



NATIONAL ASSOCIATION OF FLIGHT INSTRUCTORS

# MENTOR

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# Fly the Easy Way

Presented by Larry Bothe, retired DPE, CFI, Author

Why are you working so hard to fly  
your airplane, and spending so much  
money?

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# A little info about me ...

Larry Bothe

- Seymour, Indiana
- Gold Seal & Master CFI
- DPE 15 years; Sport, Private & IFR
- 1000 checkrides, 8000 hours
- Owned 4 airplanes & managed an FBO

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# Today's Presentation

- Pilots working their tails off on checkrides and flight reviews
- Paying your dues
- Hard way first
- Instructors know but don't teach
- Pilot trainee dropout
- And...

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...a whole lot more fun!!

21 things that will make  
your flying easier, safer,  
cheaper

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# Tricks With Trim

Make your airplane work for you

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# Set trim for takeoff

In the plane you usually fly

- Do normal takeoff
- Set trim for normal cruise-climb
- Note the position of the trim indicator
- In the future, set the trim in that place before takeoff
- No more fooling around with trim after takeoff



## Level-off; climb to cruise

- #1 thing that pilots do the hard way
- DON'T TOUCH THE THROTTLE!
- Go 50 feet too high
- Lower nose to level flight; HOLD IT THERE
- Make gross trim movement, nose down
- WAIT, for speed to come up to cruise
- Set power to cruise setting
- Fine-tune trim
- Lean the mixture when time permits



## Cruise descent & Level-Off

- Reduce power by 300 rpm or 3 inches mp
- DON'T TOUCH THE TRIM!
- DON'T ENRICHEN THE MIXTURE, YET
- Note the rate of descent; e.g. 600 fpm
- Take 10% of the rate, e.g. 60 feet
- 60 feet before target altitude add power back up to where it was before
- Airplane levels off by itself
- *LIVE* Reset mixture

# Trim for Best Glide

After an engine failure

- Trim full nose-up
- No, it won't stall
- Really; it's a certification requirement that it not stall
- Be careful in recovery; lots of forward pressure required





# Mixture & Throttle

Less work, save money

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# Leaning the mixture

- When should you lean the mixture?



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# Leaning the mixture

When should you lean the mixture?

- Anytime you are in level, cruise flight, at any altitude



# Keep your plugs clean

- 2-finger lean
  - Keep plugs from fouling, and
  - Valves from sticking
- 1000 – 1200 rpm when sitting still
- Plug still fouled? – Do a burn-out
- Full-rich for takeoff!





# Warm engine start

- Stroking the throttle
- 3 engine fires
- 2 hands for beginners
- Now do this:
  - Start with throttle all the way out
  - Turn key to START
  - Briskly push throttle all the way in, then pull all the way out, then in  $\frac{1}{4}$ "





# Radios and Instruments

Be safer, don't get lost

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# Set up radios on the ground

- Nav radios (GPS or VOR) to 1<sup>st</sup> fix
- Don't forget CDI
  - Don't know course?
  - Then estimate
- Comm's as you can
- Safer
- Reduces workload
- Eliminates errors



## VOR; what course in CDI?

- Not the one you calculated very carefully using Wind Correction Angle
- Electronic signals passing through the air are not affected by wind
- You must adjust the CDI to the Magnetic Course, not Magnetic Heading
- MC is TC corrected for magnetic variation; no wind involved

# Magnetic compass & directional gyro—set often

- When students get lost...
- When checkpoints aren't where they are supposed to be...
- When instrument approaches don't work...
- When any navigation task goes awry
- SET THE DG TO MATCH THE MAGNETIC COMPASS





Keeping it coordinated

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# Rudder usage; ball out?

- When do you need to use the rudders?



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# Rudder usage; ball out?

When do you need to use the rudders?

- When the control wheel (or stick) is displaced
- NOT when the ball is out – too late!





# Landings: Short & Soft What really works, & why

Put the airplane where you want it, every time.

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# The Aim Point

- Aim point and touchdown point are NOT the same
- Touchdown point is where you want the wheels to touch the surface
- Aim point is where the airplane would hit the ground if you didn't flare
- Aim point is about 150 feet short of touchdown point
- If you are landing at the beginning of the runway the aim point is somewhere out in the grass



# Are you high or low?

- Look at your aim point
- Is it moving up or down in the windscreen?
- If it's moving up, you're low
- Moving down, high
- Remember, the point that is vertically stationary in the windscreen is where you will strike the ground if you don't flare.
- If you adjust power, remember to set it back again when you get on the proper approach path.

# Soft field approach speed

What speed works to get soft touchdown?

- NOT short field speed – you often arrive with a THUD out of a short field landing.
- Soft-field speed not published
- Add 5 knots (or mph) to the short-field speed
- Carry 200 rpm above flight-idle all the way to touchdown.
- Kill the power when the wheels touch

3. For operation on a dry, grass

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	GR RC
2400	61	S.L.	
		1000	
		2000	
		3000	
		4000	
		5000	
		6000	

*Add 5 kts for Soft Field Lndg*



Eight more quick hits

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# Where to look when turning

- Look in direction of turn first to check for traffic and to pick point to turn to.
- Then look back straight ahead to set the bank for the turn.
- Maintain bank and watch as turn point comes to the front.
- Lead roll-out a little to hit the point

# “Sawing” the ailerons

- You can't correct every little bump or movement
- You can't stay in time with the movements; you make it worse
- Let the airplane fly
- Fix trends; not bumps

# Slips made easy

- Nobody likes slips, except taildragger pilots
- Ugly slips; nose whips all over
- Drop the wing into the wind, and
- **Pin the rudder to the firewall**
- **Steer like a truck**
- Pitch for normal approach speed, not too fast
- Take it nearly to the ground, if necessary
- Release the rudder, level the wings, land the plane

# Buckling safety belts

- Struggling with safety belts is not necessary
- Retrieve the belts while the door is still open and the seat is still back
- Buckle the seat and shoulder belts, but leave very loose
- Shut and latch the door
- Move the seat to flight position
- Snug up the belts, lap belt first

# Shutting the door

- Pressure in the cabin
- Open a window or air vent
- Pull on window sill instead of door handle
- Don't slam from way open; 4" OK
- Lubricate your door latches and hinges, and your seat rollers while you're at it.





# Taxi with control wheel back

- Don't think it matters?
- When wind is light or calm
- Relieves pressure on nose strut
- Don't have to pay to have it resealed as often
- Wipe nose strut clean during preflight



# Leave the beacon on

- Beacon has to be on anytime the engine is running (March, 1996)
- Transient surge won't hurt the beacon
- Reminder when you forget to turn off the master switch (You say you never forgot? I don't believe you.)
- Old-school pilots will turn off the beacon; you have to check



# Hurrying the turn (IFR)

- Standard-rate turn
- Flying through an intercept (you), or
- Bad vector (ATC)
- Just a little steeper bank; not aerobatics on instruments



Questions?

**Ask Away**

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**Thank you for attending**

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