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# The MacAir Flyer

VOLUME 4 ISSUE 2

February 15, 2020

## Chief Pilot Comments

**Tom Bell, Chief Pilot**

The calendar has turned, the Groundhog has seen its shadow, and spring is on its way. This would be the normal time of year to discuss spring flying weather, gusty crosswinds, and the advent of thunderstorms. Or it could be the time to remind each of us as pilots that we may be rusty from too much time in the hangar over the winter and to take it slow as we strap on our favorite air machine. Maybe we should even to get back in the books or schedule a recurrency sortie with our favorite CFI. But, I trust that you are doing that without being prodded. Last year about this time we even talked about setting a flying goal for the year, perhaps a new rating or that once-in-a-lifetime trip. Only you know how you did at that one.



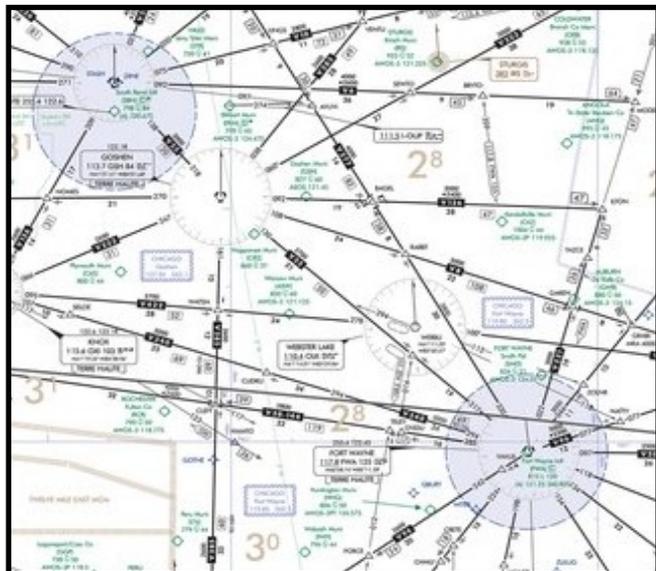
This year instead, I'd like your input. Please take a few moments to help. Where do you think our next incident/accident will be? Will it be day or night? VFR or IFR? VFR into IFR? CFIT? Maneuvering flight? Mechanical malfunction? Will it be on a training sortie or a proficiency sortie? What are our deficiencies and what do we need to do to get better?

Now comes the hard part. Given your thoughts on where our next accident will occur, what can we do now to prevent it from happening? Do we need to increase training in a particular subject area? Do we need to change our policies, procedures, or SOP? Do we need to expend additional resources in some facet of our operation? Do we need to lobby for some change in the local flying area or at the airport? My intent here is not to fill up space on the front page of the newsletter. I really am soliciting your input. You will find survey sheets outside my door (anonymous, if you choose) with these questions on them. Fill one out and leave it with Ann or stop by to chat one-on-one. You know where to find me. What help do you need to make yourself a safer and more competent pilot? Where do we need to change to make MacAir a safer, more capable flying organization?

# VOR Minimum Operational Network

Tom Bell, Chief Pilot

We all know that the FAA is in the process of reducing the number of VORs in the national airspace system as a cost saving measure in light of the fact that GPS has become our primary means of point-to-point navigation and in GA especially, for instrument approaches. We have seen the impact of that locally as the Richmond VOR (RID) has gone off the air and the Springfield airport no longer has its VOR approaches (the SGH VOR is earmarked for shutdown sometime in the future).



But recognizing that there must be a way to get IFR aircraft safely on the ground in the event of a widespread GPS failure, the FAA has identified a list of VORs that will be retained and a list of airports that will continue to have ground-based approaches that can be used in the event of a GPS failure. That system is called the VOR Minimum Operational Network (MON).

Theoretically, from anywhere in the national airspace system there will be a MON airport within 100nm that a pilot can navigate to using retained VORs (if above 5,000' AGL) and fly a ground-based approach (ILS/LOC or VOR without DME). MON airports are currently

identified by state in the Chart Summary and are depicted on IFR En Route Charts. There is a list of "retained" VORs on the FAA web site; of course these will eventually be the ones that are left on the IFR En Route Charts.

So how would this process work if a widespread GPS failure were to occur when you were flying an IFR sortie in the vicinity of I19?

Indianapolis Regional Airport (KMQJ) is a MON airport. The Dayton VOR (DQN), Brickyard VOR (VHP), and Shelbyville VOR (SHB) are "retained" VORs. Potentially, you could be cleared from Present Position direct to DQN, then via V50 to HOMAR intersection, and from there you could initiate the ILS RWY 25 approach into KMQJ.

Now comes the part where the "Devil is in the Details." How will you manage your avionics to fly this routing and approach? How will you identify the points on the airway? How will you identify the points on the approach? If the glideslope is out on the ILS, how will you identify the FAF and MAP? How will you fly the Missed Approach? Do you have fuel for this unplanned diversion?

A related briefing is posted on the web site. If you have questions, contact your friendly CFII.

## Rating Accolades

The following members achieved the following aeronautical ratings in the past quarter.

**Private Pilot:** Eric Lamphar, Tyler Brown, Lydia Pinsenschaum,

**Instrument:** Kevin Wimer

**MEI:** Bruce Snyder



## Runway Safety Tips for Instrument Pilots: **ILS Critical Area**

FAA Safety Team | Safer Skies Through Education

Notice Number: NOTC9879

The ILS Critical Area protects aircraft utilizing the ILS against interference and course distortion caused by other aircraft or vehicles near the antennas. Have you ever seen an ILS Critical Area sign or marking and wondered what you were supposed to do about it? Here are some quick tips for avoiding a pilot deviation or causing someone else's missed approach.

- ATC must protect the ILS Critical Area when there is an aircraft on an approach inside the FAF, and the weather is at or below 800' or 2 miles.
- If the conditions warrant, ground or tower will issue "Hold short of [RWY] ILS Critical Area."
- If you receive that clearance, you **MUST** keep your entire aircraft clear of the associated marking and remain on the safe side of the ILS Critical Area.

Safety works best when we help each other, so if the weather is at or below 800' or 2 miles and ground/tower hasn't issued you an ILS hold, it doesn't hurt to hold short and ask anyway. Remember, ILS Critical Areas are only mandatory when ground or tower issues a hold. If the field is uncontrolled, there is no requirement to hold short of the ILS Critical Area. That said, be mindful of the weather and inbound aircraft, and consider holding short if conditions warrant.

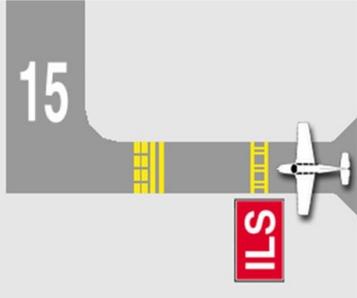
Here are some quick references:

- AIM 2-3-5.b
- AIM 1-1-9.k

Fly Safe,

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609-485-9500

### ILS Critical Area Holding Position Sign



ATC may hold you at this sign, on a taxiway, when the instrument landing system is being used at the airport. Aircraft taxiing beyond this point may interfere with the ILS signal to approaching aircraft.

Ref. AIM Para. 2-3-8

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## So You Want to Be an Author?

Wolfgang Langewiesche, Beryl Markham, Ernst K. Gann, and Robert Buck—All accomplished aviation authors who left their imprint on generations of subsequent aviators who were motivated by their writings. (If you haven't read any works from these authors, you really need to look into them. Try Amazon.) All of them got their start writing small articles and moving up.

Here's your chance—If you have an aviation-related idea you want to convey get in touch with me for the next newsletter and I'll work with you Mike Nowak (mjcsnowak@yahoo.com)



# Impact of Leaning on Fuel Consumption

## Eric Puschmann

Leaning the engine provides more efficient engine operation, reduces the potential for fouled plugs, and reduces fuel flow. But, how much change in fuel flow do we really get from leaning, especially at the lower altitudes?

In our legacy fleet, the POH provides fuel flow rates when the airplane is properly leaned (Archer Fig 5-19). This is critical when planning fuel consumption during a long cross country. But, with the limited engine instrumentation on legacy airplanes, there is no way to determine how much benefit in fuel flow and range by proper leaning--or more importantly how much we **reduce range** if we **forget** to lean.

I did a short quick test in my RV-7A to find out.

Engine/Propeller: Carbureted Lycoming O-360 engine with fixed pitch propeller, similar to our Archers. Therefore, at a given power setting, fuel flow rate should be very similar. (Note: my idle mixture is set to provide a 50 RPM increase while leaning, per Lycoming instructions).

Engine Monitoring System: Full digital Engine Monitoring System to include EGT on each cylinder, manifold pressure, a monitor showing the percent of power being generated, and a nice little gauge that tells me if I'm operating with the mixture Rich of Peak (ROP), at Peak (PK), or Lean of Peak (LOP). I also have a very well calibrated fuel flow meter.

Parameters for the test: 1. Set up in stabilized flight at 65% power, on autopilot, and 3500 feet MSL (relatively low altitude, so I didn't expect much difference too much difference in fuel flow when leaning). Record fuel flow at full rich mixture (ROP) and at Peak EGT.



65% Power, Full Rich



65% Power, PK EGT

Results: **Full rich decreased range about 25%.** Mixture at full rich fuel flow was 10.5 GPH. Leaned to Peak fuel flow was 8.0 GPH. (Note: The Archer POH, figure 5-19, lists a Best Power fuel flow is 9.0 GPH.)

Granted this is just a one data point, your range values may vary, but, forgetting to lean can dramatically decrease your range.

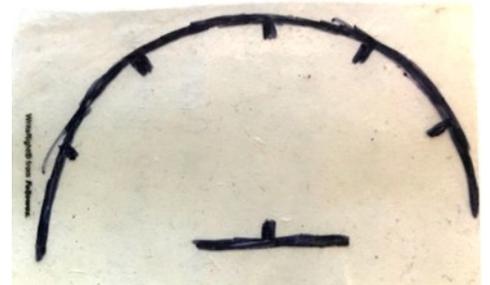
# Eliminating Parallax in Level Turns

Eric Puschmann

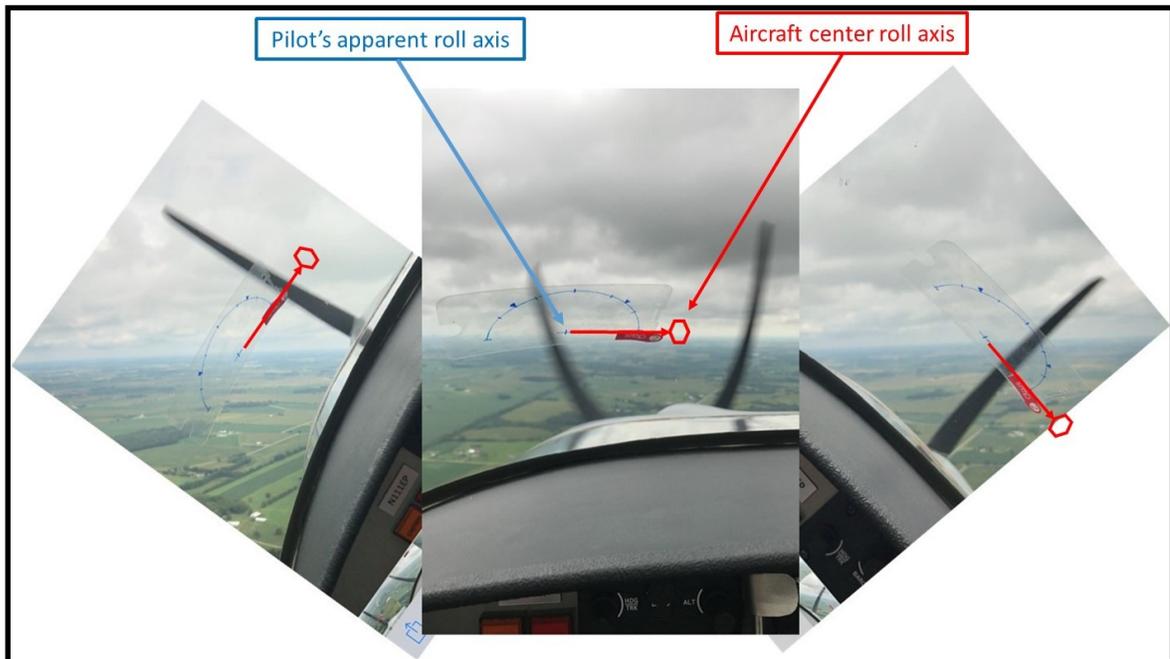
While giving flight reviews in side-by-side seat airplanes, I find that many new (and even experienced) pilots have problems maintaining level flight when rolling into or out of turns, especially steep bank turns. As mentioned in the Airplane Flying Handbook (FAA-H- 8083-3B), these pilots have a tendency to descend when rolling left and climb when rolling right, which is caused by parallax.

The AFH describes this on page 3-14 as "a pilot does not sit on the airplane's longitudinal axis, which is where the airplane rotates in roll. The pilot sits slightly off to one side, typically the left, of the longitudinal axis. Due to parallax error, this makes the nose of the airplane (emphasis added) appear to rise when making a left turn (due to pilot lowering in relation to the longitudinal axis) and the nose of the airplanes appear to descend when making right turns..."

The pilot can eliminate this parallax error by adjusting the "nose of the airplane" from the aerodynamic longitudinal axis to a spot on the windscreen directly in front of the pilot and on the horizon. Since the horizon is 30-60 miles away, moving the apparent roll axis a couple of feet is insignificant. The AFH does discuss this windscreen spot (page 3-7) and even recommends using a dry erase marker on the windscreen for a few flights. I'm no fan of putting any type of marker on an expensive windscreen, so I use a plastic cell phone screen protector made to look like a miniature attitude indicator (right). The pilot sticks this to the windscreen directly in front of their eyes, on the horizon, at cruise speed.



Now the fun begins, the airplane appears to roll about that point, and since the pilot is now looking straight ahead, parallax is eliminated. After a few flights, most pilots will instinctively use this reference spot during all maneuvering flight. With practice, they should begin to notice a developing climb or dive before it shows up on the altimeter or vertical speed indicator. Another benefit is that the spot on the windscreen is also the straight ahead reference for taxiing on the centerline with no crab.



(Cont'd on Next Page)

## Eliminating Parallax in Level Turns (Cont'd)

The lower photo on the previous page shows a 60 degree bank, level turn in both directions. Note the spot remains on, or slightly above (due to increased AOA), the horizon while the aircraft's roll reference point (i.e., near the propeller) goes well above or below the horizon, due to parallax.

Additional benefits of using a spot on the windscreen:

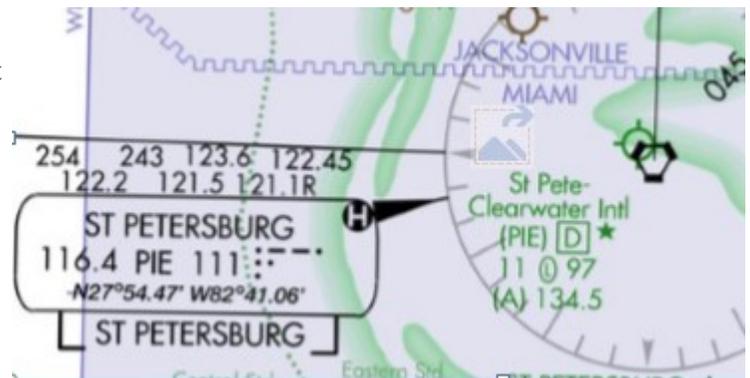
- A single visual reference for making climbs and descents, rather than trying to memorize numerous sight pictures,
- Improved altitude control during ground reference maneuvers,
- Serve as a "very crude" angle of attack indicator (one-G, wings level only). Since the spot was identified during cruise flight, it represents a cruise AOA. As the airplane slows while maintaining constant altitude, the spot visually rises up, way up, above the horizon when approaching slow flight and stall. You can then easily demonstrate the impact of flaps on lowering the pitch attitude.
- Serve as a very, very crude flight vector on "stabilized" final approach. The spot should track relatively close to the touchdown point, providing another visual indication if the plane is going above or below the desired glide path.

**FLY SAFE**

## Discontinuation of Hazardous Inflight Weather Advisory Service (HIWAS) in the Contiguous United States, as of January 8, 2020

The FAA issued a [NOTICE](#) on December 9th which sets forth the final determination by the FAA to discontinue the Hazardous Inflight Weather Advisory Service (HIWAS) as of January 8th 2020.

"Flight Information Service-Broadcast (FIS-B) replaces the current HIWAS broadcast with both a graphical and textual display of hazardous weather information right to the cockpit at lower altitudes and over a greater geographical area. For those pilots who have not yet adopted the latest technology, an advisory alert broadcast will still be made to advise these pilots that adverse weather conditions exist and to contact Flight Service for additional information if needed. Multiple sources are available that provide access to weather and aeronautical information to pilots in the cockpit, often presented in a graphical format, making it easier to visualize what is going on along the route of flight. Pilots are no longer limited to only contacting a Flight Service specialist in order to adhere to 14 CFR 91.103, numerous options are available to them to help maintain awareness of hazardous weather advisories along their route of flight."



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Have comments or an idea for the next issue? Let Tom (tbell@macair.us), David (dgraciarod@macair.us) or Mike (mjcsnowak@yahoo.com) know!