Higher Living

Welcome back. We have been remarkably busy. Big news in this issue to kick off the new year.

Our first big news is a huge instrument panel upgrade for N515DH. It now has new radios, intercom, ADS-b and Garmin GPS. Vastly different from the last time you saw it. You really need to try it out. You will think it is a different airplane. Here is a small photo.

Next on the big news list is that we have added a Cessna 172L to replace our previous 172XP which is on long term hiatus (hoping it will return). Our new Cessna is N3186Q and is available on the scheduler for flying. Please schedule a short checkout with an instructor and you will be ready to go solo. If you are currently in training and would like to try out a 172 you will be welcomed to do so. Many hours of flight training have been done in Cessna 172s over the years since they were first introduced. This Cessna will soon be upgraded with panel upgrades and ADS-b. For now, it's a training aircraft but it will evolve into a true cross country IFR platform.

We have even more plans for improvements that we hope to roll out over the following few quarters which I am personally excited about. More news on those when they arrive.

Come fly with us.

- David Williams, President EFTS

Contact Us

Schedule your next aviation adventure at www.ExecFT.com

Airplane & Instructor Rates

Arrow (N9386N)	$195/hr
Archer (N299PA)	$165/hr
Warrior (N41669)	$155/hr
Cherokee (N720FL)	$150/hr
Cherokees (N515DH, N711FL, N98166)	$140/hr
Cessna 172 N3816Q	$140/hr
Instructor time	$50/hr

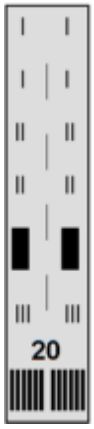
Some Runway Markings

We have all looked intently at runway markings every time we fly. There are probably some interesting facts about those marking that you may not know about. In this article a few of those will be explained.

The following image is of a runway with only visual approaches. If you have landed at BQ1 you have seen this.

This runway below has only non-precision instrument approaches. No ILS with a glideslope here.

This final runway configuration indicates a runway with at least one precision instrument approach. This is like what you see at KTTA.



Something you may not have noticed are the number of the vertical stripes at the beginning of the runway. These are known as runway threshold stripes. The total number of stripes (on a runway with standard markings) will indicate the width of the runway. Did you know that?

4 stripes = 60 feet

6 stripes = 75 feet

8 stripes = 100 feet

12 stripes = 150 feet

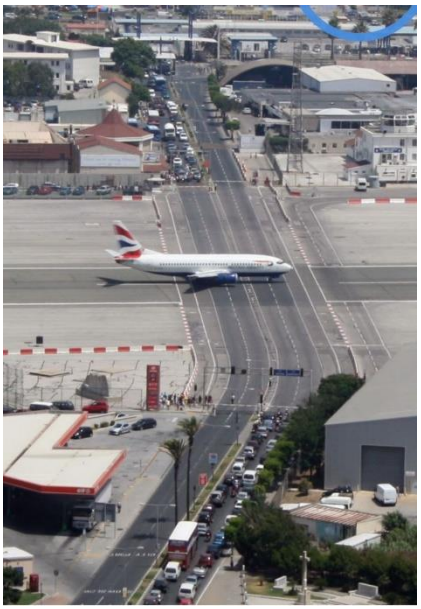
16 stripes = 200 feet

The runway in the image above has a total of 12 stripes and would be 150 feet wide. Count the stripes on the runway at KTTA next time you land to see how wide it is.

The 2 paired large painted blocks (black in the image above but white on a runway) are known as the aiming point and they sit about 1000 feet from the beginning of the runway. They indicate the point at which an instrument approach with a glide slope would intersect the runway.

All runways have centerline stripes which run down the center of the runway from end to end. The painted stripe is 120 feet long and the gap between stripes is 80 feet. Therefore, it is a total of 200 feet from the start of one stripe to the start of the next. Now for a bit of trivia. Since runways are not always an exact multiple of 200 feet long something must happen for the stripes to be correct at both the ends. To make the marking work out the stripes at the midpoint of the runway will have their length adjusted to make sure the ends are correct.

Lastly here are some runway markings you have never seen.



Yep, that is traffic stopped on each side of the active runway in Gibraltar (LXGB). Not too many places in the world where a major

runway cuts straight across a major 4-lane highway.

If you really want to know how to properly paint the runway you plan to construct in your back yard be sure to read the FAA publication titled "A Quick Reference to Airfield Standards" for everything you need to know.

100 Hour Inspections

The most likely reason an airplane you want to fly is not available is the requirement for a 100-hour inspection. The actual text of the regulation is in CFR 91.409(b) and the steps to take during the inspection are in Part 43 appendix D. The bottom line is that if an airplane is used for rental or flight training it must be inspected every 100 hours of tachometer time. You can go over the 100 by 10 hours but if that happens every hour over 100 must be subtracted from the next 100-hour inspection deadline. The 100 hour inspection is very similar to an annual inspection and includes many items. The amount of time one of our aircraft is away for its inspection usually depends on whether a repair issue comes up and whether we must wait for a part to arrive. Occasionally, in order to reduce down time, we assist in the inspection by removing inspection plate covers and getting the airplane ready for the mechanic to go over it. Even though it can be annoying to see that your favorite airplane is not available when you want it try to remember that it is done to keep our aircraft safe and reliable to fly.

Frost

We all know to not fly into situations in which we will encounter ice. Small aircraft do not generally have the equipment to deal with any level of ice and it must be avoided. Ice changes the shape of airplane wings, disrupts smooth airflow which damages lift and makes unexpected changes to the weight and balance of the airplane. Now with cold mornings with us it will be quite common to see large buildups of frost on the airplanes if you fly in the mornings. It will be especially important to make sure to remove all frost, however slight, from all flight surfaces prior to any flight. Some things you should consider:

- Frost the size of a grain of salt, distributed across a wing, can destroy enough lift to prevent takeoff.
- Partially removed frost can result in asymmetric stalls (one wing stalled) resulting in uncontrollable roll problems.
- Frost can reduce your wing's max lift by 30% or more.
- Frost can reduce the critical angle of attack by several degrees.
- Frost can increase drag by up to 40%.
- Over the last decade there have been 30 accidents related to taking off with frost.

The easiest way to remove frost is to let the Sun do it. Get to the airport early if you know the temperatures will be below freezing the evening before. Using the tow bar, move the airplane such that the Sun can shine on all flight surfaces fully. Helps if the Sun can shine on the airplane from the rear so the tilt of the wings will help a bit. Assuming the temperature is not still too low most of the frost will melt away while you wait inside with some coffee.

The second option is to manually remove the frost with a towel and some muscle power. Make sure all frost is removed from the wings, propeller, horizontal stabilizer (stabilator), windows and rudder. Please do not use a broom or an auto windshield ice scraper as both can easily scratch and damage the airplane paint. Also do not attempt to polish frost smooth. That is not acceptable, it must be removed.

One final note from personal experience, the small wing step and the black wing walk can hide ice and be VERY slick. Be careful of your footing there.

Angel Flight

If you have run out of destinations for your flying already may I suggest you take part in charity medical flying with Angel Flight. With Angel Flight you become a volunteer pilot in what is usually a multi-leg flight spanning up to 1,000 miles to help a patient reach a doctor appointment or specialized treatment. The patients either cannot afford or should not fly commercially and they don't want to endure long drives which they may not be capable of doing themselves.

You will go places you probably have not yet flown to. Your leg is normally not more than 300 miles one way. Other pilots handle the other legs. The patients are all ages and do not have contagious diseases and they are required to not need assistance from you beyond the actual flight itself. So, no medical training or assistance on your part is ever expected. The flights are never emergency flights but rather are scheduled up to 10 days in advance. Return flights, which are usually not the same day, are scheduled independently with different pilots taking part. It is always your decision to accept or reject any flight. Don't let the situation pressure you into flying when you don't feel comfortable.

I have done some of these flights myself over the years. My passengers were usually children, traveling with a parent, suffering from cancers or burns and heading to various treatment centers on the east coast.

To become a volunteer pilot, you do not need to own an airplane, just have access to one for your use. Rental aircraft are fine but experimental aircraft are not welcome. The pilot experience requirements include the following:

- Total of 500 hours PIC.
- At least 50 hours in airplane you are flying.
- Minimum of 50 PIC hours in last 12 months, or 12 hours in last 90 days, or 2 hours flight with a CFI in last 90 days.
- Instrument rating is required.
- Must carry minimum of one million dollars liability insurance with not less than $100,000 per seat. Proof of this insurance is required.
- Aircraft must be properly registered, licensed, and airworthy.

Angel Flight is a charitable organization, and your expenses may be tax deductible, but you will not be reimbursed in any financial way for the flight, and they can be expensive. But you will gain immensely from knowing you helped someone who needed you. Use the link below to read more about Angel Flight and to volunteer as a pilot.

https://www.angelflightmidatlantic.org/

Density Altitude…Not Just for Takeoffs

The perils of taking off on a shorter runway with hot, humid conditions has been repeated many times. Most all comments are from the point of view of a longer takeoff roll and a reduced climb rate. I hope you have heard it all before. This time I thought that I would turn it around and instead point out the effects during landing. Did you know there were any? After all, if climbing is so hard then getting down and stopped must be easier.

In fact, higher density altitude has a negative effect on both takeoff and landing. An increase in density altitude will affect landing by increasing your true airspeed (moving faster than you think) and therefore increasing your landing roll distance. On a short runway if you land fast, roll farther than expected and then try to go around we already know the negative impact on takeoff and climb. So that combination could

result in a runway overrun. So why do we land faster?

As air temperature increases the individual molecules move further apart and the air becomes less dense. Less dense air is the bane of takeoffs but the main affect on landing is to cause the airspeed indicator to read a bit low. Less air entering the pitot tube results in a lower indicated airspeed. A lower indicated airspeed causes us to fly a bit faster than we think we are. To put it another way if a person standing on the ramp watched you land on a cold day and then on a hot day that person would say you were moving faster on the hot day. But from your point of view, you were flying the same airspeed on both days. So, should you reduce you speed on a hot day? You should not. Because the wings and the pitot tube are being affected the same way. If you defied your airspeed indicator and flew slower, you would be moving too little air over the wings and would be inching closer to a stall than you thought. Always fly the same indicated approach speed, whether hot or cold, and the physics will work things out for you.

But the fact remains that when we touch down, we are moving somewhat faster than we thought and more braking will be required if the runway is short. Any attempt at a go around will be less likely to be successful due to the reduced acceleration and climb performance. So, landing or taking off please always keep density altitude in mind.

Which RNAV?

Among RNAV, or GPS guided, approaches there is a subset of 3 types that you will encounter. Some with and some without vertical guidance. This will be a very high-level overview of those major types. Please confer with your instructor with any questions. All these approaches require GPS.

LPV – Localizer Performance with Vertical Guidance. This is the closest RNAV gets to an ILS approach. A glide slope is provided for vertical guidance and a narrowing corridor of horizontal guidance is there too. Normally these approaches get you down to a DA (decision altitude) of 200 feet AGL. Usually, ½ mile visibility is the limit. A GPS with WAAS is required. One special consideration is that since LPV is not considered to be a precision approach you cannot use precision alternate minimums for airports with ONLY an LPV approach. You need weather minimums that meet the LNAV or circling MDA or the LNAV/VNAV DA.

LNAV/VNAV – Lateral Navigation/Vertical Navigation. This was the first type of GPS approach that offered a glide slope and were designed originally for a non-WAAS GPS. The minimum DA for these approaches is 250 feet AGL but many have minimums that are higher. The reason is that the final approach course does not narrow as the LPV does, so they are horizontally less accurate. Therefore, a wider obstacle clearance area must be allowed for in their design.

LNAV – Lateral Navigation. As the name implies these approaches offer only lateral course guidance. Vertical guidance is on you. They are similar in execution to a localizer type approach. Like the localizer approach they use an MDA rather than a DA. Generally, these have the highest minimums due to their large obstacle clearance areas. If you have a WAAS GPS it is possible that you will see LNAV+V indicated in your GPS approach selection. This is still a LNAV approach with LNAV minimums, but the GPS will be able to generate what the FAA calls advisory vertical guidance. It is recommended that you review the approach to make sure this advisory glide slope will not violate any step-down fixes that are published for the approach. If so, you must abide by the step downs.

It will depend on the situation at each individual airport but generally a CIRCLING option is available for RNAV approaches if needed. The minimums for the circle are the highest.

If you don't have an instrument rating, consider

working towards that goal. It will greatly extend the utility of your flying.

Question of the Quarter

What is G13 in the image below?

Answer:

G13 (Green 13) is a low frequency (LF) airway. There are a few in Alaska and some in Florida. The only other existing LF airway in the US is the one depicted above. As of 12/8/2020 it still exists on FAA Low Altitude Enroute Charts. It is like a Victor airway but instead of being based on a VOR it is navigated by using the MANTEO NDB.

LF airways in Florida include B9 (Blue 9) connecting the Southern Florida mainland to Marathon Key. B646 (Blue 646) connects Mérida, Mexico to Nassau, Bahamas and transitions through the Florida Keys. A portion of B646 connects Key West to Marathon Key and serves as a bypass for aircraft unable to meet the 15,000-foot minimum altitude along that portion of V3. Finally, G765 (Green 765) connects Key West to Cozumel, Mexico.

You just learned something new.

The "Higher Living" newsletter editor can be reached at david@execft.com Your feedback and article subject suggestions are welcome.