Higher Living

In this newsletter we welcome N812KM, a Van's Aircraft RV-12iS, to our fleet. I had mentioned that this plane was coming and now it's here. If you have an interest in flying this plane or if you know someone who may be interested in Sport Pilot training, please get in touch.

It's already getting hot. As I remind you every year, be sure to acquaint yourself with the performance limitations of the airplanes you fly. When the temperature rises the performance of light single engine planes will begin to decline. In remembrance of this there is an article on how to calculate your own density altitude.

In this issue I tell my personal story about accidentally activating an ELT at KMTV and what I learned about that experience. We can all learn.

Finally, I relate my wife's experience with aerobatic flight at KTTA with Mr. Dwight Frye. He referred to it as a build it yourself roller coaster in the sky.

Come fly with us.

- David Williams, Editor

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Flying a Roller Coaster in the Air

On June 20th, just 4 days after I wrote this article, Mr. Dwight Frye died in a plane crash while flying with a student in the student's airplane. I will leave the story as originally written as my memorial to him.

My wife, Denise, and I share numerous likes, but she will get on nearly any roller coaster anywhere and anytime and I have never enjoyed that feeling. When we go to a park with coasters I normally wait at the exit for her to return.

She wants to experience a launch from an aircraft carrier in a F/A-18 but I can't think of a way to make that happen. Her natural progression was to seek out an aerobatic flight which provides the ultimate roller coaster in the air. No track.

I knew Mr. Dwight Frye, an aerobatic instructor who has a Super Decathlon hangered at KTTA. We called him and we were both impressed with him and his enthusiasm for aerobatic flight. He explained in detail what to expect and we set a date.

Upon arrival Dwight explained how the flight would proceed, where the flight would be, how high and how long and requested that Denise let him know, early, if she was experiencing any sort of air sickness. He also explained that per 14 CFR 91.307 a parachute would be required.

After that we all walked over to his hangar and got ready to go. Dwight explained everything very thoroughly. He got Denise into her parachute and carefully explained how to use it. He told us about his Decathlon and how it is designed for aerobatics. He showed how to get in the plane and get buckled in which is not easy while wearing a parachute.

Then he started the plane, and I watched them taxi and takeoff. Since I stayed firmly on the ground and they flew miles north I couldn't watch the flight, so the rest of the story is told to me by Denise.

She says Dwight took her through a spin, two half Cuban Eights, a Reverse half Cuban Eight, two Hammerheads, two aileron rolls and a Humpty Bump. I had to Google some of those to understand what they looked like.

She said he carefully talked her through every maneuver, and she always felt she knew what was coming next.

At the end she returned with a big smile and we both had lots of thanks for Dwight. She had a wonderful time.

Thank you, Dwight.

Accidental ELT Activation!

Back in May I had a new experience. I accidentally set off an emergency locator transmitter (ELT) alarm. In this short article I want to let you know what to do if it ever happens to you. Normally this alarm only activates during a crash or especially hard landing but read on to learn another way to set it off.

I had flown with a student to Martinsville, KMTV, for lunch and we were preparing to leave to return to KTTA. There were no tie downs there, so we used the chocks in N30617 to secure the plane. Those chocks are metal, rather than wood and when I put them in the storage area at the back of the plane they fell to the floor with a loud metallic clunk. Apparently, that, or when I closed the cargo door, created just enough vibration to activate the ELT. We finished getting the plane ready to leave and when we got in, we heard a beeping sound that I couldn't identify right away. I had never heard an ELT alarm and was searching to try to find the source of the sound.

To make things more difficult the sun was washing out the red LED that was blinking on the panel. When I finally saw it, I immediately pressed the ELT reset switch and things returned to normal.

But what should I do next? I didn't know.

We simply got the plane started and headed back home. Due to needing to pick up N9626C from KSCR we landed there. On the ramp we were met by local Sheriff's department deputies who wanted to know what had happened and if we were OK. They explained that the Air Force Rescue Coordination center had picked up the ELT signal and began investigation into a rescue.

After the event I went home and began looking into what I should have done to make things better all around. Here's what I learned:

If you accidentally activate an ELT alarm, please do the following:

1) Turn it off as soon as possible.
2) Contact the nearest ATC facility and tell them what happened. In my case that would have been Greensboro. I would suggest using the phone number published for clearance delivery because that would at least get you to someone who would know where to transfer your call. If they say all is good and the issue is closed, you can stop at this step.

Otherwise continue to step 3.

3) Next contact the Air Force Rescue Coordination Center at 1-800-851-3051 and tell them what happened.

I was embarrassed at what had happened and even amazed at how quickly our rescue had been activated. Hope it never happens to you but if it does you know how to handle it.

How to Manually Calculate Density Altitude

Density altitude is super important for flying all airplanes but especially small single engine versions. Every aspect of small airplane performance is based on density altitude. Yes, most AWOS report density altitude and probably every aviation app will also. Therefore seldom, aside from your check-ride, will you need to really think about its manual calculation method but let's dig into it. Understanding how it is calculated can help you understand what is happening when it changes.

Density altitude can be quickly defined as the apparent density of the air at a particular location on a particular day. The most important variable is temperature. If you remember physics class you will know that air becomes denser as it cools and less dense as the temperature rises. Airplanes like it cold. When it's hot outside the lower air density affects the plane in multiple ways. If the air is less dense the propeller must work harder to produce the same thrust. The wings must have more air flow to produce the same lift. The engine has less atmospheric pressure to push air into the carburetor. All those things combine producing longer takeoffs, longer landings (yes longer), reduced horsepower and slower climbs.

There is a quick formula to calculate density altitude. Here it is.

DA = PA + (120 * (OAT – ISA))
where:

DA is density altitude
PA is pressure altitude
OAT is outside air temperature C
ISA is standard air temperature C

You determine PA by setting your altimeter to 29.92 and the altitude it shows is PA.

Most airplanes have a temperature gauge so use it to see how hot it is outside in degrees C. That is OAT.

To quickly calculate ISA only requires a few spare brain cells. ISA temperature at sea level is 15C and in most situations it decreases 2C for every rise of 1000 feet.

Let's plug in some numbers.

Since I don't have an altimeter to use at home I checked Google to find that the current barometric pressure in Cary (as I write this) is 29.79. According to the NWS web site that converts to a PA here of 630 feet.

Right now, at my home the OAT is 30C. I am at 500 feet MSL Halfway to 1000 above sea level so halfway to 2C is 1C. So, ISA here should be 15C - 1C = 14C. So if all those numbers are placed in the formula, we get the following.

DA = 630 + (120 * (30 – 14))

= 2550 feet

As confirmation of this math, I called the AWOS at KTTA and it reported density altitude of 2200 feet which is a close match since my house in Cary is about 250 feet higher.

So, sitting on the ground any airplane near me would "feel" like it was at 2550 feet already. If I was flying at 2500 feet above Cary, the airplane would perform as though it was at 2550+2500 or 5050 feet. That is a big difference and one that you can feel in the performance of your plane.

How about humidity? Does it matter? Yes, humidity does influence density altitude, but its impact is generally considered less significant than that of temperature. However, if the day is hot and humid and the takeoff distance chart doesn't leave much room on a short runway then stay home.

Why Does the Term FBO Exist?

In the early years of aviation after the end of World War I there was very little flying regulation. Most flying was done in military surplus aircraft by persons who made a living flying town to town and putting on airshows for the local public. Usually, these pilots would bring along their mechanics and some would provide flight training or airplane rides. They had no established business location.

Eventually with the influx of aviation regulation in terms of airports, pilots, mechanics and flight training the transient nature of those activities was limited. The pilots who previously made a living on the road now were drawn more and more to establish business at airports. They begam referring to themselves as fixed base operators (FBO) to distinguish themselves from the transients. The term, FBO, or fixed base operator continues in use today to refer to a permanently located business which provides a variety of aviation services at airports

What are ADS-b In and Out?

Automatic Dependent Surveillance - Broadcast is the long name for what we normally just refer to as ADS-b. It has two main modes of use which are referred to as IN and OUT. The OUT version is mostly of interest to air traffic control while the IN feature is mostly of interest to pilots. In addition to IN and OUT there are two different frequencies over which ADS-b information is transmitted, 1090Mhz and 978Mhz. Outside the US and above 18000 feet only 1090Mhz, known as extended squitter ES, meets the regulation. Below 18000 feet the 978Mhz, also known as UAT, can be used. Weather information is available on the 978Mhz frequency and is known as FIS-B. Airborne traffic information has the abbreviation of TIS-b.

On January 1, 2020, ADS-b OUT was required by regulation to be equipped in certain situations in aircraft in the US. ADS-b OUT makes use of your transponder and a WAAS GPS to transmit your aircraft id, position, velocity and altitude once per second. This is received by ATC and any nearby aircraft. The system doesn't need any radar to work because it makes use of a network of ground stations to receive aircraft signals and sends those back to ATC. This same system will then transmit weather and traffic information to ADS-b IN equipped aircraft. There is an ADS-b antenna located at KTTA near the rotating beacon.

ADS-b IN can receive the weather and traffic information transmitted to it either from ground stations or from nearby aircraft within about 30 miles.

ADS-b IN requires a receiver and a graphical display to be installed on the airplane. Usually, the GPS doubles as the ADS-b IN display and will show weather and traffic to the pilot.

Where is ADS-b required?

ADS-b IN is never required but it sure is helpful with its display of weather and traffic.

ASB-b OUT is required in a variety of situations:

- In class A airspace.
- Inside and within 30 nautical miles of the

primary airport in class B airspace.
- Within class C airspace.
- Above 10000 feet anywhere assuming you are also more than 2500 AGL.
- Over water, within 12 NM of the US coast while at or above 3000 feet MSL.

The intention is for ADS-b to eventually replace or supplement ground-based radar and due to its greater positional accuracy, it is hoped that aircraft can be allowed to fly closer together on commercial routes to allow greater volumes of airline traffic.

For the regulations see CFR 91.225

Question of the Quarter

What is the strange "barking" sound some Airbus aircraft make?

Answer:

OK full disclosure, I have never heard this myself but apparently it is a thing that some folks hear and worry about. Airbus says it is caused by a hydraulic pump called the Power Transfer Unit. It operates automatically to maintain constant hydraulic pressure. You are most likely to hear it if you sit near the wings of an A320 or A330. Don't be alarmed. It's normal.

You just learned something new.

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