains the keys and all the required documents.
12. Pay.
13. Book your next appointment.

Additional Notes:




## Taking Off Vital Statistics

### Normal

1. Flaps set as required (Cessna - no flaps).
2. Trimmer set to neutral.
3. Rotate speed 55 - 60 KIAS.
4. Accelerate (Best ROC) 65 - 70 KIAS.

### Short Field, Obstacle Clearance

1. Flaps set to 10 degrees.
2. Rotate speed 50 KIAS.
3. Climb speed 59 KIAS until clear of obstacle.
4. Accelerate (Best ROC) 65 - 70 KIAS.
5. Flaps retract slowly.

### Short Field, No Obstacles

1. Flaps up.
2. Rotate speed 50 KIAS.
3. Accelerate (Best ROC) 65 - 70 KIAS.

### Soft Field, Obstacle Clearance

1. Flaps set 10 degrees.
2. Rotate at the lowest possible airspeed.
3. Accelerate 59 KIAS just above the ground.
4. Climb speed 59 KIAS until clear of obstacle.
5. Accelerate (Best ROC) 65 - 70 KIAS.
6. Flaps retract slowly.

### Soft Field, No Obstacle

1. Flaps set 10 degrees.
2. Rotate at the lowest possible airspeed.
3. Accelerate (Best ROC) 65 - 70 KIAS.
4. Flaps retract slowly.



# Aircraft Data Cessna 172N JTC

## General:

- 1. Engine Type: Avco Lycoming O-320-H2AD
- 2. Engine Power: 160 BHP @ 2700 RPM
- 3. Fuel Grade: 100 / 130 Octane (Green)  
100LL Aviation Fuel (Blue)
- 4. Oil Type: Engen Avlube 100 (Ashless)
- 5. Oil Capacity: 6 Quarts
- 6. Min. Oil level: 4 Quarts.

## Fuel:

- 1. Capacity (Long range tanks) ..... 54 US Gals. ( 208 L )
- 2. Usable Fuel ..... 50 US Gals. ( 190 L )
- 3. Fuel Burn ..... 28 L / Hr

## Operation Speeds:

- 1. Rotate (Normal)..... 55 KIAS
- 2. Rotate (Short Field) ..... 50 KIAS
- 3. Best ROC ..... 70 KIAS
- 4. Best AOC ..... 60 KIAS
- 5. Cruise Climb ..... 75 - 80 KIAS
- 6. Approach (No Flaps) ..... 60 - 70 KIAS
- 7. Approach (Full Flaps) ..... 55 - 65 KIAS
- 8. Best Glide Speed ..... 65 KIAS




# Aircraft Data Cessna 172N JTC

## Limitations:

1. MTOW .....2300 lbs. (1045 Kg.)
2. MLW .....2300 lbs. (1045 Kg.)
3. V<sub>NE</sub> .....160 KIAS
4. V<sub>NO</sub> .....128 KIAS
5. V<sub>A</sub> (MAUW) .....97 KIAS
6. V<sub>A</sub> (1600 LBS).....80 KIAS
7. V<sub>FE</sub> .....85 KIAS
8. Max X-Wind.....15 Kts.

## Notes relating to JTC (Cessna 172):

1. To ensure maximum fuel capacity when refueling, place fuel selector valve in either LEFT or RIGHT position to prevent cross-feeding.
2. Take-off and land with fuel selector valve handle in BOTH position.
3. Avoid side-slips with flaps extended.
4. It is suggested in the Cessna Pilot's Guide that straight and level flight be done on either tank separately, and not BOTH as pilots normally tend to do. The reason for this is also explained in the same manual.
5. If the aircraft engine is reluctant to start, never crank the engine continuously for more than one minute at a time, otherwise the starter may overheat. Allow the starter to cool down for five minutes after such a prolonged cranking session, before trying again.




## Local Procedures For Vereeniging Airport

1. An AFIS service is being provided 0430 - 1600Z Monday to Friday (excluding some Public Holidays) and weekends 0500 - 1500 Z. (This service has currently been suspended until further notice)
2. Runways 15 and 21 will be flown left-hand circuits and runways 03 and 33 will be flown right-hand circuits to avoid over-flying built-up areas and provide better visibility from the tower.
3. Arriving aircraft should contact "Vereeniging Radio" as follows:
  - a) **From South:** Crossing Vaal River in the vicinity of New Vaal Colliery.
  - b) **From Southwest:** Crossing railway lines east of Sebokeng, Evaton and Orange Farms.
  - c) **From North:** Crossing ridge south of Walkerville east to Glen Douglas Dolomite Mine.
  - d) **From East:** Passing abeam Midvaal racecourse.
4. Inbound or through traffic will be advised of the QNH, wind velocity, active runway and any known traffic. If there is no traffic to affect an orderly and safe approach, arriving aircraft may be advised to join the circuit altitude of 5850 ft. (This point on condition that the AFIS is operational - of course)
5. If any aircraft are established in a traffic pattern, arrivals will be requested to join overhead at 6500 ft. Dependant on runway in use, a descending orbit should be made on the dead side of the active runway to bring the aircraft over the upwind end of the active runway at 5850 ft., and perpendicular to it. The aircraft can then join the downwind leg by calling turning downwind.
6. The majority of departures are toward the General Flying Area. Departures to the GFA will be asked to turn out from the runway opposite to its traffic pattern. In most instances, aircraft are still climbing on reaching 5 n.m. radius and no standard altitude to the GFA is practical.
7. Aircraft departing to the North and West of R59 (Alberton - Sasolburg freeway) and under the JHB TMA will be requested to provide TIBA on 125.8 beyond 5 miles from FAVV (plus 124.4 if applicable). Aircraft departing to the East of R59 should use 125.4 for TIBA beyond 5 miles from FAVV. Aircraft wishing to make IFR/VFR departures into "Johannesburg Radar" should request the Tower operator to contact radar for a SQUAWK code prior to take-off. (Not applicable at this time - or until AFIS becomes available again)



Date: 2009/05/28

## Local Procedures For Vereeniging Airport

8. Aircraft returning from the GFA should aim to cross the railway lines at 6500 ft and arrive overhead at this altitude prior to joining the active circuit. As per item 4 above, if it is safe to do so, it may be suggested that aircraft descend to circuit altitude prior to joining the circuit but separation of aircraft will still be the responsibility of the pilot. Pilots should be aware that there could be aircraft doing a cloud-break procedure and descending from 7500 ft to 6600 ft on FAVV QNH.
9. Aircraft approaching Vereeniging Airport should be aware that Vereeniging hosts an Aerobatic Box to the east of the field, directly adjoining runway 03 / 21 to the east and 15 / 33 to the south. Aerobatic aircraft may be active in this box at any time. Approaching aircraft should call well in advance of approaching the airfield and plan their approach accordingly. When the aerobatic box is active the circuits on 03 / 21 are altered to remain to the west of the airfield.
10. Johannesburg radar may position aircraft over VV - 460 at 8000 ft on the Johannesburg QNH. In this instance the pilot must contact Vereeniging Radio 122.1 prior to descending to ensure that no other traffic is in the area or in the cloudbreak procedure at 7500 ft on the Vereeniging QNH.
11. Aircraft in the VV cloudbreak procedure and descending to 6600 ft should keep a listening watch and look out for possible aircraft joining the circuit or returning from the GFA at 6500 ft.
12. In normal circumstances, pilots should always conform to the established circuit pattern. Since many movements are for training purposes, experienced pilots should give consideration to students who may not have the experience to adjust their pattern for faster or slower aircraft. Exceptions to the guideline would be cross-wind training and heavier aircraft not able to use 15 / 33.
13. Whenever the airport is unmanned, approaches should be made at 2000 ft AGL (6850 ft altitude). After checking the wind direction for active runway, descent should be made on the dead side as per item 5 above.



## The Johannesburg General Flying Area

### FAD 182

GND - 7500 ft. under TMA

GND - FL100 under CTA.

Radio - 124.4 Mhz

Flying areas used for flying training in South Africa are designated Danger Areas and as such are given FAD designators. Commonly known as GFAs (General Flying Areas) certain restrictions and limitations apply as a group as well as individually.

The GFA used by the Unitas Flying Club is the Johannesburg General Flying Area, FAD 182. The geographical limits of the GFA is described in the AICs (AIC 21.15) If you are unsure of the whereabouts of this area, ask your instructor to point it out to you on a map.

The main features which form the boundaries of this area are easily recognized from the air. Your instructor will point these features out to you on your first visit to the GFA. Although there is no law specifying which part of the GFA you may or may not use, your CFI recommends that you use the southern sector of the GFA, i.e. the portion that is to the south of the Vereeniging - Potchefstroom railway line.

Note that a portion of the GFA is situated under the TMA, which starts at 7600 ft. altitude. This means that you should remain under 7500 ft. while in this area. Once clear of the TMA, it is legal to climb to FL100 when doing flying exercises.

Due to the fact that it may be impractical to keep changing between Flight Levels and QNH whilst doing exercises, especially stalls and spins, we would normally remain on QNH settings while in the GFA, even at altitudes above 1500 ft. AGL. Take care, however, to keep differences between QNE and QNH in mind when climbing above, say, 9000 ft. in the GFA. For this reason it is recommended that any pilot wanting to do exercises at "high" altitudes in the GFA, remain below 9500 ft. on QNH.

On page 33 you will find a recommended procedure that you can perform before take-off at Vereeniging that may help you to ensure that you do not inadvertently infringe on controlled airspace when doing upper air work in the GFA.

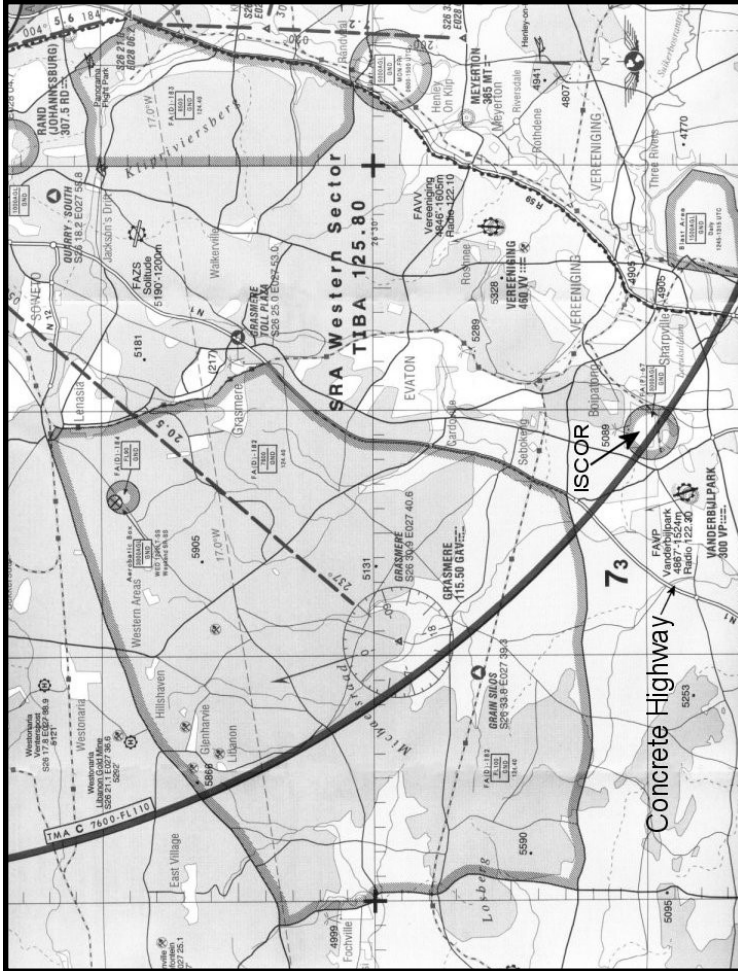
Always remember that there are many pilots who are not constantly aware of the existence of special areas through which they may be travelling. Unannounced aircraft are regularly seen passing through the

*(Continued on page 33)*



Date: 2005/01/25

## The Johannesburg General Flying Area





## The Johannesburg General Flying Area

*(cont'd from p.31)*

Johannesburg GFA without so much as a casual radio call to inform other traffic of their presence. For this reason you should continuously be on the alert and clear the area properly at all times while operating in the GFA.

### QNH to QNE Procedure

1. Set your altimeter to 4846 ft. while the aircraft is stationary on the apron at Vereeniging airport.
2. Note the QNH. This means to observe the value (hectopascal) displayed in the subscale window of the altimeter.
3. Set the altimeter subscale to the Standard setting of 1013.2 hpa., and note the indicated altitude on the altimeter. This is known as the QNE.
4. Calculate the difference between the QNH altitude (When on the ground, this is known as **elevation**) and the QNE. The difference should coincide with an altitude difference of approximately 30 feet for each hectopascal of difference.
5. Now, add or subtract (as the case may be - ask your instructor for guidance) this difference in altitude to/from 10000 ft. Remember 10000 ft. corresponds to the maximum flight level you should go to in the GFA. The calculated altitude should be the highest that you should allow yourself to go under the CTA in the GFA.
6. **Example:** QNH 1023. QNE 5150 ft. Altitude difference = 300 ft. QNE is higher than QNH altitude, therefore SUBTRACT 300 ft. from 10000 = 9700 ft. Remain below 9700 ft.

*Nevertheless, if you have any doubts, set your altimeter to the standard setting of 1013.2 when doing high level exercises.*



# PPL Syllabus

## Exercises to be completed for initial issue of PPL

- 1 Cockpit layout
- 1E Ground Emergencies
- 2 Preparation for flight and action after
- 3 Air Experience
- 4 Effects of controls
- 5 Taxiing
- 5E Emergencies during taxi
- 6 Straight and level flight.
- 7 Climbing.
- 8 Descending
- 9 Turning
- 10A Slow Flight
- 10B Stalling
- 11 Spin Avoidance.
- 12 Take-off and climb to downwind position
- 13 Circuit, approach and landing
- 12/13E Airborne emergencies.
- 14 First solo.
- 15 Advanced Turning.
- 16 Forced landing
- 17 Precautionary landing.
- 18A Navigation.
- 18B Navigation problems with reduced visibility
- 18C Radio Navigation
- 19 Basic Instrument flying



## Typical Training Schedule To Issue Of Private Pilot's License

### Ground School and Briefings:

Lesson	Hours	Total Hours
1 - 5	2.0	2.0
6	2.0	4.0
7 - 8	1.0	5.0
9, 15	1.5	6.5
10 - 11	1.5	8.0
12 - 13	1.5	9.5
16 - 17	1.5	11.0
16 - 17	2.0	13.0
18 A & B*	5.0	18.0
18C	1.0	19.0
19	1.0	20.0

Please note that all the above times are given as a guide. Flight and briefing times may vary at the discretion of the instructor.

*\* Where possible, briefing of exercise 18 is given to a group of 3 or more students to reduce the costs per student. All other briefings are usually done on a one-to-one basis.*



Date: 2009/05/26

## Typical Training Schedule To Issue Of Private Pilot's License

### Flying Lessons

Phase	Lesson	Hours	Total Hours
1	1 - 5	2.0	2.0
1	6	2.0	4.0
1	7 - 9	2.0	6.0
1	10 - 11	1.5	7.5
2	12 - 13	3.0	10.5
2	14	1.5	12.0
2	12 - 13	4.0 (Solo)	16.0
3	15	1.5	17.5
3	16 - 17	2.0	19.5
3	14, 16, 17	4.0 (solo)	23.5
4	18A B	5.5	29.0
4	18	5.0 hrs solo	34.0
4	18C	2.5	36.5
4	19	5.0 Hrs	41.5
5	GF Review	2.5	44.0
5	Mock Test	1.5	45.5
6	GF Test	1.8	47.3
6	X-country test	3.2	50.5



## Typical Training Schedule To Issue Of Private Pilot's License

### Exercise 18 Navigation

NAV 1	FAVV to FAGM to FAPS to FAVV
NAV 2	FAVV to FAGM to FARG to FALI to FAPS to FAVV
NAV 3*	FAVV to FAPS to FAGM to FAVV
NAV 4*	FAVV to FAPS to FALI to FARG to FAGM to FAVV
NAV 5	FAVV to FAHG to FASR (F/S) to FAWI to FAWB (F/S) to FALA to FAVV (Test Cross Country)

\* **Solo**  
F/S **Full Stop**

FAVV	Vereeniging Aerodrome.
FAGM	Rand Airport (Germiston).
FAPS	Potchefstroom Aerodrome.
FALI	Lichtenburg Aerodrome.
FARG	Rustenburg Aerodrome.
FAHG	Heidelberg Aerodrome.
FASR	Standerton Aerodrome.
FAWI	Witbank Aerodrome.
FAWB	Wonderboom Airport.
FALA	Lanseria Airport.

***NOTE:** The above navigation routes are given as a suggested guideline, being routes that will comply with the requirements laid down by the authorities. However, your instructor may choose to give you a different route. In this case he/she will supply you with the necessary information to enable you to plan the route properly.*



Date: 2006/09/30

## Requirements for the issue of a Student Pilot's License

1. A medical certificate issued by an approved Aviation Medical Examiner.
2. An adequate knowledge of Radio Telephony Procedures to do solo flights.
3. At least 17 years of age.
4. Pass written exams on aviation law, Checks and procedures and aircraft technicals required in the license.
5. Complete training sequences 1 - 14 as well as a working knowledge of sequences 22 and 23.

### Privileges of a Student Pilot's License holder

1. A student shall be permitted to fly solo for the purpose of receiving training for a Private Pilot's License:
  - a) In the type of aircraft in which he/she is undergoing training and is endorsed in his license.
  - b) After being authorised by an instructor and while under supervision.
  - c) Without carrying passengers.
  - d) On a flight other than an international flight.
  - e) In VMC by day.



## Emergency Checklist

NOTE: This checklist is only provided as a guide and covers the main aspects pertaining to a particular emergency. It is very important therefore to be familiar with the full amplified procedures as covered by the POH and briefed in exercises 12, 22 and 23.

### Power failure during take-off run:

1. Throttle closed.
2. Apply brakes without locking wheels.
3. Flaps retract.
4. Mixture ICO
5. Magnetos off.
6. Master switch off.

### Power loss during take-off:

1. Maintain 65 KIAS.
2. Fuel selector check / switch.
3. Fuel pump ON (If applicable).
4. Mixture rich.
5. Carb. heat ON.
6. Primer locked.
7. Magnetos - select Left, Right and both.
8. If power does not recover proceed with emergency landing.

### Power loss in flight:

1. Fuel selector check / switch.
2. Fuel pump ON (If applicable).
3. Mixture rich.
4. Carb. heat ON.
5. Check engine gauges.
6. Primer locked.
7. Magnetos - select Left, Right and both.
8. If power does not recover proceed with emergency landing.



## Emergency Checklist continued

### Forced Landing Without Power (FLWOP)

1. Airspeed 65 KIAS.
2. Fuel pump OFF (If applicable).
3. Fuel Selector OFF.
4. Mixture ICO.
5. Magnetos OFF.
6. Harnesses tight.
7. Open doors prior to touchdown.
8. Master switch off just before touchdown, after final flap setting has been selected.
9. Approach speed 60 KIAS.
10. Touchdown should normally be made at lowest possible airspeed with full flaps.

### Engine Fire During Start

1. Continue cranking engine.

#### If engine starts:

2. Run engine at 1700 RPM for a few minutes.
3. Shut down engine and inspect for damage.

#### If engine fails to start:

2. Throttle full open.
3. Mixture ICO.
4. Continue cranking engine.
5. Fuel selector OFF.
6. Use fire extinguisher.
7. Shut down all electrics and inspect engine for damage.





## Emergency Checklist continued

### Engine Fire In Flight

1. Fuel Selector Valve OFF.
2. Mixture ICO.
3. Master switch OFF.
4. Cabin heat and air OFF (Except overhead vents).
5. Airspeed 100 KIAS (If this does not extinguish the fire, increase glide speed to find an airspeed which will provide an incombustible mixture).
6. Execute a forced landing without power.

### Electrical Fire In Flight

1. Master switch OFF.
2. Avionics power switch OFF.
3. All other switches (except Magnetos) OFF.
4. Close all vents/cabin air/heat.
5. Activate fire extinguisher as necessary.

### WARNING

*After discharging an extinguisher within a closed cabin, ventilate the cabin.*

If the fire appears to be out and electrical power is necessary for continuance of flight:

6. Master switch ON.
7. Check circuit breakers for faulty circuit, do not reset.
8. Avionics power switch ON one at a time, with delay after each until short circuit is localised.
9. Land as soon as practicable.

*Note: The above procedures by no means cover all possible emergencies. Students should be made aware that the POH should be consulted about further procedures for certain items unique to the aircraft being operated. Other publications also exist which can help pilots to be prepared for many other situations. But when all is said and done, good common sense prevails.*



# Airmanship

## Example of a passenger briefing (Do before starting the engine)

Are you all comfortable? Are you familiar with the use of your seats and seat belts? (If not, explain) Are you familiar with the operation of the door? (If not, explain opening and closing). We have on board a first aid kit, positioned here (show) and a serviceable fire extinguisher, positioned here (show).

As you can see we are flying a single-engined aircraft. These engines are very reliable and I do not expect to have any problems during the flight. However, in the unlikely event that we do experience an engine failure, I would like to show you the way in which you must brace yourselves. Rear passengers hold your ankles, placing your head between your knees, the foetal position. Front passengers hold the glare-shield, remaining clear of the controls and open the door on my command. Any questions?

## Example of a crew briefing (Do just prior to departure)

Today I will be doing a normal take-off on runway .... I will be rotating at ....KIAS and climbing out at ....KIAS. If I experience an engine failure, or am unhappy with any aspect of the aircraft before rotation, I will immediately close the throttle and apply maximum braking without locking the wheels, and keep straight on the centreline of the runway. I will vacate as soon as possible (if possible) and advise ATC.

If I experience an engine failure after rotation, but have sufficient runway left to re-land the aircraft, I will immediately close the throttle, use flaps as required, land the aircraft, use maximum braking without locking the wheels and keep straight on the centreline of the runway. I will vacate as soon as possible and advise ATC.

If I experience an engine failure after rotation with insufficient runway remaining, I will immediately lower the nose and go through normal "Engine Failure After Take-off" procedures. I will NEVER attempt to turn back to the runway.

The Best Glide Speed for this aircraft is .... KIAS with flaps up and .... KIAS with flaps down. Any questions?



# Airmanship

## Refueling Procedures

*When refueling the aircraft, certain points have to be noted carefully. Remember, YOU are the Pilot In Command of the aircraft, and all the responsibilities come down squarely on your shoulders.*

1. Park the aircraft within reasonable distance from the fuel bowser, in such a position as to facilitate easy access for refueling.
2. Make sure that you are parked in front of the correct fuel bowser, i.e. supplying the correct type and grade of fuel for your aircraft (as per operating manual).
3. Before refueling commences, ensure that the fuel pump reading is reset to zero.
4. Ascertain that a grounding lead has been properly affixed to the aircraft. This is usually attached to the exhaust of the engine, although other suitable grounding points may also be used.
5. As the Pilot In Command, you may not leave the aircraft to wander off to destinations unknown while the aircraft is being refueled. The refueling should be monitored at all times by the PIC.
6. As each tank is filled, inform the attendant that you personally want to replace the filler cap. You are responsible to ensure that the tanks have been filled to the required levels and that the filler caps are properly in place.
7. Once topping up has been completed, carefully note the amount of fuel that has been pumped into the aircraft and fill in the appropriate space in the Flight Folio.
8. The same applies to oil replenishment.
9. When paying for the fuel and oil, accompany the attendant to the paying point, checking all the amounts and quantities on the necessary documents, BEFORE you accept and sign them.
10. Attach receipt for the fuel uplifted to the autho-sheet on completion of your flight.

**Note:** JTC has a fuel card in the flight bag. This card is to be used whenever fuel is uplifted. The credit card slip and the invoice received from the fuelling attendant must then be attached to the autho sheet when paying for the flight. Don't forget to ensure that all the proper information is filled in the Flight Folio. Ask someone in authority if you are unsure of the procedures.



Date: 2007/08/22

# Airmanship

## Cruise And Field Approach Checks

### F R E D A S

- |          |             |   |
|----------|-------------|---|
| <b>F</b> | Fuel        | Contents Sufficient.<br>Selection as per fuel management plan.  |
|          | Frequencies | Check, including standby frequencies.   |
|          | Fix         | Establish position  |
| <b>R</b> | Radio       | Appropriate call.   |
| <b>E</b> | Engine      | Ps & Ts in the green.<br>Carb Heat check.<br>Mixture set for Alt / Descent.<br>Suction check.<br>Ammeter check. |
| <b>D</b> | D.I.        | Align with compass.   |
| <b>A</b> | Altimeter   | QNH / Standard as required.<br>Altitude check.  |
| <b>S</b> | Security    | Hatches and harnesses secure.   |



# Airmanship

## Pre-Stall, Spin And Aerobatic Checks

### H A S E L L

- |          |          |  |
|----------|----------|--|
| <b>H</b> | Height   | Sufficient to complete recovery at not less than 2000 ft AGL.  |
| <b>A</b> | Airframe | Flaps as required (None for spin).<br>Undercarriage as required.   |
| <b>S</b> | Security | Hatches closed.<br>Harnesses tight.<br>Seats locked.<br>Articles stowed and secure.  |
| <b>E</b> | Engine   | Ps & Ts in the green.<br>Carb heat check.<br>Mixture set for recovery power.<br>Fuel pump ON.<br>Pitch set for recovery power.   |
| <b>L</b> | Location | Not over built-up area.<br>Not over high or rising ground.<br>Not over rough terrain.<br>Not over public gatherings.<br>Not over large expanses of water.<br>Not into the sun.<br>Not within 5 nm of an airfield or controlled airspace.<br>Not near other aircraft.<br>Within easy gliding distance of a forced landing field at all times. |
| <b>L</b> | Lookout  | Inspection turn 360 degrees. First 270 degrees medium turn, last 90 degrees steep turn. Enter the manoeuvre immediately after the turn is completed.   |



# Airmanship

## DOs and DONTs

DO always keep a good lookout for other aircraft wherever you are - even if you are in controlled airspace and under ATC control.

DO broadcast regular radio reports whenever you are flying in uncontrolled airspace. Always include the following in your broadcasts:

1. Your call sign (registration) and aircraft type.
2. Your route (from ... to ...).
3. Your altitude / Flight Level.
4. Your next reporting point and ETA for that point.
5. End your message with your call sign again.

DONT fly anywhere unprepared.

DONT take chances. The golden rule is: *Whenever there's doubt, then there's no doubt.* Like the sea, the air is unforgiving of the incompetent and foolish.

DONT start your aircraft when it is in such a position that it will *propwash* other people or other aircraft, e.g. in front of an open hangar. A very bad habit amongst pilots is the so-called FPS - Full Power Start. After starting the engine, it should at no time run faster than holding RPMs. Learn to control your aircraft engine properly.

DO always carry minimal provisions (at least) with you whenever you intend flying away from your local airspace. This should include water, warm clothes and some signalling equipment. It may also be a good idea to have some means of making a fire.

Refer to page 28 for some aircraft specific pointers when flying with JTC.



# Airmanship

## TRANSPONDER EMERGENCY CODES

I	Interference	7500
C	Communication	7600
E	Emergency	7700

## The Five Golden Rules (the Five C's)

Aircraft experiencing difficulties of any kind should remember and adhere to the *Five Golden Rules*:

**CONFESS** your predicament.

**COMMUNICATE** with ATC.

**CLIMB** for better radar coverage and better view.

**COMPLY** with instructions and advice given.

**CONSERVE** fuel and other resources.



# Information

## Glossary

ADF	Automatic Direction Finder
AH	Artificial Horizon
ASI	Air Speed Indicator
ATC	Air Traffic Controller (Tower)
ATSU	Air Traffic Services Unit
DI	Direction Indicator
EFATO	Engine Failure After Take-off
FLWOP	Forced Landing Without Power
ICO	Idle Cut Off
ILS	Instrument Landing System
KIAS	Knots Indicated Airspeed
KTAS	Knots True Airspeed
Kts	Knots
MAOC	Maximum Angle Of Climb also BROCC
MROC	Maximum Rate Of Climb also BAOC
MAUW	Maximum All Up Weight
MLW	Maximum Landing Weight
NDB	Non-Directional Beacon
Nm	Nautical Miles
TIBA	Traffic Information Broadcast by Aircraft
TMA	Terminal Area
SRA	Special Rules Area
Ts & Ps	Temperatures and Pressures
VOR	VHF Omni Directional Radio Range
VSI	Vertical Speed Indicator
V <sub>NE</sub>	Never Exceed Speed
V <sub>FE</sub>	Flap Extension Speed
V <sub>NO</sub>	Normal Operating Speed (Smooth Air)
V <sub>A</sub>	Manoeuvring Speed
V <sub>SO</sub>	Stalling Speed (Clean)
V <sub>SE</sub>	Stalling Speed (Flaps and Undercarriage Extended)
V <sub>I</sub>	Rotate Speed
V <sub>X</sub>	Best Angle-Of-Climb Speed
V <sub>Y</sub>	Best Rate-Of-Climb Speed





# Information

## Often Used Frequencies under the JHB TMA & Vicinity

Locator	Name	Location	TWR	VOR	ILS	NDB	NDB
FAVV	VEREENIGING	S26 34.30 E027 57.48	122.1			460 VV	
FAGM	RAND	S26 14.30 E028 09.06	118.7	117.7 RAV		307.5 RD	337.5 RA
FALA	LANSERIA	S25 56.00 E027 55.18	124.0	117.4 LIV	110. 9	270 LA	210 LL
FAGC	GRAND CENTRAL	S25 59.00 E028 09.00	122.8			372.5 GC	
FAWB	WONDERBOOM	S25 39.00 E028 13.00	120.6			230 WR	257.5 WB
FAPY	PARYS	S26 53.00 E027	123.5				
FAPS	POTCHEF-STROOM	S26 40.06 E027 05.06	123.0	115.8 PSV			
FARG	RUSTENBURG	S25 39.00 E027 17.00	122.4			452.5 RG	
FASI	SPRINGS	S26 15.00 E028	122.4				
FABB	BRAKPAN	S26 14.18 E028	122.7				
GAV	GRASMERE	S26 30.53 E027		115.5			
HGV	HEIDELBERG	S26 41.49 E028		116.7			
HBV	HARTEBEES- POORTDAM	S25 42.33 E027 49.57		112.1		237.5 HB	
FAPN	PILANESBERG	S25 20.00 E027 10.24	118.4	112.6 PNV		215 PLB	480 PLG



Date: 2009/05/28

## Information

### General Aviation Frequencies In South Africa

WEST Sector - JHB Special Rules Area (Below TMA)	125.8
EAST Sector - JHB Special Rules Area (Below TMA)	125.4
VFR Traffic - Position reports and listening watch at and below 1500 ft AGL and outside the lateral limits of JHB special rules area, below PE TMA, below EL TMA, below Hoedspruit TMA, outside General Flying Areas, and for unmanned airfields w/o allocated frequencies.	124.8
General Flying Areas frequency	124.4
Except PE GFA	124.2
LASS Lowveld information (daily 0400 - 1600 Z)	119.0
JHB North / NW ACC 24 Hrs.	126.7
JHB NorthEast ACC 0500 - 1500 Z	128.9
JHB South FIS 0600 - 1400 Z	119.5
JHB SouthWest ACC 0400 - 1700 Z	128.3
JHB SouthEast ACC Special times (see AICs)	132.15
JHB East FIS/ACC	129.1
JHB West FIS/ACC	118.5/118.55
JHB Central FIS/ACC	120.3
JHB North FIS 0430 - 1600 Z	127.4
JHB FIS/ACC all areas outside operating hours	126.7
CTN East FIS/ACC	124.7
CTN West ACC 24 hrs	125.1
CTN West FIS 0600 - 1500	126.5
CTN After hours	125.1
International Distress Frequency	121.5
Gliding operations	123.4
General Chat Frequency	123.45

#### ADDITIONAL NOTES:




# Information

## Telephone Numbers

CAA	+27 11 545 1000
Unitas Flying Club	no lines available
Unitas Chief Flying Instructor	+27 82 894 7319
Unitas Club Chairman	+27 83 526 7265
Vereeniging Tower	no lines available
Vereeniging Airport Manager	call Sedibeng town council
Bloemfontein Briefing	+27 51 433 1452
Fax:	+27 51 433 1374
Met:	+27 82 233 9100
Capetown Briefing	+27 21 937 1116/7
Fax:	+27 21 934 0964
Met:	+27 82 233 9900
Johannesburg Briefing	+27 11 928 6517/8/92
Fax:	+27 11 975 1592
Met:	+27 82 233 8900
Grand Central ATC	+27 11 805 3166
Lanseria ATC	+27 11 701 3262/78
Rand Airport ATC	+27 11 827 4517
Wonderboom ATC	+27 12 543 1402
Pilot's Aids:	
Wings 'n Things	+27 11 701 3209
Fax:	+27 11 701 3208

## ADDITIONAL NOTES:




# Pilots Manual

## Morse Code

Alfa	● -	Mike	- -	Yankee	- ● - -
Bravo	- ● ● ●	November	- ●	Zulu	- - ● ●
Charlie	- - ● - ●	Oscar	- - -	One	● - - - -
Delta	- ● ●	Papa	● - - ●	Two	● ● ● - -
Echo	●	Quebec	- - ● -	Three	● ● ● ● -
Foxtrott	● ● - ●	Romeo	● ● ●	Four	● ● ● ● - -
Golf	- - ●	Sierra	● ● ●	Five	● ● ● ● ●
Hotel	● ● ● ●	Tango	-	Six	- ● ● ● ●
India	● ●	Uniform	● ● -	Seven	- - ● ● ● ●
Juliett	● - - -	Victor	● ● ● -	Eight	- - ● ● ● ●
Kilo	- ● -	Whiskey	● - -	Nine	- - - - ●
Lima	● - ● ●	X-ray	- ● ● -	Zero	- - - - -

## Signals

### Light signals directed to aircraft at aerodromes

To aircraft in flight	
Steady Green	Cleared to land.
Steady Red	Give way to other aircraft and continue circling. A further signal will follow in due course.
Series of green flashes	Return for landing. Will be followed by a steady green light in due course.
Series of red flashes	Aerodrome unsafe, do not land.
Red flare	Do not land until further notice

To aircraft on the ground	
Steady Green	Cleared for take-off.
Steady Red	Stop
Series of green flashes	Taxi.
Series of red flashes	Clear the runway.
Flashing white light	Return to starting area.



# Pilots Manual

## Signals

### Signals for use in the event of Interception:

**FIRST SERIES:** used to guide an aircraft away from a prohibited area or to a landing field

Signal By Interceptor	Meaning	Response
a) rocking wings while in front and to left of intercepted aircraft; at night in addition flashing navigational and landing lights at irregular intervals	Follow me away from a prohibited area	Rocking wings if safe, at night also showing steady landing light
b) rocking wings while in front and to right of intercepted aircraft; at night in addition flashing navigational and landing lights at irregular intervals	Follow me to a landing terrain	Rocking wings if safe, at night also showing steady landing light
c) after a) or b) have been acknowledged, making a slow level turn onto desired course; at night in addition flashing navigational and landing lights at irregular intervals		Follow interceptor

**SECOND SERIES:** used for identifying aircraft and after having led an aircraft away from a prohibited area with the first series

Signal By Interceptor	Meaning	Response
An abrupt break away upwards of 90° or more without crossing the line of flight of the intercepted aircraft	You may proceed	Rocking wings if safe, at night also showing steady landing light

**THIRD SERIES:** used after the first series in the vicinity of the landing area

Signal By Interceptor	Meaning	Response
Circling landing area, lowering landing gear, overflying in landing direction, at night also showing steady landing light	Land on this area	Same as interceptor. Land if safe, at night also showing steady landing light



Date: 2001/12/13

# Pilots Manual

## Signals

Signals for use in the event of Interception (continued):

FOURTH SERIES: used if the intercepted aircraft finds the proposed landing area unsuitable		
Signal By Intercepted Aircraft	Meaning	Response
Rocking wings (if fixed gear) or raising landing gear while passing over landing area between 1000' and 2000' AGL, at night also flashing landing light or any other available light	Landing area unsuitable	Continues with first or second series

## Ground - Air Emergency Signalling Codes

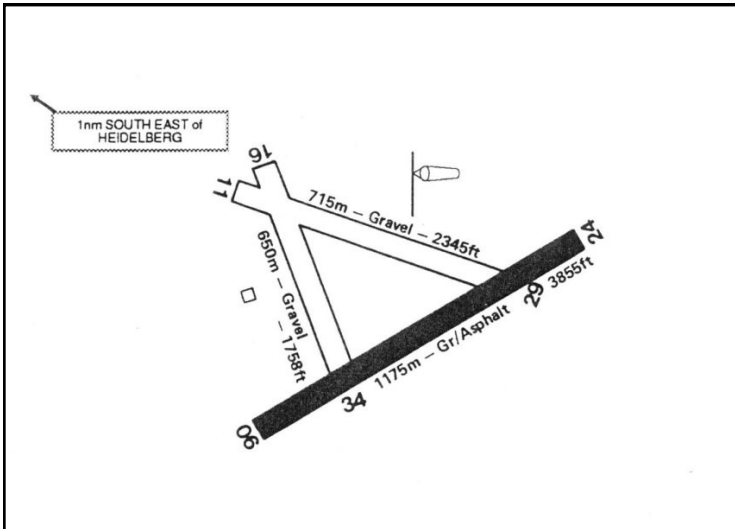
Meaning	Signal
Require Assistance	<b>V</b>
Require Medical Assistance	<b>X</b>
No, negative	<b>N</b>
Yes, affirm	<b>Y</b>
Proceeding in this direction	↑



Date: 2009/05/28

## Pilots Manual

<b>Heidelberg Coordinates</b> 26°30.3'S 028°23.3'E	<b>Elevation:</b> 5119 ft. <b>Variation:</b> 16°W	<b>Radio:</b> RD 125.4 HGV 116.7
--	--	--



<b>Facilities:</b> Airfield Operator Tel: 083 654 2793 Fax: 086 618 0946 Email: <a href="mailto:flyers@haa.co.za">flyers@haa.co.za</a>	<b>Coordinates for HGV:</b> 26°41.8'S 028°17.0'E
--	--



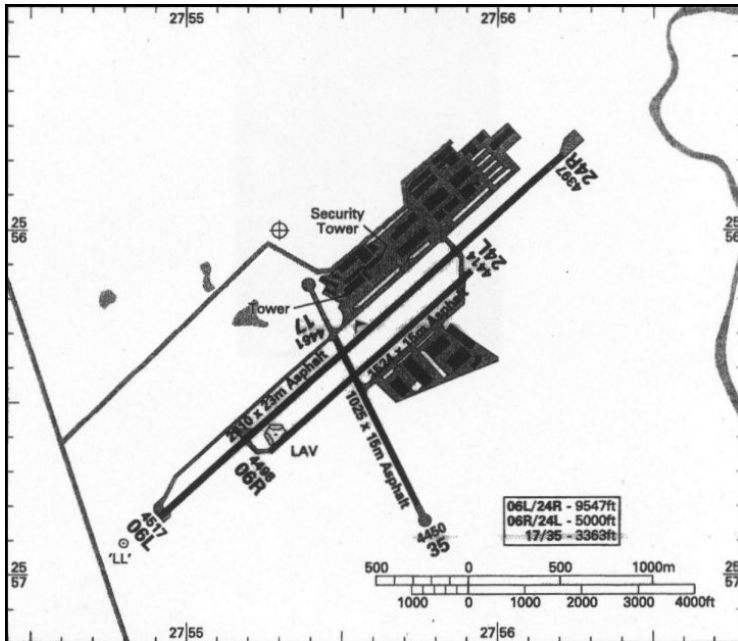
Date: 2009/05/28

## Pilots Manual

**Lanseria**  
**Coordinates**  
25°56.0'S  
027°55.3'E

**Elevation:**  
4517 ft.  
**Variation:**  
17°W

**Radio:**  
TWR 124.0  
NDB LA 270  
NDB LL 210  
VOR LIV117.4  
ILS LAI 110.9



**Facilities:** (code 011)  
ATC: 701 3262/3278  
Fax: 701 3505  
Opr: 659 2750/3262  
Ground : 121.65  
Apron: 122.85

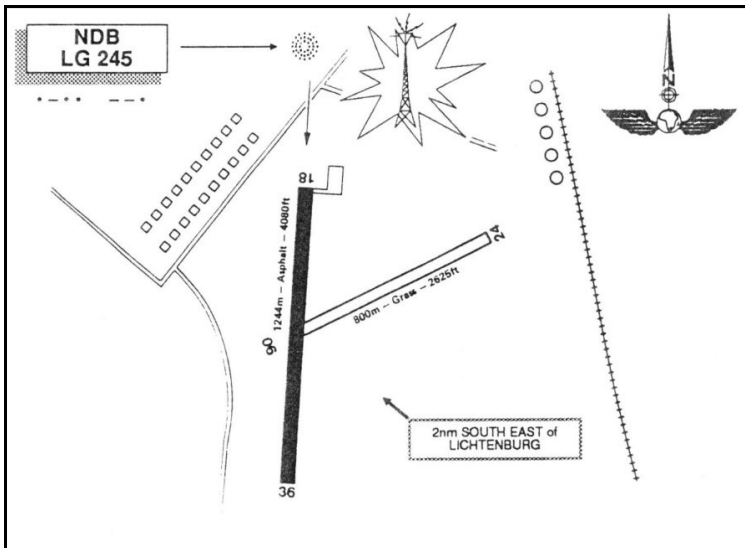
Avgas/Jet A-1: 122.85  
O/H 659 2750x225  
A/H 659 2754





# Pilots Manual

<b>Lichtenburg Coordinates</b> 26°10.0'S 026°11.0'E	<b>Elevation:</b> 4875 ft. <b>Variation:</b> 16°W	<b>Radio:</b> RD 124.8
---	--	---------------------------



<b>Airfield Operator:</b> O/H 018 632 5051 A/H 018 632 3021 lictic@global.co.za	<b>Note:</b> Obstruction - Radio Tower 3 Nm N of airfield 168 ft AGL.
--	---



Date: 2001/12/13

# Pilots Manual

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# Pilots Manual

<p><b>Potchefstroom Coordinates</b>                  26°40.05'S                  027°05.05'E</p>	<p><b>Elevation:</b>                  4520 ft.  <b>Variation:</b>                  17°W</p>	<p><b>Radio:</b>                  RD 123.0</p>
<p><b>Airfield Operator:</b>                  O/H 018 299 5111                  Fax: 018 293 1113</p>	<p><b>Note:</b> Obstruction - Radio mast 1.1 Nm S of airfield 200 ft AGL.</p>	

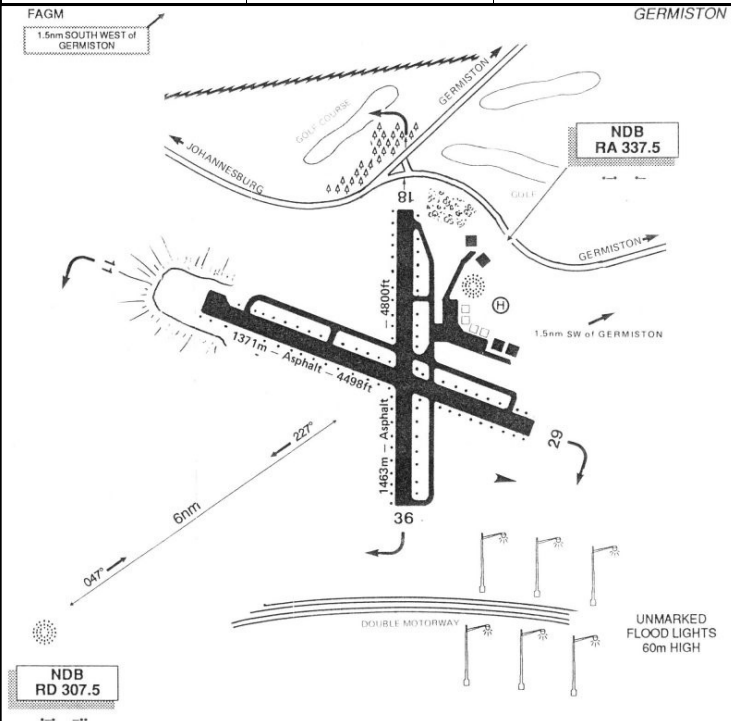
**Note:** although the runway 33 / 15 is indicated on the chart, that runway is marked with crosses at present, and is therefore U/S UFN. The placing of the VOR on the chart is also only approximate.



Date: 2001/12/13

# Pilots Manual

<b>Rand Coordinates</b> 26°14.5'S 028°09.1'E	<b>Elevation:</b> 5474 ft. <b>Variation:</b> 16°W	<b>Radio:</b> TWR 118.7 NDB RA 337.5 NDB RD 307.5 VOR RAV 117.7
--	--	---



<b>Airfield Operator:</b> O/H 011 827 8884 / 5 / 6 Fax: 011 824 4475 ATC: 011 8274517 or 8244475 ENGEN 130.65	<b>Rand Apron 130.5</b> CCT ALT 6300 ft
---	--



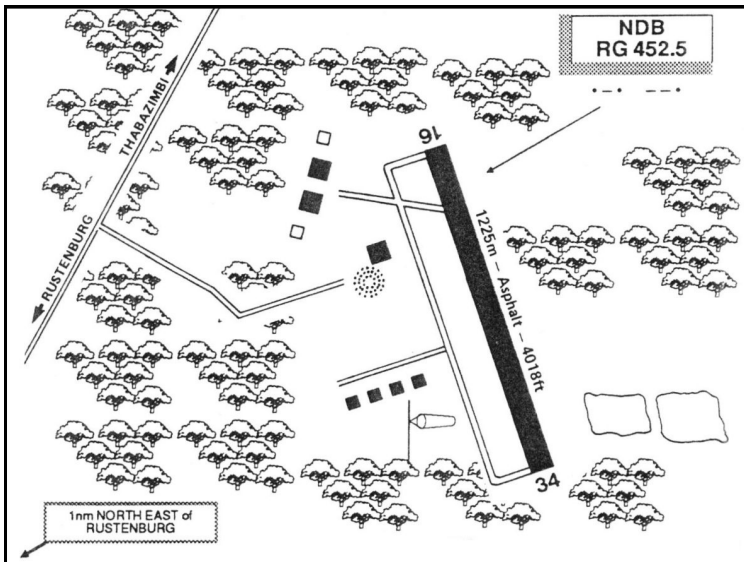
Date: 2001/12/13

# Pilots Manual

**Rustenburg  
Coordinates**  
25°39.0'S  
027°17.0'E

**Elevation:**  
3700 ft.  
**Variation:**  
17°W

**Radio:**  
RD 122.4



**Airfield Operator:**  
O/H 014 5903111  
Fax: 014 590 3003

**Note:** Obstruction - some masts and towers in the vicinity. Up to 100 ft high.



Date: 2009/05/28

## Pilots Manual

**Standerton  
Coordinates**

26°56.0'S  
029°13.0'E

**Elevation:**

5190 ft.

**Variation:**

18°W

**Radio:**

RD 124.8



**Airfield Operator:**

O/H 017 712 2328

Cell: 083 566 7157

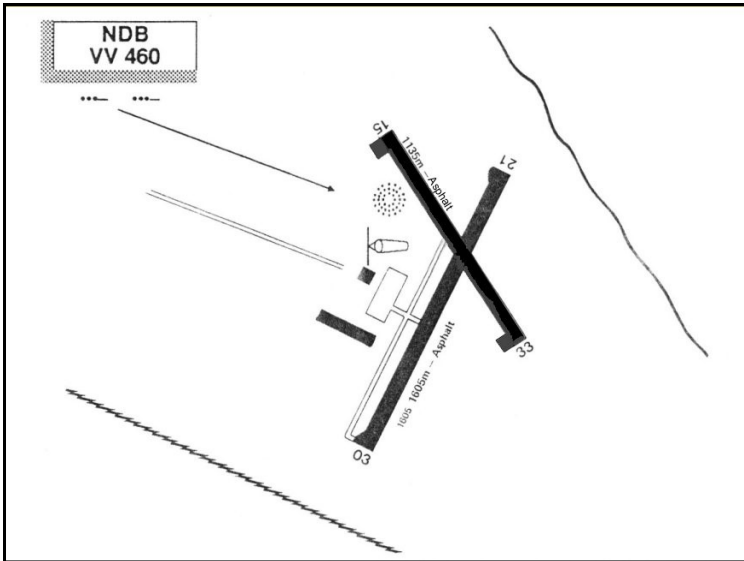
**NOTE: PPR**

**Note:** Obstruction - Power lines on the approaches to RWY 03 & 16. Radio mast 115 ft high on app. To RWY 23.



# Pilots Manual

<b>Vereeninging Coordinates</b> 26°34.3'S 027°57.5'E	<b>Elevation:</b> 4846 ft. <b>Variation:</b> 16°W	<b>Radio:</b> RD 122.1 NDB VV 460
--	--	---



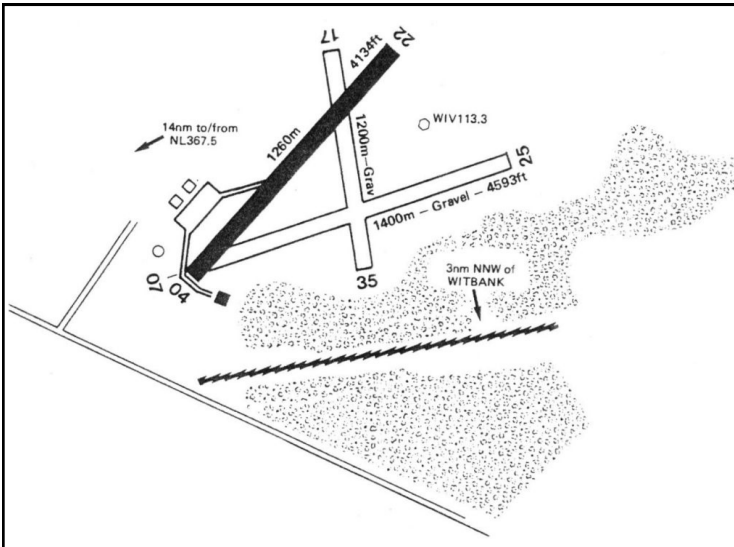
<b>Airfield Operator:</b> O/H 016 427 1015  Fuel: Avgas / Jet A1	<b>Obstruction PWR lines</b> APP RWY 03 & 33
---	---



Date: 2001/12/13

# Pilots Manual

<b>Witbank Coordinates</b> 25°49.9'S 029°11.5'E	<b>Elevation:</b> 5078 ft. <b>Variation:</b> 16°W	<b>Radio:</b> RD 123.5 VOR WIV 113.3
---	--	--



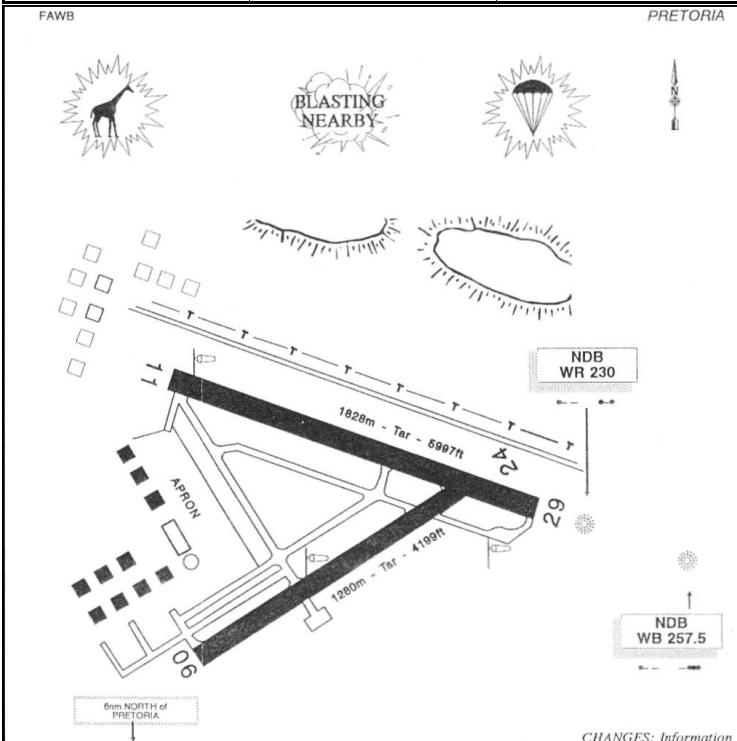
<b>Operator:</b> 013 690 6911 <b>Facilities:</b> ENGEN Avgas 013 690 6911	<b>VOR Coordinates:</b> S25 49.44 E029 11.42 <b>Caution:</b> Parachuting and Gliding on weekends. Maintain listening watch on 123.4
---	---





# Pilots Manual

<b>Wonderboom Coordinates</b> 25°39'S 28°13'E	<b>Elevation:</b> 4059 ft. <b>Variation:</b> 16°W	<b>Radio:</b> TWR 120.6 NDB WB 257.5 NDB WR 230
---	--	--



CHANGES: Information

<b>Facilities:</b> ATC 012 543 1402 567 2741 Avgas/Jet A-1 567 1188/9 A/H          567 4224	Restaurant on the premises.
--	-----------------------------



# Appendix 1

## Exterior Inspection Procedures for Single-Engine Aircraft.

### LEFT WING

1. Cabin Door / Hinge / Seal ..... Check
2. Air inlet ..... Clear
3. Undercarriage ..... Check
4. Fuel Vent ..... Clear
5. Pitot Tube ..... Cover removed
6. Fuel Drains ..... Sample
7. Fuel Content ..... Visual Check
8. Filler Cap ..... Secure
9. Wing Surface Condition ..... Check
10. Leading Edge ..... Check
11. Tip and Lights ..... Check
12. Aileron ..... Check
13. Flap ..... Check
14. Static Wicks and Bonding ..... Check

### TAIL

1. Aerials ..... Secure
2. Cargo Door ..... Locked & Secure
3. Fuselage Skin ..... Inspect
4. Air Inlets ..... Clear
5. Stabilizer ..... Check
6. Anti-balance Tabs ..... Check
7. Fin and Rudder ..... Check
8. Bonding and Static Wicks ..... Check
9. Leading edges of tail plane ..... Check



## Appendix 1 (continued)

### RIGHT WING

1. Cabin Door / Hinge / Seal..... Check
2. Flap..... Check
3. Aileron..... Check
4. Bonding and Static Wick..... Check
5. Tip and Light..... Check
6. Leading Edge ..... Check
7. Wing Surface Condition ..... Check
8. Fuel Contents ..... Visual Check
9. Filler Cap ..... Secure
10. Fuel Vent ..... Check
11. Fuel Drains ..... Sample
12. Undercarriage..... Check
13. Air Inlet..... Check

### NOSE

1. Windshield ..... Clean
2. Oil Contents ..... Adequate
3. Propeller and Spinner ..... Check
4. Alternator Belt ..... Check
5. Engine Cooling Inlet..... Clear
6. Engine Air Inlet ..... Clear
7. Nose wheel ..... Check
8. Fuel Drain ..... Sample
9. Static Air Vent ..... Clear



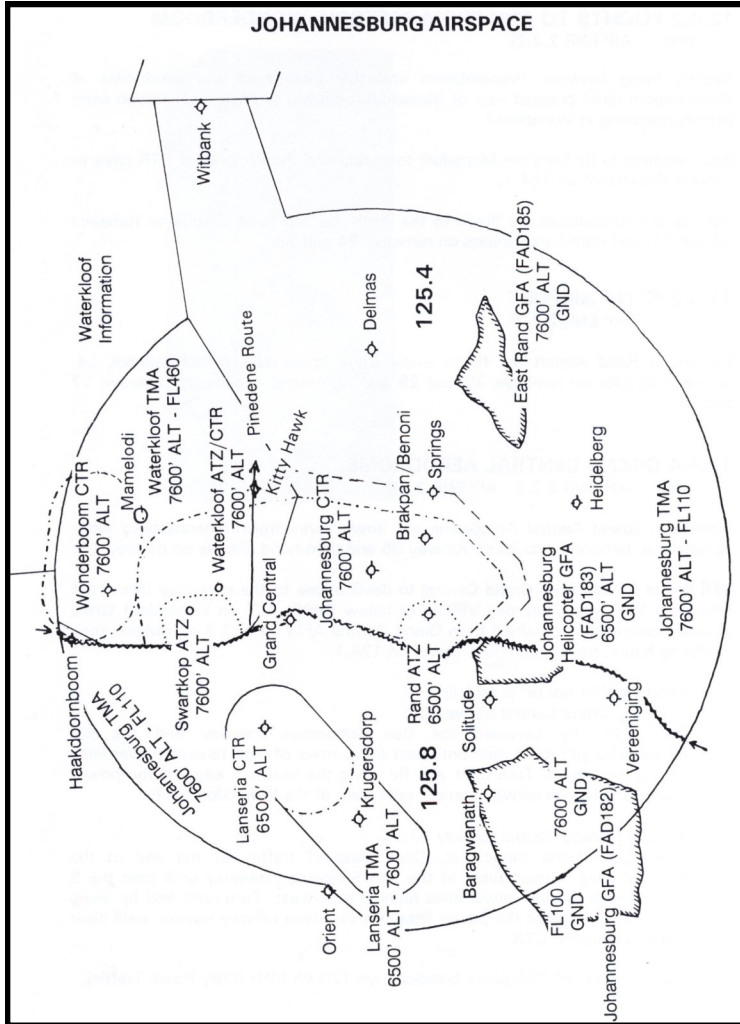
Date: 2001/12/13

## Appendix 1 (continued)

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# Appendix 2



Date: 2001/12/13

## Appendix 2

### Procedures Under the Johannesburg TMA

Maximum Altitude: 7500 ft on JHB QNH

Frequencies to use: JHB Info 119.5S, 127.4N

VFR Western Sector 125.8

VFR Eastern Sector 125.4

Traveling Northbound, fly at 7500 ft.

Traveling Southbound, fly at 7000 ft.

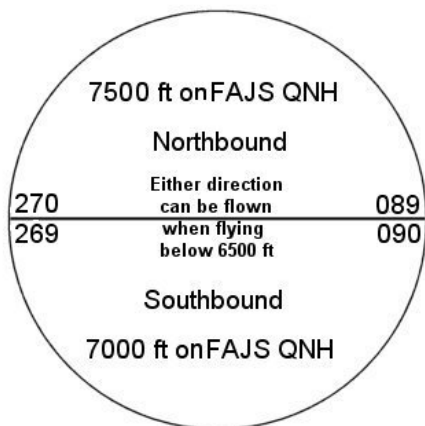
When entering the buffer zone S & E of JHB CTR, contact JHB Info and squawk 2000.

When flying under the TMA you are requested to fly with landing lights on, if possible.

Keep a very good lookout for other aircraft, especially aircraft flying to and from the various GFAs.

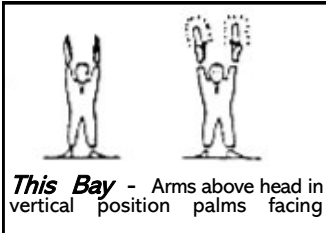
Make regular TIBA calls on the VFR frequency for the sector you are in.

The picture on the right illustrates the altitudes to be flown when under the JHB TMA. Note that no suggested altitude is given when flying below 6500'.

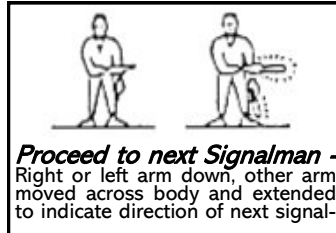


## Appendix 3

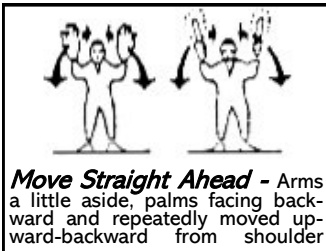
### Hand Signals



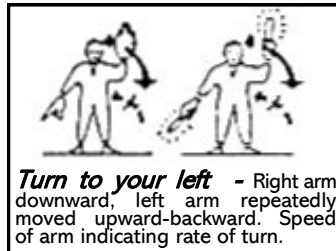
***This Bay*** - Arms above head in vertical position palms facing



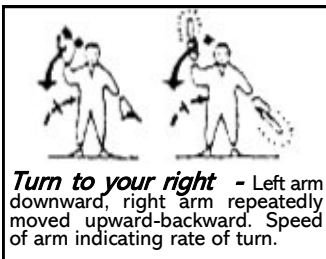
***Proceed to next Signalman*** - Right or left arm down, other arm moved across body and extended to indicate direction of next signal-



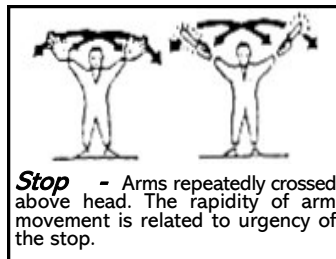
***Move Straight Ahead*** - Arms a little aside, palms facing backward and repeatedly moved upward-backward from shoulder



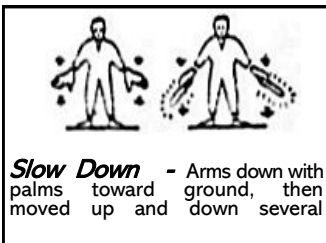
***Turn to your left*** - Right arm downward, left arm repeatedly moved upward-backward. Speed of arm indicating rate of turn.



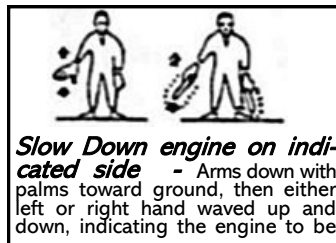
***Turn to your right*** - Left arm downward, right arm repeatedly moved upward-backward. Speed of arm indicating rate of turn.



***Stop*** - Arms repeatedly crossed above head. The rapidity of arm movement is related to urgency of the stop.



***Slow Down*** - Arms down with palms toward ground, then moved up and down several



***Slow Down engine on indicated side*** - Arms down with palms toward ground, then either left or right hand waved up and down, indicating the engine to be

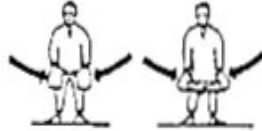


## Appendix 3

### Hand Signals (continued)



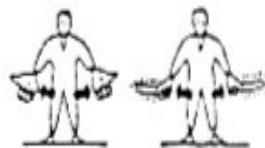
**Engage Brakes** - Raise arm and hand, with fingers extended, horizontally in front of body, then



**Chocks Inserted** - Arms down, palms facing inward, move arms from extended position



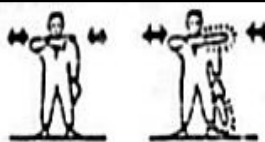
**Release Brakes** - Raise arm, with fist clenched, horizontally in front of body, then extend fingers.



**Chocks Removed** - Arms down, palms facing outwards, move arms outwards.



**Engine Start** - Left hand overhead with appropriate number of fingers extended, to indicate the number of the engine to be started, and circular motion of right hand at head level.



**Engine Cut** - Either arm and hand level with shoulder, hand across throat, palm downward. The hand is moved sideways with the arm remaining bent.





## Appendix 4

### Sample R/T Procedures

#### First Lesson - a flight to the GFA.

*On the Apron, after starting the engine:*

- JTC: "Vereeniging Radio, Juliet Tango Charlie, good morning."  
AFIS: "Juliet Tango Charlie, good morning, go ahead please."  
JTC: "Juliet Tango Charlie has two crew on board, requesting your instructions for a flight to the general flying area."  
AFIS: "Juliet Tango Charlie, the QNH is 1024, taxi the holding point runway 21, report ready for backtracking, the wind is 230 degrees at 8 knots."  
JTC: "QNH 1024, taxi holding point of runway 21, next call ready for backtracking, copy the wind, Juliet Tango Charlie."

*(I am not going to continue writing Juliet Tango Charlie all the time, just JTC. This doesn't mean you can start saying "Jay Tee See" all of sudden!)*

*When about to enter runway 15/33 for the backtracking procedure:*

- JTC: "Vereeniging, JTC is ready for backtracking."  
AFIS: "JTC, backtrack runway 33 and runway 21 at own discretion. Report ready for the departure next."  
JTC: "Backtracking at own discretion, will call ready for departure next, JTC."  
AFIS: "JTC"

*At the holding point, when ready for the take-off:*

- JTC: "Vereeniging, JTC is ready."  
AFIS: "JTC, you may take off at your own discretion. The wind is 240 degrees at 10 knots, gusting 12. Right-hand out, call area outbound next."  
JTC: "Take off own discretion, right-hand out, call area outbound next, JTC."

*After reaching the five mile zone boundary at the railway lines:*

- JTC: "Vereeniging, JTC, area outbound."  
AFIS: "JTC, broadcast 125.8. Call returning. Bye-bye."  
JTC: "Changing frequency 125.8, will call you next inbound, cheers!"

*Now broadcast on frequency 125.8 (Special Rules Traffic):*

- JTC: "Special rules traffic, JTC, Cessna 172, from Vereeniging to the JHB GFA. We have just cleared the Vereeniging boundary 3 miles to the north east of Iscor at Vanderbijlpark, flying at 7000 feet, climbing 7500 feet. Any conflicting traffic please respond, JTC."

*An aircraft may respond in the following fashion:*

- A/C: "JTC, this is KGB, Cessna 152, from Rand airport overhead Evaton routing the Vanderbijlpark airfield. Maintaining 7000 feet. We'll keep a lookout for you. KGB."

*Respond to this call -*

- JTC: "Copy that, KGB, will keep a lookout as well. Enjoy the flight. JTC."



Date: 2001/12/13

## Appendix 4 (continued)

*Next, you will be entering the Johannesburg General Flying Area. What is the frequency to change to now?*

JTC: "Traffic in the JHB GFA, this is JTC, Cessna 172, from Vereeniging. Just entering the GFA now, overhead the concrete highway 3 miles to the north of Iscor at 7500 feet. Our intentions are to operate to the South of the Grain Silos for the next 40 minutes. Any affected traffic please respond. JTC."

*If other aircraft respond, carefully listen to what they have to say. Don't worry if, at first, you have difficulty understanding what they say. You first have to get used to the contents of radio messages. Even then, it is sometimes difficult to hear what other pilots are saying. This is mainly due to incorrect 'miking' techniques, and inability to speak clearly. Your instructor will teach you how to do these things properly, so other people can always understand what you are saying. Definitely don't mumble!*

*While operating in the GFA, make periodic TIBA calls. From time to time you will hear other aircraft transmitting in the GFA. Try to hear what they are saying. Mainly you should listen for their positions. Many calls are heard from aircraft operating in the Pretoria GFA 1 or GFA 2. Sometimes also from the Magaliesburg GFA, or the Helicopter training area. Ask your instructor to point these out to you on a map. Finally, remember to keep a GOOD lookout for other aircraft, flying unannounced in the GFA.*

*When returning to Vereeniging from the GFA, call GFA traffic announcing your departure from the area, then do your broadcasting to the JHB Special Rules Traffic, as before. When reaching the Vereeniging Zone boundary, your inbound announcement follows (on what frequency was that again?):*

JTC: "Vereeniging radio, JTC, good afternoon."

AFIS: "JTC, good afternoon, go ahead, sir."

JTC: "Ma'am, JTC is inbound from the GFA at 6500 feet. Request your joining and landing instructions."

AFIS: "JTC, join overhead the field for a left-hand downwind for runway 21, the QNH 1023. Be advised we have JBO in the circuit, and a Piper Arrow is airborne from the runway at this time, routing towards the Vaal dam. Report when established on the downwind."

JTC: "Copy the traffic, QNH 1023, will call you next on the downwind, JTC."

AFIS: "JTC"

*(The AFIS responds in this fashion to confirm that you have read back the message correctly. If something was understood incorrectly, the AFIS will repeat the correcting information).*

*Next, we take a look at the procedures in the circuit.*

*(Continued on next page...)*



## Appendix 4 (continued)

### Later lessons - flying circuits.

*Once again, on the apron, make initial contact:*

JTC: "Vereeniging radio, JTC, a very good day to you!"

AFIS: "JTC, hi there! Go ahead."

JTC: "Request your taxi for circuits, two on board."

AFIS: "QNH 1018, taxi holding point 03, ready next."

*Sometimes, instead of saying things like "The QNH is..." and "Report when you are ready for departure" the message is abbreviated somewhat. Especially at busy airports. When flying at a place like Lanseria, it is not uncommon to hear the ATC saying at this point: "1019, 06", and nothing else. What he means is: "The QNH is 1019, taxi to the holding point of runway 06 and report when you are ready for departure." Howzat!*

JTC: "1018 and runway 03, JTC."

*You have to repeat the vital information that you get from the tower. Any thing else is not NECESSARY to repeat. However, one should not make a bad habit out of being terse on the radio. With some pilots this has become second nature, and can sometimes be very disconcerting. Especially at strange airfields and with other traffic in the circuit. Simply saying "Roger" or equivalent at this point is not legal, in fact. Be careful not to develop bad habits in aviation.*

*When you are ready for take-off, again:*

JTC: "Vereeniging radio, JTC ready."

AFIS: "JTC, take off own discretion. Call right-hand downwind runway 03. The wind is 350 degrees 5 knots."

JTC: "Next call right downwind 03, JTC."

*On the downwind, abeam the upwind threshold runway 03:*

JTC: "JTC is on the right-hand downwind for runway 03."

AFIS: "Report on finals 03."

JTC: "Finals 03 next, JTC."

*Now, final approach:*

JTC: "JTC finals runway 03, touch-and-go."

AFIS: "Touch-and-go own discretion. Call again right-hand downwind runway 03. The wind is 360 degrees at 7 knots."

JTC: "Touch-and-go at own discretion, next call right-hand downwind runway 03, copy the wind, JTC."

AFIS: "JTC."

*(Continued on next page...)*

*This sequence of events repeats itself for as many times as the number of circuits you are doing.*

*Most of your radio work will be of the type that has been described up to now. One*



## Appendix 4 (continued)

*other variation of these calls that you will frequently make is the full-stop landing call. On finals for your last landing of the sortie:*

JTC: "Vereeniging radio, JTC on finals for runway 33, full stop."

AFIS: "JTC, land own discretion runway 33, the wind is light and variable. Call when vacating the runway."

JTC: "JTC."

*The right thing at this stage is to repeat the instructions issued, as always, but while you are still learning to fly, you want as little distraction as possible from your concerted efforts to make a landing that will, at last, please your instructor. It may seem at this point that even the effort of listening to the voice in the tower is too much for you to handle. Nobody is going to bite off your head if you don't exactly do everything 100 percent correctly. It comes with practice. But just saying your call sign tells the operator in the tower that you have at least heard her talking.*

*After the landing, when clear of the runway:*

JTC: "Vereeniging radio, JTC is clear of the active runway."

AFIS: "(click—click)"

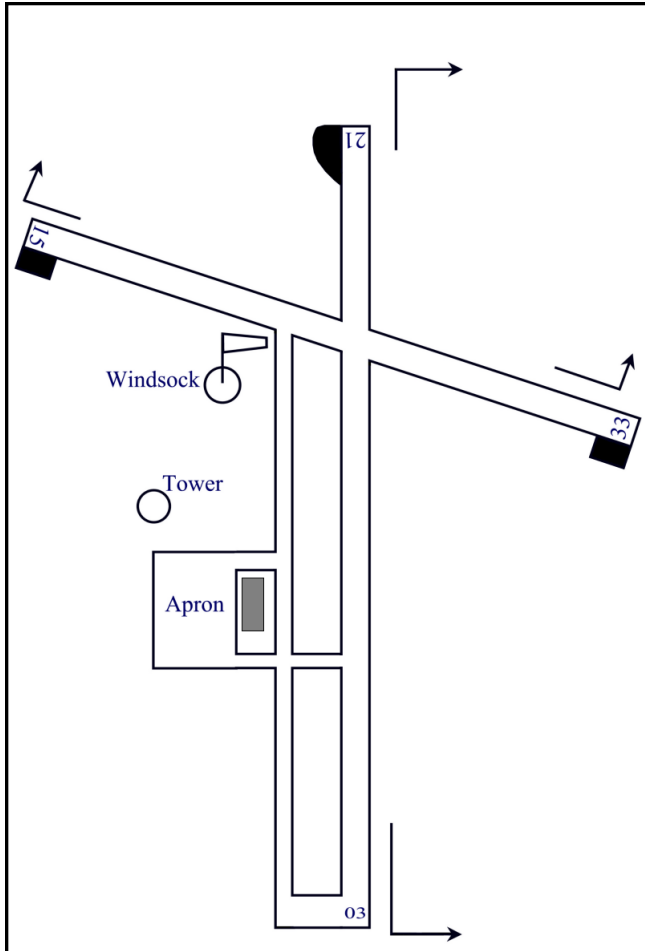
*Often, instead of confirming by giving your call sign, the operator may simply click the microphone button twice. This is not exactly very good air-manship, but is commonly accepted as a confirmation that the message was understood and correct.*

When reading through these sample procedures, take into account that the way in which it is presented here, is not the only way that these procedures can be done. You may often hear other terms being used, or additional instructions or information being given. At Lanseria, for instance, some of the operators have the habit of responding to an aircraft's call on finals, with the words "Check three greens." If you can't guess what this means, then how about this pilot's response: "Roger, three Dunlops dangling!"

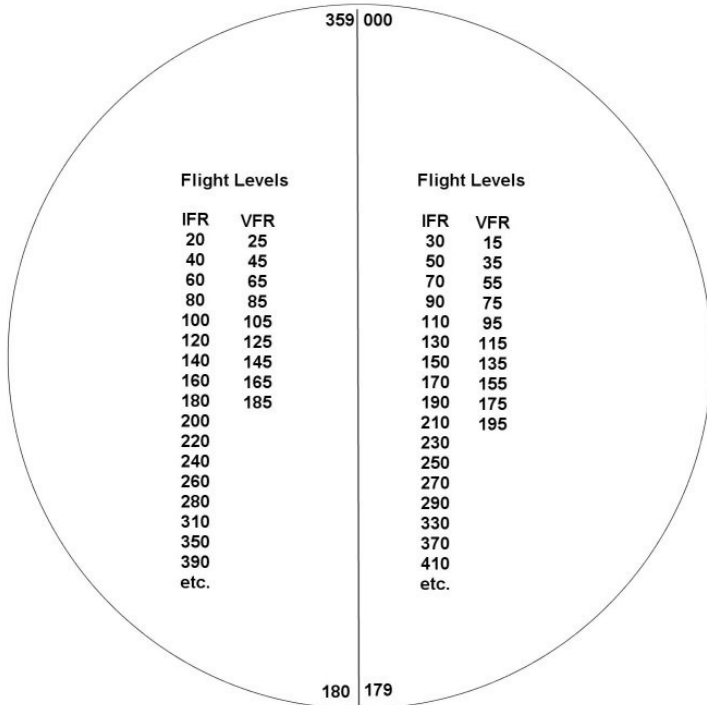
Remember, though, that the procedures described here, will be demonstrated by your instructor umpteen times, until you get it right. You also will be doing a full radio course at a later stage before receiving your PPL. This course will teach you many other things about R/T procedures. The procedures you see here are only to get you started. But they should also give you a very good idea of what normally transpires during a radio conversation in the air.



## Appendix 5 Vereeniging Airfield Layout



## Appendix 6 The Semi-circular Rule



Flying between 000 degrees and 179 degrees magnetic, VFR flights should be conducted at odd flight levels plus 500 ft. Flying between 180 degrees and 359 degrees magnetic, VFR flights should be conducted at even flight levels plus 500 ft. Note that VFR flights are not allowed above FL 195.



# Appendix 7

## Club Rules

### 1 General

- 1.1 These rules must be read in conjunction with the **Club Constitution**. Should any rule set out hereunder be in conflict with the Constitution, the latter must take precedence.
- 1.2 It is a legal requirement that all members familiarise themselves with the club's Operations Manual, Flight Safety Programme and the Quality Management Plan.
- 1.3 The operation of the Vereeniging Airfield is governed by the General Municipal By-laws and Aviation Regulations...Club members are bound by them.
- 1.4 All Club Members are deemed to be part-owners of the club and it's assets. Members are accordingly required to treat such assets with due care.
- 1.5 The Club requires that all members respect the needs of other users of Vereeniging Airfield. Good manners and consideration for others are basic to good airmanship.
- 1.6 Any member observing any dangerous or potentially dangerous situation, or act, which could endanger people, aircraft or other property on or above the airfield, must immediately report the matter to the Airfield Manager, the Control Tower, the Duty Pilot, an Instructor or a committee member.

### 2. Property

- 2.1 Members are requested to check that all club office doors and windows and all hangars used by Club aircraft, are locked before leaving the premises...if they are the last to leave.
- 2.2 The Club is responsible for keeping the premises clean. Members are requested to assist by ensuring that rubbish, empty cans, etc., are placed in the refuse bins provided.



## Appendix 7 (continued)

### 3 Aircraft reservation and payment

- 3.1 No pilot will be permitted to fly any of the club's aircraft without:
- Current Club membership card
  - Valid, current pilot's licence on his/her person
  - Logbook proof that the member is current on aircraft type
  - Proof of adequate excess insurance cover or Uniflex membership.
  - Advance payment sufficient to cover the estimated cost of the flight, conversely, no member with an account in arrear will be permitted to fly.
  - Prior reservation recorded in the booking sheet.
- 3.2 Aircraft reservations are to be made through the club office between 08:00 and 16:00 local time any day of the week.
- 3.3 Instructor reservation should be made at the same time as the aircraft booking; students and instructors are recommended to arrange subsequent lessons on completion of the previous one.
- 3.4 Members must book the times of their flight as accurately as possible. Where a flight is booked for two hours or more, a maximum of one hour "dead time" will be allowed. Time not flown may be charged at the rate of R50-00 per hour plus VAT.
- 3.5 All recorded bookings must be authenticated by the signature of the Duty Pilot; cancellations will not be honoured unless similarly authenticated.
- 3.6 Cancellations must be made as early as possible, but not less than 24 hours ahead of the booked time, to enable timely arrangements to be made for bookings by other members. Failure to cancel within the stipulated time, other than for reasons of bad weather or non-availability of aircraft, may result in the imposition of a "No Show" fee, which will include aircraft rental of R50-00 per hour for each hour booked.





## Appendix 7 (continued)

3.7 **Cessna 172 ZS-JTC** is the club's regular ab-initio training aircraft and student pilot training carries overriding priority in the reservation of this aircraft. It may not be booked for lengthy "away" flights during weekends or public holidays, unless by special prior arrangement. Where this is agreed to, any cancellation must be made at least seven days in advance.

### 3.8 Away/overnight flights

The following conditions apply in respect of away/overnight flights:

**3.8.1** Minimum daily hours must be flown, viz. two hours per day on weekdays and three hours per day over weekends and public holidays. Any shortfall may be charged at a rate of R50 -00 per hour plus VAT.

**3.8.2** Pre-payment, sufficient to cover the cost of the flight must be made before departure.

**3.8.3** All fees pertaining to landing, approach, parking or other costs charged for visits to other airfields must be paid by the hirer. The original receipts for these charges must be attached to the applicable Flight Authorisation Form on return. Where it is not possible to pay such fees, (e.g. touch and go) an indication must be recorded on the Authorisation Form. The charging of such fees to the aircraft owners results in considerable administrative work and records searching in order to determine the name of the pilot concerned. To cover the cost of this work, a penalty fee amounting to 100% of the costs will be charged to the pilot concerned.

**3.8.4** Flights must reflect the pilot's own name, postal address and telephone numbers as operator. When billing the pilot the ATNS need to open an account in the name of the hirer and will obtain the latter's agreement by telephone...this must be agreed to. This rule also applies to training flights, including ab-initio cross country training flights, night rating cross countries, instrument rating use of ILS and instrument rating currency exercises. As training flights attract an 80% discount, it is essential that the flight plan be very clearly marked as a training flight and when making initial contact with ATC after



## Appendix 7 (continued)

take-off the controller must be asked to log the flight as a training flight/exercise.

**3.8.5** Original VAT invoices for away fuel purchases must be attached to the Flight Authorisation Form. The quantity of fuel/oil purchases will be refunded to the hirer at the rate applicable to fuel/oil purchases at Vereeniging Airfield.

### 3.9 Payment

3.9.1 Unless prior arrangements are made with the Club Management, all flying and instruction is payable in advance. The club's credit policy does not permit members to have debit balances. In the event of a member for any reason not being able to pay the costs of the flight and/or instruction, penalty fees may be applied. Interest at current rates will be charged on all debtor balances and until such amounts have been paid the member concerned will not be permitted to fly. Any accounts outstanding after 60 days will result in legal action being taken to recover the debt and all membership privileges will be suspended.

3.9.2 Payments may be made in cash, by credit card or by cheque.

3.9.3 Members who have failed to pay landing fees, etc., will have their accounts debited with the costs thereof. If there are insufficient funds available to cover the costs, the members concerned will not be allowed to fly until their accounts are in credit.

3.10 The Club reserves the right to refuse to hire an aircraft to a member without giving a reason.

## 4. Aircraft documentation and operation

4.1 Flight folios must be correctly completed in respect of each flight, in terms of CAA regulations. All fuel/oil must be uplifted under the pilot's supervision and recorded by him/her in the Flight Folio. When supervising the refuelling, the pilot is responsible to ensure that the pump meter is set to zero before refuelling starts...the pilot must be present during the entire



## Appendix 7 (continued)

refuelling operation.

- 4.2 The Club's Flight Authorisation Form must be completed in full before every flight, with tachometer and Hobbs times recorded therein on completion of the flight. The Flight Authorisation Form is a legal contract, so care in its completion is important.
- 4.3 It is incumbent on the pilot to ensure that the mandatory aircraft documents are correct and that the aircraft has not over-flown the stipulated time for Mandatory Periodic Inspection.
- 4.4 Departures or arrivals after club office hours are permitted only by special arrangement and subject to the convenience of the Club and its officers.
- 4.5 All aircraft must be operated in terms of the Air Navigation Regulations.
- 4.6 The Club's aircraft may not be flown for hire or reward, other than in respect of properly authorised training and charter flights.
- 4.7 Landing on or taking off from unlicensed airfields is not permitted.
- 4.8 The Club's aircraft may not under any circumstances be used for the dropping of parachutists.
- 4.9 Doors may not be removed from Club aircraft for any purpose.
- 4.10 Flights may not be made outside the borders of South Africa, except by special arrangements with the Club Management.
- 4.11 It is the responsibility of the pilot-in-command to ensure the following before a flight:
  - 4.11.1. Review/revise the aircraft owner's manual and any other applicable notes.
  - 4.11.2. Verify that all systems and equipment are serviceable.



## Appendix 7 (continued)

4.11.3. Check for damage to the aircraft; any damage must be reported before moving the aircraft, to any Club official. In cases where unreported damage is found, the cost of repair will be charged to the last hirer.

4.11.4. The aircraft is correctly loaded. The Club requires that a load sheet be completed in respect of any flight where

- i) All seats are occupied
- ii) The payload will result in a total weight within 90% of the aircraft's gross weight.

4.12 No smoking is permitted in any club aircraft.

4.13 Aircraft must be securely tied down and chocked when left in the open unattended. The control lock and pitot cover must be fitted. When left in a hanger, It is not necessary to fit the control lock, but the aircraft must on no account be left with the park brake applied. When left unattended, the aircraft doors and windows must be locked at all times. If away from base, the tow bar must be locked inside the aircraft.

4.14 The aircraft must be left in a clean state with all rubbish removed.

4.15 On shut down, all electrical switches must be off, with the exception of the rotating beacon, which will serve as a warning if a master switch has been left on. Double-check that the magnetos have been switched off on shut down. Any pilot leaving the aircraft with the master switch on will not be permitted to fly prior to a check ride with an instructor.

4.16 Should the Club aircraft not be booked for a flight within one hour of the conclusion of the present flight, it must be returned to it's hangar and the hangar doors closed.

4.17 When closing the hangar doors, extreme caution must be exercised not to cause damage to the doors by allowing them to come off their rollers and injury to any person by allowing body parts to come between doors and fixed structures.

4.18 Club aircraft may not be operated under any training licence



## Appendix 7 (continued)

other than Unitas Flying Club.

- 4.19 Under no circumstances may any club aircraft be started by anyone having consumed any alcoholic beverage within the previous 8 hours... any breach will result in immediate suspension of privileges pending a disciplinary inquiry.

### 5. Pilot qualification requirements

#### 5.1 Cessna 172

- 5.1.1 Valid PPL or higher
- 5.1.2 Aircraft type on licence
- 5.1.3 A minimum of three hours (all types) flown within the previous three months, of which at least one hour must be on the Club Cessna 172.

#### 5.2 Piper PA28R Arrow

- 5.2.1 Valid PPL or higher
  - 5.2.2 Aircraft type on licence
  - 5.2.3 A Minimum of 60 Hours logged
  - 5.2.4 Night Rating
  - 5.2.5 Minimum of 0,5 hours per month - pilots not having flown any aircraft for three months will require a check ride by an instructor. Those over the one-month period, but within a 3-month period, may be checked out by a Club accepted safety pilot.
- 5.3 Pilots in command of flight over the Drakensberg escarpment and to the coast must be in possession of a Night Rating.

### 6 Snags, Breakdowns and Damage

- 6.1 Snags must be recorded on the Flight Authorization Form, Flight Folio and duty office blackboard. Where they render the aircraft non-airworthy, they must be reported to the Duty Pilot or Office Manager immediately.
- 6.2 Breakdowns on away flights must be reported to the aircraft



## Appendix 7 (continued)

owner before taking any remedial action. Details are to be recorded in the Flight Folio. The Club will not be responsible for the costs of return of the hirer or passengers in the event of an away breakdown.

- 6.3 Details of accidents are to be advised in terms of ANRs and to the aircraft owner or a Club official as soon as possible.

### 7. Excess insurance.

- 7.1 The hirer is responsible for any excess charged for accident damage repair by the aircraft insurers. This is currently R 20 000.00 for JTC.
- 7.2 Hiring pilots are required to carry insurance to cover this risk... such cover is available from most insurance brokers at a cost of approximately 10% per annum.
- 7.3 The Club has it's own excess insurance scheme, known as "Uniflex". The current premium is R600.00 per annum plus VAT for an excess of R 20 000.00, however this may be paid in two six-month instalments.
- 7.4 In the event of a member invoking the use of the Uniflex excess, he/she will be required to pay the full year's instalment if having only purchased six month's cover and to purchase further cover for a year - a total of R 900.00.

**COMMITTEE OF THE UNITAS FLYING CLUB  
2 SEPTEMBER 1998**



Date: 2002/09/27

## Appendix 7 (continued)



## Appendix 8

# What is the 'Dead-Cut Check'

The 'dead-cut check' thing on the magnetos is often misunderstood. In my experience student pilots often get confused about what to do with the magneto switch when the procedure check-list refers to it.

There are three situations, each with a different purpose, during which the magneto switch is checked.

- 1. After start.** The magnetos are checked for individual operation.  
As soon as the startup procedure is completed, the *After Start Checks* calls for a 'dead cut check'. This is to make sure both magnetos are functional. At this point it does not prove they are working properly, but proves that they are both working. Select left magneto, check engine revs drop. Next the right magneto with corresponding drop in revs. Next, briefly to off position to ensure engine cuts and immediately back to both.
- 2. Run-up.** The magnetos are checked for **proper** operation under power.  
Select left magneto, check drop in rpm, compare with limit requirement. Select both, watch rpm return to normal. Select right magneto, repeat process as for left. Ensure selection to *Both* after completion of procedure. **Do NOT switch magneto switch to *Off* position during this procedure!**
- 3. Shut-down** after flight. Confirm that the magneto switch actually does cut out both magnetos in off position.  
Briefly turn magneto switch to *Off* position to ensure that engine does cut out, then immediately back to *Both*. Whilst executing this procedure, ensure that engine rpm is low, preferably 1000rpm or under.





## Miscellaneous

<b>VMC Minima for Aeroplanes</b>				
Airspace	Ceiling	Visibility	Distance From Cloud	
			Horizontally	Vertically
CTR/ATZ/ATA*	1500' AGL	5 km	2000'	500'
<b>Other Airspaces:</b>				
Gnd to 1000'AGL by day		1.5 km	Clear of Cloud	
1000' AGL to FL 100 by day		5 km	2000'	500'
Gnd to FL100 by night		5 km	2000'	500'
FL 100—FL 195 day or night		8 km	1.5 km	1000'



## Miscellaneous

### ONE HUNDRED-AND-SEVENTY-EIGHT SECONDS TO LIVE

IF YOU ARE TEMPTED TO TAKE OFF IN MARGINAL WEATHER WITHOUT INSTRUMENT TRAINING, READ THIS FIRST. IF YOU DECIDE TO GO ANYWAY, START COUNTING DOWN FROM 178 WHEN YOU LOSE VISUAL CONTACT

How long can a pilot who does not have instrument training expect to live after he flies into bad weather and loses visual contact with the ground? The Institute of Aviation of the University of Illinois sought to answer this question back in 1954.

The answer - 178 seconds - two seconds short of three minutes.

This article, forcefully tells what those 178 seconds mean to the pilot.

The sky is overcast and the visibility poor. In fact, that five mile reported visibility looks more like two now. You are no longer able to judge the height of the overcast. Your altimeter says you are at 1200 ft and your map tells you that there is terrain up to 1500 ft beneath (around) you. There might even be a tower around here some place, for you are not exactly sure just how far off course you are. But you've flown in worse weather than this, so you go on.

You unconsciously ease back on the wheel just a bit, to clear those not too imaginary towers. Then with no warning, you are in it. You stare so hard into the milky white mists that your eyes hurt, but you see nothing. You fight the feeling that is in your stomach, and swallow, only to find your mouth dry. Now you know you should have waited for better weather. The appointment was important, but not that important. Somewhere a voice is saying, "You've had it - you've had it!"

#### **You Now Have One Hundred-And-Seventy-Eight Seconds to Live.**

Your airplane is still on an even keel but your compass is turning slowly. You push a little rudder and add a little pressure on the wheel to stop the turn, but this feels unnatural and you return the controls to their original position. This feels better, but now your compass is turning a little faster and your airspeed is increasing slightly. You scan your instrument panel for help but now it looks almost unfamiliar.

You are sure you will break through in several minutes. This is just a bad spot. However, you don't have several minutes left.

#### **You Have One Hundred Seconds To Live.**

You glance at your altimeter and are shocked to see it unwinding. You already are down to 1100 ft. - Instinctively you pull back on the wheel. Nevertheless, the altimeter still unwinds, the engine is revving too fast and the airspeed is almost to the red line.

#### **You Have Forty-five Seconds to Live.**

Now you are sweating and shaking. There must be something wrong with the controls, for pulling back on the wheel only moves the airspeed indicator a little farther into the red. You can hear the wind tearing at the airplane.

#### **You Have Ten Seconds To Live.**

Suddenly you break out of the overcast. There is the ground. You can see the trees rushing up at you, and you can see the horizon if you turn your head far enough. It's at an unusual angle, you are almost inverted, you open your mouth to scream but you are too late. It's all over, son.

Your time has just run out.



## Miscellaneous

Notes:

- Let's say you see a young child moving closer to your aircraft while the engine is running and you want to stop the engine as quickly as possible. How? Cut the magnetos before pulling the mixture.

- If you are changing passengers on the ground, rather stop the engine before letting anyone get in or out. Brief your passengers before the time about not approaching the aircraft until you have stopped the engine.



Date: 2009/01/13

## Registration

Take a moment to register your Student guide. By sending this information, you will be placed on an update mailing list. From time to time information in this manual may well change. If you would like to be informed of updates when they occur, send this registration form to:

E N Schneider  
P O Box 1249  
Vanderbijlpark 1900

Or e-mail the information to me at

eugene@enl.co.za

<b>Name:</b>	
<b>Address:</b>	
<b>Date Purchased:</b>	
<b>Phone:</b>	
<b>E-mail:</b>	



Date: 2003/23/03

# Registration

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