WILLIAMSON FLYING CLUB
~ Established 1956 ~

FlyThisSim Flight Simulators

Traffic Pattern, Normal X/Wind Landings, Go-Around

TASK

- Complete 8 Traffic Pattern Circuits to include:
  - 6 Full Stop Landings
  - 2 go-arounds
- Takeoff on Either 10 or 28
- Fly Traffic Pattern as Appropriate for Wind
- Land, using appropriate Crosswind Control
- Exit runway (Or taxi to end and perform a 180°)
- Takeoff from Opposite Runway, repeat...

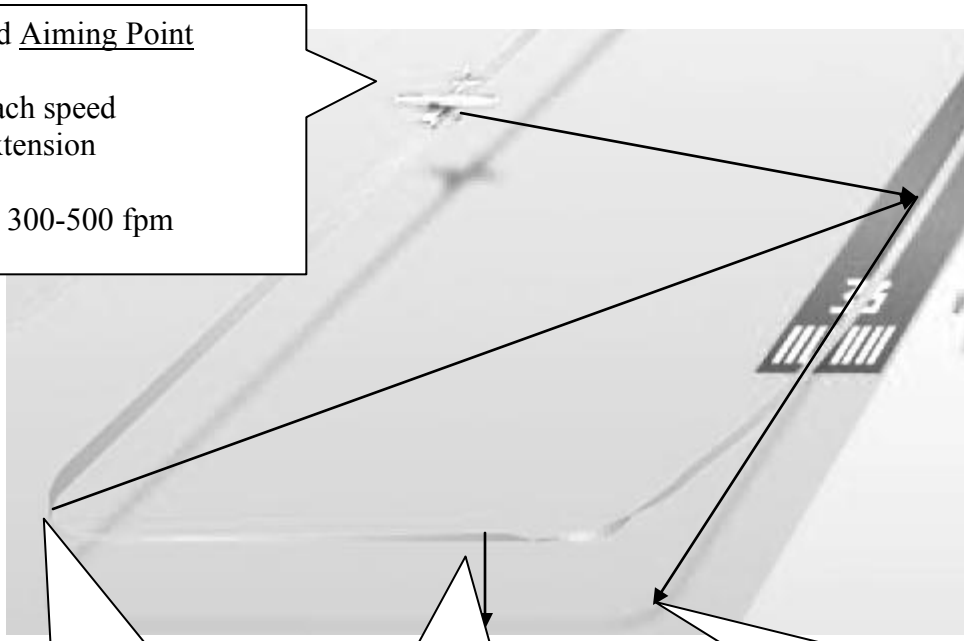
CONDITION

- Airplane: Piper Warrior (Piper_Warrior_FTS530_VisX.lfts)
- Location: KSDC, Williamson-Sodus Airport
- Environment:
  - Time: 12:00
  - Visibility: VFR (7sm)
  - Clouds: None
  - Wind Direction: 190°
  - Velocity: 10 kts
  - Turbulence: 3

STANDARDS

- Altitude +/- 100ft
- Airspeed +/- 5 kts
- Touchdown Slightly Beyond Aiming Point in Appropriate Landing Attitude Near Stall Speed.
- Aligned with the Runway Centerline w/no Drift
- Procedures Completed IAW Appropriate Checklist

Abeam intended <u>Aiming Point</u>
-Reduce Power
-Slow to approach speed
-Partial Flap Extension
(1-2 notches)
-Begin Descent 300-500 fpm



When Aiming Point is 45° off shoulder:
-Turn Base (20-30°Bank)

Aircraft should be approximately ¾ to 1 sm from landing point.
-Power as Necessary for descent

-Flaps as Desired
-Power for descent to achieve a 400-500 agl Base to Final Turn (When Landing Point is at 10 o'clock position.)
-Start a shallow turn a little early to avoid overshooting

This technique will give a consistent descent path to final

-Use power to control Descent Path (1500rpm+/-)
-Final Flap setting as necessary when landing is assured
-Crosswind Correction on Short Final

15-20Ft (2-3 Runway Stripes)
-Initiate Flare (Reduce Power)
-Begin a gradual round-out that allows a gradual descent to the aiming point.

3-5 ft Begin to slow descent rate
(Nose gradually to and hold Landing Attitude)
-Look down the runway (over the nose) to maintain landing attitude and runway alignment.
Plan to touch down at or beyond aiming point.
Maintain continuous back-pressure and runway alignment after touch down

NORMAL/X-WIND LANDING

1) Enter Traffic Pattern At TPA and 90 kts --- 45* to Downwind
2) Before Landing Checklist ----------COMPLETE

Note: "The airplane should be trimmed to an approach speed of about 75 kts with flaps UP. The flaps can be lowered at speeds up to 103 kts; approach speed is reduced 3 kts for each notch of flaps used."

Note: "In high wind conditions, particularly strong crosswinds, it may be desirable to approach the ground at higher than normal speeds with partial or no flaps."

3) Abeam Desired Landing Point Downwind
   a) Throttle----------1600 to 1800 rpm
   b) Flaps----------1 Notch (10 degrees)
   c) Airspeed----------70-75 kts
   d) Trim ----------As Required
4) Base Leg (Adjust for Wind Correction)
   a) 20-30* Bank turn @ approx 45* angle from Landing Point
   b) Flaps----------2nd Notch (25 degrees) Before or After Turn
   c) Pitch and Power---Simultaneously to maintain
      i) Airspeed--------70-75 kts
      ii) Descent-----AS REQUIRED to turn final 400-500 agl
   d) Trim----------As Required
5) Final Approach
   a) Flaps----------3rd Notch (40 degrees) as necessary
   b) Pitch and Power---Simultaneously to maintain
      i) Descent path to landing point
      ii) Airspeed----- 65-70 + Gust Factor

DO NOT ALLOW AIRCRAFT TO SLOW BELOW APPROACH SPEED or SINK BELOW GLIDE PATH

   c) Trim----------As Required
   d) X-Wind Correction-------ESTABLISH as Necessary
6) Landing Flare------Approximately 15-20 ft above touchdown
      i) Power--------to Idle
      ii) Pitch --------- to maintain glide path to landing point
      iii) Touchdown----Main wheels only (Lower Nose Gently)
      iv) Directional / X-Wind Control----------Maintain
      v) Brakes----------As Necessary

TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

Objective. To determine that the applicant:

1) Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
2) Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
3) Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
4) Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 VSO, +10/-5 knots, with wind gust factor applied.
5) Makes smooth, timely, and correct control application during the roundout and touchdown.
6) Touches down smoothly at approximate stalling speed.
7) Touches down at or within 400 feet (120 meters) beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
8) Maintains crosswind correction and directional control throughout the approach and landing sequence.
9) Completes the appropriate checklist.

Common Errors:

1) Improper use of landing performance data and limitations.
   a) Use POH to determine performance limitations and operate within those limitations.
   b) Use the crosswind component to determine crosswind component is not greater than published limitations.
2) Failure to establish approach and landing configurations at appropriate time or in proper sequence.
3) Failure to establish and maintain a stabilized approach.
   a) Use pitch and power simultaneously to maintain approach. Power for glide path. Pitch to maintain airspeed.
   b) Low Final Approach: Immediately apply power, then pitch to reestablish correct glide path.
   c) Slow Final Approach: Immediately apply power, DO NOT increase pitch attitude. Execute Go Around if to Low
4) Inappropriate removal of hand from throttle.
5) Improper technique during flare to touchdown:
   Execute a GO-Around if insufficient runway remains for recovery
   a) High roundout: (AVOID using significant nose down pitch)
      i) Hold pitch attitude constant until airplane decelerates to again start descending.
      ii) Add a small amount of power as necessary to prevent the rapid loss of airspeed/'altitude.
   b) Late or rapid roundout: May cause hard landing and bounce from accelerated stall.
      i) Promptly apply power prior to stall. If sufficient runway remains, execute normal landing.
   c) Floating during flare: (Caused from excessive speed on final approach)
      i) Smoothly and gradually adjust the pitch attitude until the proper landing attitude is attained.
   d) Ballooning during flare: (If excessive: Execute a GO AROUND immediately)
      i) If slight: maintain landing attitude and add power as necessary to slow descent rate.
   e) Bounce or Porpoise: Add power, reestablish landing attitude. If the bounce is excessive: GO AROUND.
   f) Drift or Crab during touchdown: Increase crosswind correction as necessary to maintain runway centerline while the aircraft slows during flare and touchdown.
6) Poor directional control and improper use of brakes after touchdown:
   a) Maintain runway alignment with coordinated rudder control and minimum braking.
   b) Apply aileron pressure into the wind toward the high wing (the sooner the better)

TRAFFIC PATTERN

- A rectangular course around the airport is used for traffic sequencing and landing preparation.

Upwind, Crosswind, Downwind, Base and Final.

- Traffic Pattern altitudes typically range between 600ft AGL and 1000ft AGL.
- If a Traffic Pattern Altitude(TPA) is listed in the Airport/Facility Directory (A/FD), then that altitude should be used. If TPA is not listed, add 1000 to the airport elevation.
- Left-Hand turns are standard.
- If a Traffic Pattern has Right-Hand turns, it will be noted on the Sectional Chart, the A/FD and the Segmented Circle on the airport.
- According to 14CFR 91.126, the pilot of an airplane MUST make all turns to the LEFT unless there are indications for an Right-Hand Pattern.
- However, you may see helicopters use a Right-Hand Pattern as they are required to "avoid the flow of fixed wing traffic."
- If remaining in the Traffic Pattern for landing practice, you should advise your intentions during your Radio Call prior to takeoff.
- You should then announce each turn made within the pattern.
- Typically, when I have about 300ft left to go prior to reaching TPA and I am beyond the departure end of the runway, I will check for traffic and begin my Crosswind turn.
- You should level the wings on the Crosswind turn at least long enough to scan for traffic prior to turning Downwind.
- Base is typically turned when your Touchdown Aiming Point is about 45° off your shoulder (Typically the Aiming Point Markers 1000ft from the runway edge), which should put you about 1 mile from the runway Threshold (beginning of the runway).
- Final should be turned when your aiming point is at about your 10 o'clock position.
- Sometimes you may have to modify the traffic pattern as necessary to compensate for wind and traffic.
- If I am following an airplane, I will not turn Crosswind or Base until the other plane is at least 45° off my shoulder in the opposite direction.

BE GOAL ORIENTED!!

- You should plan to be about 400-500ft AGL as you turn from Base to Final.
- This will give you a consistent sight picture and predictable descent path which is especially useful when you are away from your Home Airport.

- An easy way to determine the altitude you should be at turning final, find the Airports Field Elevation on your altimeter and look directly across from that point to find the 500ft AGL altitude you should reference.

- For every mile you are from the airport, if terrain allows, you should add 500ft to the elevation as a reference altitude to pass through on approach. This will provide a 4-5° glide path that, assuming no wind and a typical approach speed, will require a descent rate of about 500-600ft/minute.

- As you turn Final, adjust power for you desired descent.

STABILIZED APPROACH

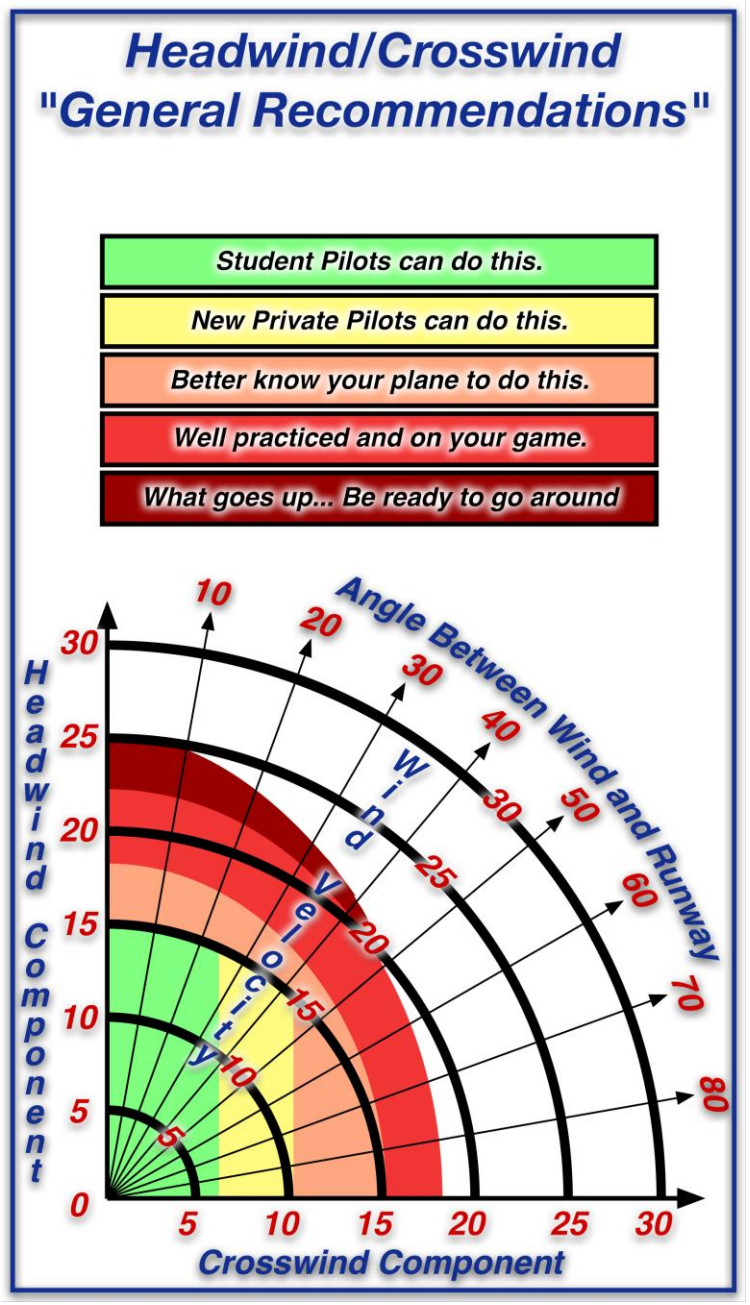
- Stable means "Not likely to change".
- A Stabilized Approach is a Descent made at a Constant Airspeed and Constant Descent Angle to an Aiming Point on the Runway.
- This is accomplished with the proper use of Power & Pitch control as necessary to maintain a Visual Descent Path (Visualize a Ramp) and constant Airspeed.

- The **Side Slip** is used to counteract the side force caused by a crosswind during landing.
- If we are approaching the runway for landing with the airplane pointed at the runway and the wind is flowing from the right, the airplane will tend to flow "with the wind" and we will be pushed off of our desired flight path (Think of a boat crossing a river, to travel straight across, it must point upstream).
- So, to continue our descent path, we must alter our ***Heading*** into the wind enough to counter the side drift.
- This results in the plane approaching the runway at an angle that is not aligned with the runway.
- The result of landing while not aligned with our direction of travel (and the runway) is a side load on the landing gear (that can result in landing gear failure) and difficult directional control after landing.
- To prevent this, prior to touchdown on the runway, we enter the plane into a Side-Slip by Aligning the airplane with the runway using Rudder Control as necessary.
- As we apply the Rudder Control force (In this example, Left), we apply opposite (Right) Aileron Control force as necessary to "Bank" or lean the plane into the wind, using our Lift force to cancel the Side force caused by the crosswind...
- **This will take some practice as the required control effort necessary to maintain a side-slip during landing changes as the plane slows down. :-)**

"Pilots' inability to cope with wind is a leading cause of accidents."

- Most aircraft have a performance number listed the Operating Handbook as the Maximum Demonstrated Crosswind Component.
- This is not necessarily a limit, but simply the Maximum Crosswind a Test Pilot successfully landed in during flight testing.
- Most pilots' use this as a limit because if you are landing in a stronger crosswind, you have now become the Test pilot ;-)
- The true limiting factors are Rudder Control Authority and Pilot Skill.
- Just because you can keep the plane straight during short final, doesn't mean you will able to keep it straight during the entire landing procedure.
- As the plane slows down, control effectiveness is reduced and more rudder pressure will need to be applied to maintain alignment.
- I find most pilots have difficulty with a crosswind more than 10kts.
- As a rule of thumb, the crosswind component of a wind that is 45° off from the runway direction is 75% of the wind speed...
  Greater towards 90°, less closer to runway heading...

Most windsocks stand straight out at 15knots.



Normal Landing

Most landings are "Screwed Up" while the plane is still on the Downwind Leg. Flying an inconsistent and irregular Traffic Pattern will lead to an inconsistent and irregular Landing Approach which will lead to a poor landing.

You must set yourself up for success!!

Flying a consistent Traffic Pattern and Stabilized Approach will give you the best shot at a good landing.

Once on Final Approach, adjust your heading as necessary (for crosswinds) to track the runway centerline. (Keep the extended centerline under your right butt cheek ;-)

Use POWER (primary) and Pitch (for quick adjustments) as necessary to maintain a proper sight picture that ensures a stabilized approach/descent down to your aiming point.

Elevator Trim should be used to "Lock-in" your desired approach speed. After the airplane is "trimmed", any noticeably extra pressure on the control yoke should bring a quick crosscheck to the airspeed indicator, and pitch should be adjusted as necessary to ensure the proper airspeed.

"I would rather be a little higher than lower, faster than slower"

Low and/or Slow approaches are Dangerous!

Give yourself an acceptable airspeed range of about 10mph/kts to maintain.

As you approach the Runway Threshold, it's time to get the plane lined up for landing.

Bring the Nose to the Centerline with appropriate Rudder Pressure. Maintain enough pressure to KEEP the airplane aligned with the Runway Centerline. As you add Rudder Pressure, you will need to add appropriate and opposite Aileron (Roll) Pressure to keep the plane from banking Against the Wind.

The airplanes Bank Angle is used to Counteract Crosswind Forces as necessary to keep the plane from drifting Left or Right of the Centerline.

MAINTAIN RUNWAY ALIGNMENT THROUGHOUT THE LANDING PROCESS.

Be Aware that as the plane is slowed down during landing, Control Effectiveness is REDUCED requiring Additional Control Movement of Rudder & Aileron to MAINTAIN Directional Control and Alignment.

Round out & Flare

The Round out is initiated by a Power Reduction (typically to idle) when the plane is about 20ft off of the ground (typically once you have crossed the Runway Threshold)

With the power reduced, Pitch Control must be used to continue the approach path to the Runway. The result is a desired loss of airspeed and a raising of the nose to a landing attitude that ensures touchdown on the Main Landing Gear.

As the Round out is initiated, attention should be shifted from the aiming point to a point farther down and near the end of the Runway. This will allow you to better judge airplane alignment, crosswind, height and speed control.

When power is reduced to begin the round out, gentle back pressure should be applied to the control yoke to prevent the nose from pitching down. You should then monitor the descent of the plane and gently and incrementally increase pitch as necessary to maintain a smooth continuous descent to the runway.

If timed correctly, the nose should be about 1-2 finger widths below the end of the runway when the plane is 3-5 ft above the ground. When you have reached this point, begin the Flare.

The Flare to Land is a method of slowing the descent rate to a comfortable touchdown force with an additional application of pitch. Generally, raise and hold the nose where it is level with or just below the end of the runway. Maintain this attitude until and after the main wheels touchdown. Let the Nose Come Down on its own and continue to Maintain Directional (Rudder) and Crosswind (Aileron) controls pressures throughout the landing and Roll Out.

Keep "flying" the plane to the end of the runway even After the plane has touched down.

Keep Aileron Control INTO the wind through the roll out to prevent the wing from raising up due to crosswind forces.

Once directional control is assured, apply smooth braking as necessary... Avoid unnecessarily heavy braking. If you "Lock-Up" the wheels, reduce braking force and reapply with less force. You should try to complete all required braking prior to exiting the runway to prevent the plane from flipping due to its Three Wheeled stance.

Go-Around

A good Approach will give you the best chance to make a good landing. It doesn't guarantee one. If things get out of hand during the landing and you are left with a "Runaway Stagecoach", making a Go-Around is best way to retake the reigns... A Go-Around can be made Before, During or After Touchdown... Adding Power to Full Throttle immediately pushes air accross your Rudder and (except T-Tail) your Elevator/Stabilator making them more effective. This makes the airplane more controllable quickly!

Typical Reasons to initiate a Go-Around:

Faulty Approach (Too High/Low, Too Fast/Slow)>
Ambushed by the invisible and generally diabolical Wind.
Know the winds hiding spots:
Hill, Trees, Buildings
Lakes & Rivers (Will give you that Sinking Feeling)
Pavement & Plowed Fields (Will give you a boost up)

Obstacle On the runway: Person, Plane or Thing

To initiate a Go-Around, Generally:
Apply Full Power & Rudder Pressure to control Torque (Throttle: Full; Then Carb Heat: Off; Then Mixture: Rich).
Pitch the Nose to a Slight Climb Attitude (Nose to the End of the Runway).
The increase in power will tend to Pitch the Plane UP (Sometimes Too Far)
HOLD the nose in the proper Climb Attitude using whatever pressure is necessary...
Don't let the plane fly you.
Reduce Flaps to Acceptable Climb Setting.
Climb at Vx (Best Angle Climb Speed) until Obstacles are Clear and Transition to Vy (Best Rate Climb Speed).

PIPER PA-28-161
CHECKLIST

FlyThisSim
Flight Simulators

PRE FLIGHT

1. THROTTLE QUADRANT----INSTALLED
2. COMPUTER----------ON
3. MESSAGES----SWIPEx2/DOUBLE-TAP
4. SELF CHECK----------GREEN
   a. **SELF CHECK FAILED?**
      1. CANCEL START-UP
      2. RESTART COMPUTER
5. SIM TIME----------RECORD
6. AIRPLANE PANEL----------SELECT
7. AIRPORT----------REPOSITION
8. WEATHER----------SET
   a. TIME
   b. VISIBLITY
   c. WIND DIRECTION & SPEED
   d. CLOUD HEIGHTS
9. PILOT-EDGE----------CONNECT
10. FLIGHT PLAN----------FILE

ENGINE START

1. PARKING BRAKE----------SET
2. SEATS / BELTS--LOCKED / FASTENED
3. FLAPS----------UP
4. CIRCUIT BREAKERS---------CHECK-IN
5. ELECTRICAL EQUIP ----------OFF

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1. FUEL TANK----------SELECT
2. MASTER SWITCH----------ON
3. FUEL PUMP----------ON
4. BEACON LIGHT----------ON
5. CARB HEAT----------OFF
6. MIXTURE--------(Exercise)----------RICH
7. THROTTLE-----(Exercise)--OPEN 1/8 inch

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8. PRIME----------AS REQ---IN & LOCKED
9. IGNITION----------BOTH
10. PROP AREA----------CLEAR
11. ENGINE----------START

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12. THROTTLE----------1000-1200 rpm
13. OIL PRESSURE (w/in 30 Sec)----CHECK
14. FUEL PUMP-------OFF & Verify Pressure

TAXI

1. MIXTURE----------LEAN FOR TAXI
2. RADIOS / AVIONICS-------SET AS REQ
3. ATIS-ASOS-WXBRIEF----------REVIEW
4. FLIGHT INST---------- SET & MONITOR
5. BRAKES & STEERING----------TEST

GROUND RUN-UP

1. BRAKES----------SET
2. FLIGHT INST----------CHECK & SET
3. CIRCUIT BREAKERS---------CHECK-IN
4. RADIOS / AVIONICS----------AS REQ
   a. IFR CHECKLIST------ --------AS REQ

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5. FUEL SELECTOR------FULLEST TANK
6. MIXTURE----------RICH
7. THROTTLE----------2000 rpm
8. MAGNETOS---CHECK(175max drop<50diff)
   ----------SMOOTH OPERATION
9. CARB HEAT----TEST, Note RPM Drop
10. ENGINE INSTRUMENTS--------CHECK
11. SUCTION & ALTERNATOR-----CHECK
12. THROTTLE----------LOW IDLE CHECK
    a. ---AND W / CARB HEAT
    b. -RETURN TO 800-1000

BEFORE TAKEOFF

If it doesn't LOOK, SOUND or FEEL right-----GET IT CHECKED OUT BEFORE YOU GO!

BEFORE TAKEOFF

1. PASSENGER & EMERGENCY BRIEFING
2. SEATS & BELTS--LOCKED / FASTENED

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3. CONTROLS----------FREE & CORRECT
4. FLAPS----------SET
   (Norm: 0 deg, Short/Soft 25 deg)
5. TRIM TAB----------SET

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6. MIXTURE------RICH (T/O Below 3000 ft)
7. CARB HEAT----------OFF
8. WINDOW VENT----------CLOSED
9. DOOR ----------CLOSED / LATCHED

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(Vr: 45-55 kts, Vx 63 kts, Vy 79 kts)

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10. FUEL PUMP----------ON
11. LANDING LIGHT----------ON
12. TRANSPONDER----------ON ALT
13. TIME OFF----------RECORD

AFTER TAKEOFF

1. **+1000' AGL / Cruise Climb: 87 kts**
2. FLAPS----------UP (Verify)
3. FUEL PUMP----------OFF (Verify PSI)
4. LANDING LIGHT----------OFF
5. ENGINE INSTRUMENTS---------CHECK
6. MIXTURE----------LEAN AS REQ

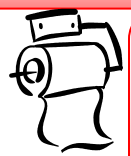
CRUISE & DESCENT

1. THROTTLE----------AS REQ
2. MIXTURE----------LEAN AS REQ
3. **FUEL TANK----------SELECT AS REQ**
4. ENGINE INSTRUMENTS--------CHECK
5. FLIGHT INSTRUMENTS---------CHECK

V-SPEEDS
Vs0------44 kts
Vs1------50 kts
Vfe-----103 kts
Va------111 kts
Vno----126 kts
Vne----160 kts
Cruise Climb—------87 kts
Traffic Pattern-------90 kts
Final (no Flaps)-------70 kts
Final (Full Flaps)-----63 kts
Vr: 45-55 kts, Vx 63 kts, Vy 79 kts
(Approach-No Flaps 73kts / Full Flaps 63 kts)

Best Glide 73 kts (Max Gross)

For those "Oh Crap" Moments



T--Trim
P--Pick

F--Fuel
A--Air
S--Spark
T--Transmit

BEFORE LANDING

(Mid-Field Traffic Pattern----------90kts)

1. SEATS / BELTS-LOCKED / FASTENED
2. FUEL PUMP----------ON
3. LANDING LIGHT----------ON
4. MIXTURE----------RICH
5. **FUEL TANK----------SELECT FULLEST**

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(Approach-No Flaps 73kts / Full Flaps 63kts)
→ → **GoAROUND--**Full Power Climb 65-80kts
-- Flaps to 25 deg as req
--Obstacles Clear- Retract Flaps

AFTER LANDING

1. FLAPS----------UP
2. MIXTURE----------LEAN FOR TAXI
3. FUEL PUMP----------OFF
4. LANDING LIGHT----------OFF
5. TRANSPONDER----------STANDBY

SHUT DOWN

1. AVIONICS / ELECTRICAL EQUIP--OFF
2. MAGNETOS------CHECK GROUNDING
3. THROTTLE----------1000 to 1200 rpm
4. MIXTURE----------CUT-OFF
5. IGNITION----------OFF
6. MASTER SWITCH----------OFF

ENGINE FAILURE DURING FLIGHT

1. AIRSPEED----------73 kts
2. LANDING SITE----------CHOOSE

RESTART / TROUBLESHOOTING PROCEDURES

1. **FUEL TANK----------SELECT FULLEST**
2. PRIMER----------IN & LOCKED
3. FUEL PUMP----------ON
4. CARB HEAT----------ON
5. THROTTLE----------OPEN
6. MIXTURE ----------FULL RICH
7. IGNITION----------BOTH(START)

NO RESTART?--*EMERGENCY LANDING*

EMERGENCY LANDING

1. SEATS/BELTS------UPRIGHT/SECURE
2. AIRSPEED----------**73 kts**(Flaps *up*)
   ----------**63 kts**(Flaps *down*)
3. MIXTURE----------IDLE CUT OFF
4. FUEL----------OFF
5. IGNITION----------OFF

*SQUAWK **7700***
MAYDAY- LAST CALLING OR **121.5**
6. MASTER----OFF / DOORS---UNLATCH