The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

August 2021

Editors

Phil Corman | Jim Price

Contributors

Bruce Jaeger | Bob Kromer | Tom Rouch | Ron Blum | Richard Brown | Linda Corman

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Features

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The views expressed in each author's article are their own.
The Mooney Flyer's goal is to educate, inform, and entertain Mooniacs.

From the Editor

Phil Corman

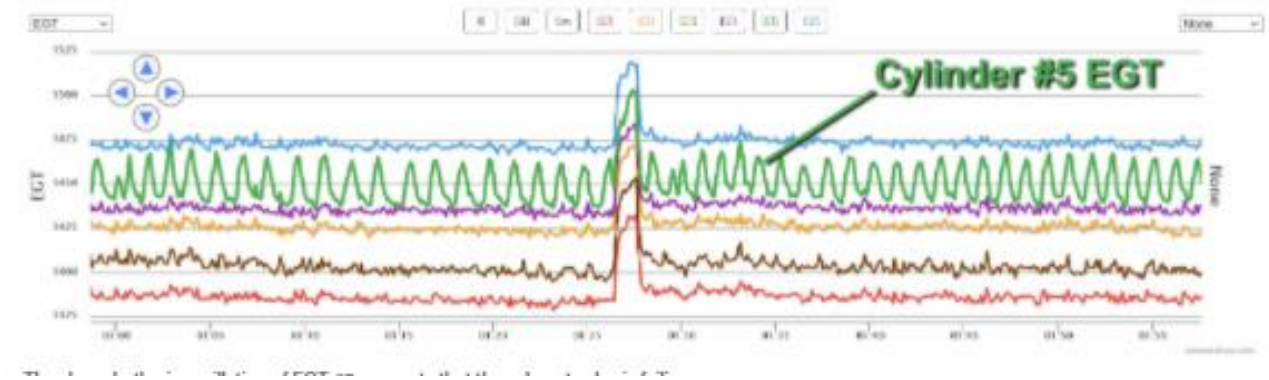
Exhaust Valves

Even if you don't know anything about engines, you need to know that exhaust valves are one of the most common failure points for an engine. You might say "So what? I don't know much about engines." Well, you don't need to know much. Here's what you can know and do to possibly give you advance warning of an exhaust valve that's starting to fail.

The first thing to do is, at each annual inspection, have your mechanic Borescope each cylinder.

If your valve has a symmetrical burn pattern and looks kind of like a pizza, then it's ok.

The second method used to see if an exhaust valve is beginning to fail, is to dump your engine monitor data and look for an oscillating EGT temperature variation approximately every minute.



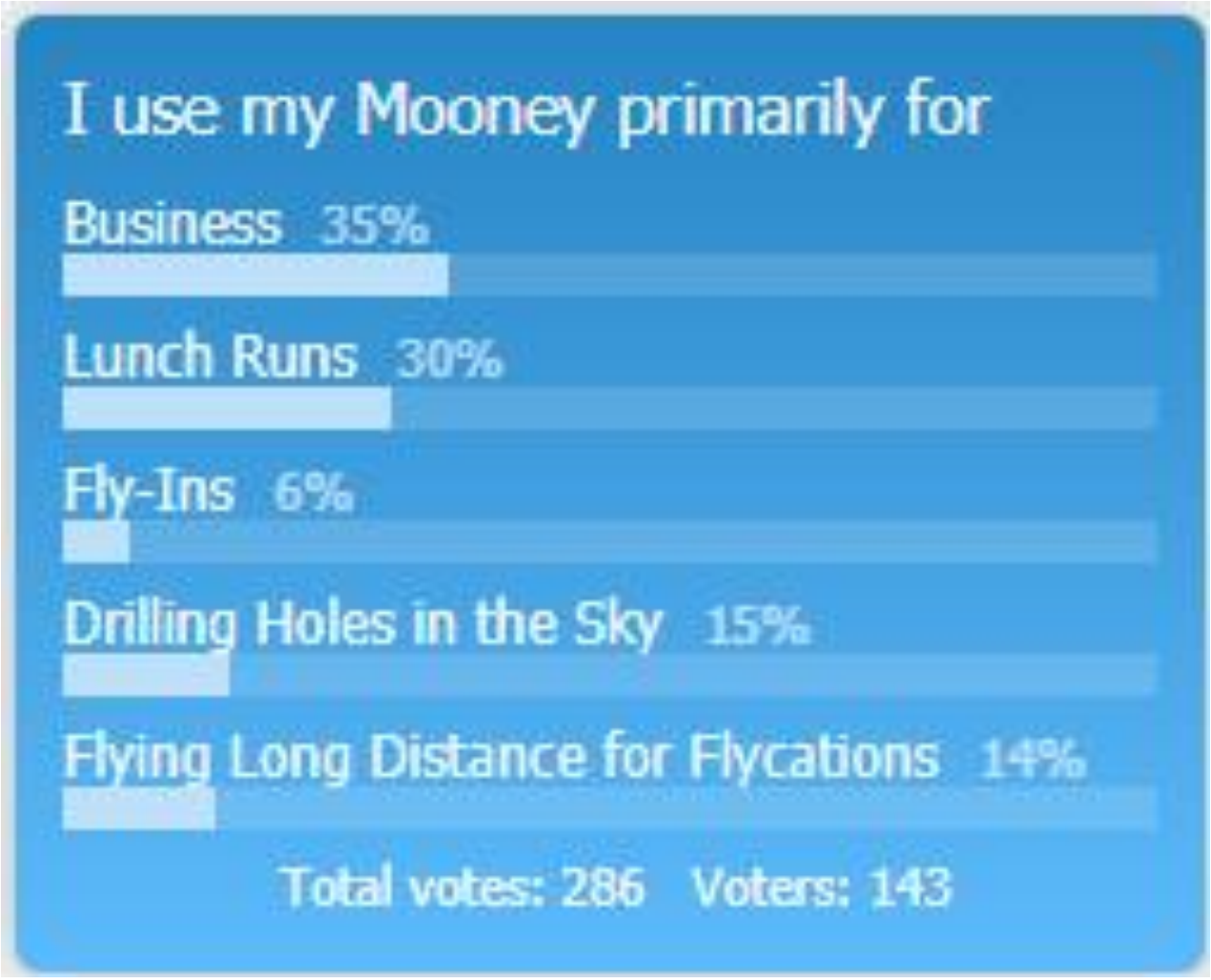
This is another fairly sure indication of a failing exhaust valve. Here's another test you can do: Once you are at cruise and your power/mixture has stabilized, set your engine monitor to "Normalize". This will show all EGTs at the same level. Now, keep an eye on them. If over several minutes, a cylinder rises and falls with regularity, that is cause for a closer look when you are back on the ground.

A last check you can make, although it is considerably less accurate is: If your engine runs rough after a "cold start", this can be the sign of a sticky valve. This is also called "Morning Sickness". If it gets your attention, you should have your cylinders Borescoped.

Well enough of all this engine stuff. It's summer! Go out and fly your Mooney.

Rest In Piece Our Fellow Mooniac

Henry Punt passed away on July 15th during a departure from California's Dinsmore Airport (D63). Henry was a dear friend of ours. He never had a negative thought in his soul and was always cheerful and upbeat. He lifted everyone around and he will be missed.



Next month's poll: "My Favorite Mooney Flying is" **CLICK HERE** to vote.

Really liked the autopilot article and learning the details of the Cardinal crash at St. Johns. I knew about the crash, but none of the specifics. A real shame.

Kelly M

Long time reader, first time emailer ;-)

You missed a worthy aviation podcast (broadcast) Just Plane Radio. The show has been airing nationwide every Saturday at 11am Eastern on Talk Radio networks for 9+ years and we are also available as a podcast shortly after the show airs. Did I mention I also own a 1982 Mooney 201? This should easily put us in your top 10.

The most recent episodes should be of interest to the Mooney community. I am in the middle of a complete engine overhaul and firewall forward refresh of all accessories. I am trying to capture much of the process on our website as well.

Dennis H

Several months ago, I commissioned an artist from https://www.aviationgraphic.com/ to create a print of my Mooney. He did a fantastic job. I am looking forward to receiving the 11"x14" print and framing it for my wall. If anyone else is interested in doing the same, below is his contact info. If you have a 201, you will probably only need to pay the print fee. If you have a long body Mooney or short body Mooney, there may be a design fee involved.

Artist: Crisponi Ugo
Email: aviationgraphic@gmail.com

I've read Phil Shapiro's piece on flap use in the June 2019 edition over and over and found it very insightful. I am wondering about his thoughts on flap use during an instrument approach.

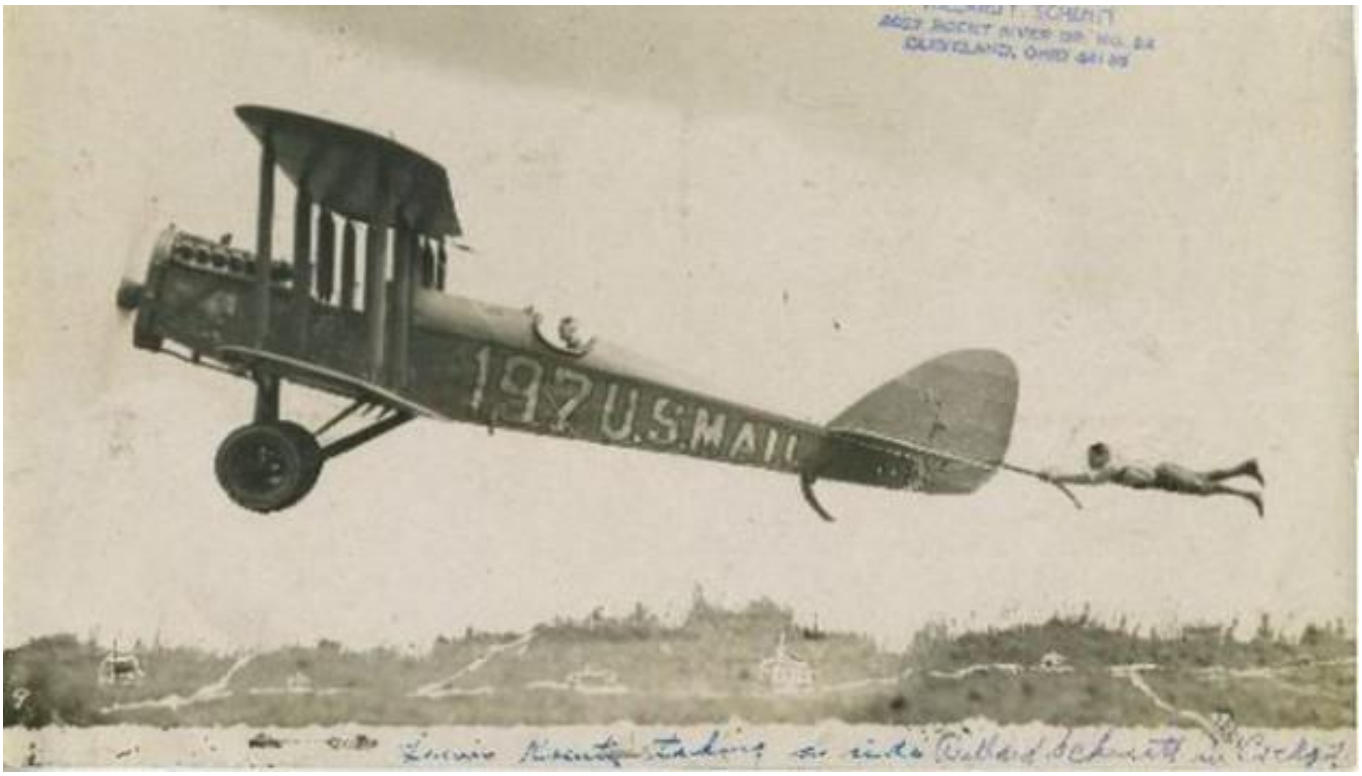
Not knowing if I'm "going missed or not", I worry about having the flaps positioned in the full setting when I need to abort the landing. Having a M20C model, the flap positions indicator is down by my shin and raising it to partial in IFR would be difficult. Does he have a recommendation on when to put in flaps during instrument approaches?
Thanks so much for your wonderful magazine,

Brad P

Response: You raise a great point. Earlier models with hydraulic pump action flaps make it very difficult and even dangerous to attempt a reposition of full flaps to takeoff flaps. Missing the takeoff position and fully retracting the flaps could have disastrous consequences.

For flap position on an instrument approach, I will always use flaps at the takeoff setting and have them extended prior to the Final Approach Fix (with gear). If I am flying into a short field and need the small improvement in landing distance I receive from full flaps, I will add them when landing is assured (completely out of the weather and cleared to land). However, if landing distance is not critical consider leaving the flaps at the takeoff setting. This gets you all the lift benefits and only marginally hurts your landing distance. If you must go missed approach, you are properly configured as soon as you raise the gear.

Since we are talking instrument approaches and going missed approach, I will also mention that it is important to remember that the published missed approach TERPS criteria assumes you are starting the procedure at the Missed Approach Point at the proper altitude or higher. Therefore, if you attempt a published missed after a failed landing, you are not in protected airspace initially. I recommend you coordinate for an alternate clearance immediately and maintain flaps at takeoff and VX until clear of obstacles.
Thanks
Philip



Flying Into Big Busy Airports

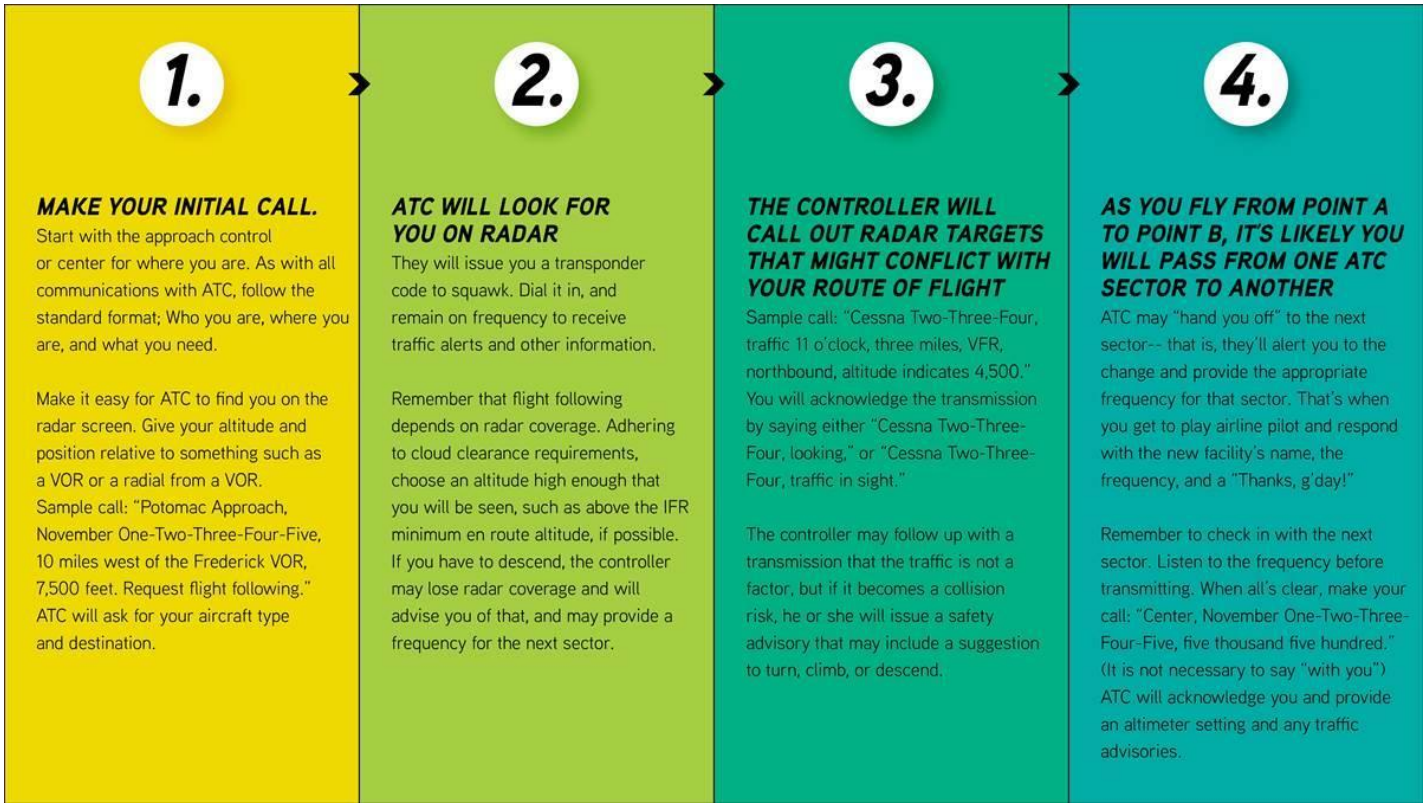
Phil Corman
Co-Editor

Many pilots are reticent to fly into larger airports (Class C or Class B) due to the unique and higher pilot loads involved. These include sequencing for landing, adjusting airspeeds on approach, complying with ATC requests, more complex taxi routes and other procedural differences.

Linda and I have been flying into Class C airports such as San Jose International (KSJC) to visit our family. In the early stages of that, we were not intimidated, but did not want to screw up. And boy, there are many ways to do so. In this article, I wish to share my experiences, and hopefully make it easier for those Mooniacs with some reservations.

First of all, Let Them Know you are Coming

It's easier on you and ATC if you let them know you are coming. The easiest way to do that is to initiate VFR Flight Following. ATC then knows you plan to land at that airport and can help with routing to keep you clear of the heavy traffic. They can often inform you of what to expect before you are handed off to the Tower. If you requested Flight Following early, you may be talking to Center. As you get closer to your destination, you can expect to be handed off to Approach Control. If you are flying into Class C, you do not need to hear "Cleared into Class C". You only need to hear your N Number broadcast. If you are entering Class B, then, of course, you need to hear the magic words "Cleared into Class Bravo" and you need to respond, "Cleared into Class Bravo". It is simple. Now, familiarize yourself with Class C and Class B weather minimums. I love Class B as it is the least restrictive, with "3sm visibility and clear of clouds". That means you can fly right atop, below or next to clouds; just do not enter those clouds. Class C is more complicated with 3sm, 1000' above, 500' below and 2000' horizontal.



Secondly, Know Your Frequencies Beforehand

Write down or pre-load your communications with ATIS, Approach Control, Tower and Ground. If you have an EFB such as ForeFlight or Garmin Pilot, load the airport page for reference. Remember, some bigger airports have 2 tower frequencies, so capture both. Getting ATIS early helps as it lets you know what to expect. When you check in with Approach Control, tell them that you have the ATIS information, such as ". . . with information Romeo."

Do What You are Told and Communicate Flawlessly

When talking to Approach, you may be vectored to a visual checkpoint, or asked to turn away from conflicting traffic. Initiate the request as quickly as you can after ensuring that the request is SAFE. Then, with as few words as possible, echo the request back to ATC.

Approach is handling a significant number of aircraft ranging from Boeings and Airbus to you and your Mooney, all with different speeds and different experiences. Doing what is asked and communicating compliance in a timely basis is critical. Failing in one or the other may result in delays for you.

Don't be surprised if you are asked to circle for landing traffic or take a vector slightly away from the airport. It's all about sequencing.

Landing

When landing at larger airports with larger airplanes and faster airspeeds, you will hear things like, “Mooney cleared to land, #2 behind the Airbus . . . Caution wake turbulence”. After acknowledging, it’s up to you to ensure that you are properly spaced, but not excessively as there is likely to be another airline behind you. Three minutes is a decent rule of thumb behind heavy traffic. Landing beyond the heavy’s touchdown spot is another.

Landing between Heavy Aircraft

This will also happen to you where you want to be tight behind the leading aircraft (wake turbulence) and another is behind you, flying at a higher airspeed than you. When this happens to us, the Tower usually asks us for “best speed to the runway” and or “direct to the runway”, (from wherever you are now).

We all know that slowing a Mooney down is “fun”. When I am asked for best speed to the threshold, I drop my gear and then increase my speed, since my gear down speed is higher than my gear extension speed. Then I’ll go faster, usually 135-140kts to the runway environment. At this point I throw out the speed brakes and crank in some flaps when able. That kind of best speed is appreciated by the tower.

Now You Need to Taxi

There are lots of taxiways at larger airports. It might be useful to have a pen and paper to write down taxi instructions. These may include 3-6 different taxiways and possible runway crossings. Don’t rush yourself. It’s okay to stop after you clear the runway to contact ground and write down and readback your taxi instructions. Needless to say, you should know the FBO you want to taxi to.

Departing Stuff

The first difference is that you usually will have to contact Clearance Delivery before taxiing. Before you do this, listen to ATIS so that you are more informed.

Tell Clearance Delivery that you will be departing VFR, your destination and requested altitude. Be sure to add that you have the ATIS letter, such as “. . . with information Zulu.” You can expect a response that includes, “maintain runway heading, maintain VFR, Departure Frequency and squawk code.

After that, you can contact Ground Control to taxi. On the initial call, let them know you have the ATIS letter and that you want to perform a runup. If you don't tell them upfront, it will cause them to ask. This is a small but professional way to handle your requirements.

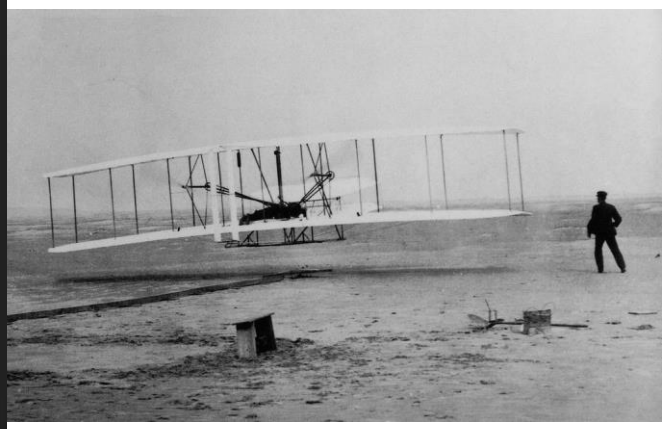
Lastly, after runup, you will still be talking to ground. They will give you taxi instruction to the runway.

Contact the tower when ready for takeoff. Upon getting a clearance to takeoff, we usually get further instructions such as "After takeoff, turn left to heading xxx". This is all simple and easier if you are expecting it.

Summary

As with anything, if you are prepared, execute as ATC requests and communicate like a pro. It is fun.

The Mooney M-18 was a single-place plane with retractable gear. It resembled a small ME-109 enough that pundits called it the "Texas Messerschmitt." Sometime in 1946, it was named the "Mooney Mite". *Reference The Al Mooney Story.*



The Mooney Flyer

Aviator Quick Tips!

We may not carry as many passengers as an airline pilot, but each precious life that we hold in our hands, deserves a pilot that knows what he or she is doing. Like a professional pilot, it is always a good idea to review things. Professional pilots, at least annually and sometimes twice a year, receive additional training and review.

Here is your review for August 2021.

Required Equipment, VFR Day Flight (A TOMATO FLAMES):

- **A**IRSPEED Indicator.
- **T**ACHOMETER, (for each engine).
- **O**IL PRESSURE gauge, (for each engine using a pressure system).
- **M**ANIFOLD PRESSURE gauge for each altitude engine.
  - ✓ A **turbocharged** reciprocating engine is an "altitude engine". Its manifold pressure is boosted and therefore, you must be able to monitor that pressure.
- **A**LTIMETER.
- **T**EMP gauge for each liquid cooled engine.
- **O**IL TEMP gauge for each air-cooled engine.
- **F**UEL gauge for each tank.
- **L**ANDING GEAR POSITION indicator, (for aircraft with retractable gear).
- **A**NTI-COLLISION LIGHT system, if the aircraft was certified after March 11, 1996.
  - ✓ In the event of an Anti-collision light failure, you may continue to a location where repairs or replacement can be made.
- **M**AGNETIC DIRECTION INDICATOR, (installed in the aircraft).
- **E**LT (FAR 91.207).
- **S**EAT BELTS.
  - ✓ If the aircraft was certified after July 1978, you'll also need Shoulder Straps.

Additional Equipment Required for VFR Night Flight (FLAPS):

- **F**USES, 3 of each kind required, and accessible in flight.
  - ✓ However, this applies **only if** your aircraft is equipped with them.
  - ✓ If your airplane has only circuit breakers, there's no need to have fuses.
- **L**ANDING LIGHT, **but only if you are flying for hire.**
- **A**NTI-COLLISION LIGHT SYSTEM, **if certified after August 11, 1971.**
  - ✓ In the event of failure, you may continue to a location where repairs or replacement can be made.
- **P**OSITION LIGHTS, on from sunset to sunrise. *(FAR 91.209).*
- **S**OURCE OF ELECTRICAL POWER (alternator or generator).

Additional Equipment Required for IFR Flight (DRAG SCAR):

- **D**IRECTIONAL GYRO (DG) or equivalent.
- **R**ATE OF TURN indicator **or an additional attitude indicator.**
- **A**TTITUDE INDICATOR.
- **G**ENERATOR or ALTERNATOR with adequate capacity.
- **S**KID / SLIP Indicator.
- **C**LOCK.
  - ✓ **Installed in the aircraft**, displaying hours, minutes and seconds.
- **A**LTIMETER.
- **R**ADIOS & NAV.
  - ✓ Two-way radios and NAV equipment appropriate to the ground facilities to be used.

Checking Your Fuel

We do this before every flight or risk a departure engine issue. Here are most of the things you should check and/or be very aware of.

Water in Your Drain Cup

We all know that 100LL is BLUE and that water is heavier than AvGas, so the clear, or hazy fluid at the bottom indicates water in the tank.

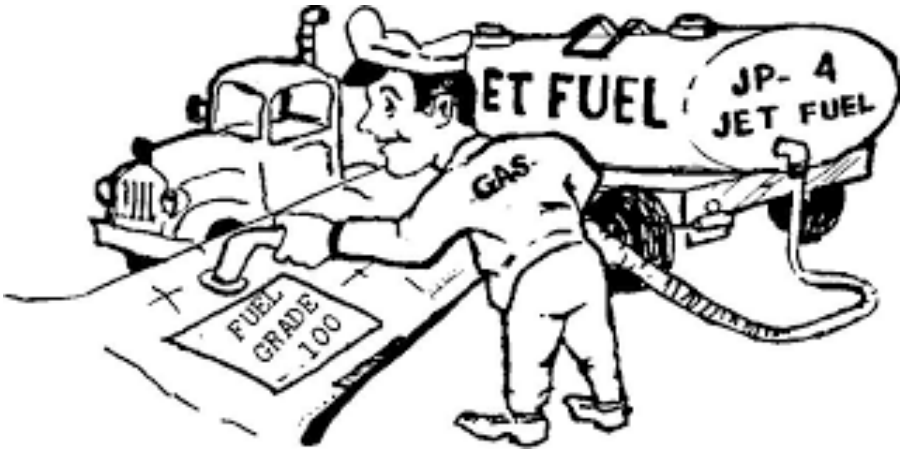
If you find water in your tank(s), you have ONE choice: Begin and continue sumping until you have no indication of water. That means in both tanks and your main sump. My advice is to then run your Mooney on the ramp for several minutes on each tank to ensure there is no additional water in the system. It's so much more fun to find this out on the ramp, than on departure. Remember, water in the system may not present itself immediately upon starting. Sources of water in your fuel system can be a result of water in the fuel depot or truck, condensation, washing your Mooney with water, or precipitation.

Cracked O-Rings

The sole purpose of O-rings is to seal your tank from external water. These should be changed at least during your annual. It's cheap insurance. I recommend Fluorocarbon O-Rings as they are more durable and last longer.

Clogged Sump

If your sump will not drain, it's probably clogged with some larger foreign object debris. You should address this before attempting any flight. This is rare, but it happens. Don't overlook this infrequent occurrence.



Jet A in a Mooney

The trouble with having an FBO fuel your Mooney with Jet A is that it is very hard to detect. Jet A is not dyed so it is a clear/hazy fluid. The only method I know to check for Jet A is to pour some of the fuel onto a tissue. If a greasy ring forms, then you have Jet A contamination.
Your only choice is to completely drain your tanks and then have them flushed. The FBO should perform this for you at no cost.

The only way to avoid this kind of issue is 1) Pump your own fuel, or 2) Watch the FBO fuel your Mooney.

Final Thoughts

Before “sumping”, wait 10-15 minutes after fueling so that any water in the fuel can sink to the bottom of the tank and be detected by you. A rush to departure may not give the water enough time to sink to the bottom of your fuel tanks. Finding water or Jet A in your tanks will probably never happen to you. However, being an ACE PIC is ensuring that your excellent judgement eliminates the need for your excellent skills.

Fly Fast, Fly Safe

Always be ready for that one in a million problem.

First Time in Actual IMC

by Richard Brown

If you have been following along on my Blog, you know that in February of this year, I started the flying portion of my IFR training. It is something I have wanted to accomplish for quite some time, but before beginning the process, I was waiting for some panel upgrades. The upgrades were completed in September 2020 and then I just procrastinated. I gave myself a deadline to pass the written, and then for some extra motivation, I scheduled and paid for the exam. When 2020 finally came to an end I had a piece of paper that said I had passed the written exam.

I fly out of the LA area in Southern California, and we don't really see much weather. We will typically get some rain in the Spring and then the months of May and June have a consistent morning marine layer that burns off by mid-day. Those weather patterns are affectionately referred to as "May Gray" and June Gloom."

I am now a little over 20 hours into my IFR training. You would think that having gone through the months of May and June I would have seen some actual IMC, but you would be wrong. I scheduled lessons for Saturday mornings and the marine layer would either have burned off early or never even materialized overnight. However, if I was planning a VFR cross country, like a recent trip to St George, it wouldn't burn off until close to noon. On weekdays I would be in my office looking out the window at a marine layer which would hang around until early afternoon. The IFR God's were laughing at me.

On June 19th, with an 8:30am flight scheduled, the stars finally aligned. It would be my 19th IFR training flight, and I was finally able to fly in actual IMC.

I arrived early to the airport so I could pre-flight the plane before my CFII arrived. The skies over Fullerton (KFUL) had a few lingering whisps of clouds. I had been looking at the weather at Long Beach (KLGB) and Torrance (KTOA) to the west, and while KLGB was reporting broken skies, KTOA was reporting overcast at 800.

My CFII said, "Let's request flight following to Torrance, and once we're in the air, if it is still socked in, we can get a pop-up clearance to fly the approach."

I was trying to keep my excitement in check. We had tried to find some actual IMC to fly approaches before and it never worked out. Way back on March 19th, flight #8 was to Palomar (KCRQ). We had filed an IFR plan and before departing, the ceilings were reported at 600'. The LPV minimums go all the way down to 202' AGL and it was going to be perfect. As we were cruising southeast along the coast past Camp Pendleton, I asked my CFII how the field was looking. "It's completely clear", came the reply. Once again, the IFR God's were laughing.

So, on June 19th, I was trying not to get my hopes up. We lifted off, I gave him the controls, put the foggles on, took the controls back, and turned to a heading of 120 degrees while calling up SoCal approach. You know that feeling when you need to ask a question, but you don't want to ask because

you are afraid of the answer? That was the feeling in my gut as we leveled off at 2,500' and I asked, "So how's it looking?"

"It's still socked in" came the reply.

"YES!" I yelled inside my head.

I called up SoCal and asked for IFR clearance to fly the RNAV RWY 29R approach. I was told "On Request." Shortly after that we were given the clearance along with a new vector; then another vector to intercept final and cleared for the approach. As we approached the FAF, I dropped the gear and my CFII said, "Take the foggles off, I want you to see what it looks like when you go in and break out." I removed the foggles and looked out at a blanket of clouds.

As I looked out the windscreen and could not see the Earth, the thought that went through my mind was, "I'm going down into that?" By this point I had many hours with the foggles and had become comfortable flying with them. I had flown many approaches, recovered from unusual attitudes, made turns to headings, climbs, descents, and all the things you do when working on an Instrument Rating. However, during all those maneuvers, there is this a little thing in the back of your mind that knows the person in the right seat can still see the ground. I suddenly realized that this flight was going to be real.

I pulled the power back to begin the descent from the FAF. As we got closer to the clouds, my heart rate increased by at least 30 beats a minute. As I had been taught, I was on the instruments before going into the clouds, while my heart raced. I had the camera going under the wing and comparing the time stamps on the video along with CloudAhoy, we entered the cloud layer at about 1,400'. As we continued the descent, in my peripheral vision, I started to catch some glimpses of ground below. I stayed on the instruments with only a quick glance up as part of my scan. It felt like we were in the clouds for about five minutes, but the reality was that after a minute in the clouds, we broke out at about 700'. And then there it was, right out in front of me, the runway, and it looked great.

We landed and exited the runway. When I called up Ground to taxi back, I also requested the TEC route back to KFUL. Sitting in the runup area, we enjoyed the wonderful world of waiting for an IFR release. We were fourth in line, and Tower was apologizing for the delay because SoCal was "understaffed."

Eventually we were next in line and received our clearance to take off. The ATIS said there was a broken layer at 600' and overcast at 800'. Normally, about 2-300' AGL, I give my CFII the controls so I can put the foggles on. However, he wanted me to have them off so I could experience going into the clouds and coming out of them. Before we got into the broken layer, I was on the instruments and again, what was only a minute until we broke out into sunny blue skies felt like four times that long. I gave my CFII the controls so I could put the foggles back on. We were vectored around in the climb, and it was an uneventful flight back to intercept the RNAV 24 approach into KFUL.

I was surprised by two things on the flight. The time warp in IMC that seemed to take forever before breaking out, and the pace of my heart as we descended into the layer. I am just hoping the Gods will smile down on me and give me some more actual IMC during my ongoing training.

If there are things you would like me to write about (or not write about) drop me an email at richard@intothesky.com.

Remembering Henry Punt

I met Henry a few years ago when I moved from Corona to Fullerton. There is a tight knit group of pilots in the Southeast Hangars and Henry was one of them. Henry loved to fly his Mooney, and if he was flying to get some food, it was all the better. He would ask, "Have you ever been to xxxx?" It didn't matter whether I said "Yes" or "No," the answer was always the same. "Oh, Man! They have the best xxxxx you have ever had!" Fill in the x's with just about anything off the menu. He's missed already.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Wisconsin Aviation Expands Aircraft Interiors Service with the Acquisition of Jaeger Aviation & Its Spatial Interior

Wisconsin Aviation, Inc., announces the expansion of its aircraft interiors department with the acquisition of Jaeger Aviation, based in Willmar, Minnesota.

With its roots stemming back to 1945, Jaeger Aviation's sixty-four years of specializing in Mooney Aircraft sales and service made a new interior design for the vintage Mooney a natural. The "Spatial Interior," as this new design was labeled, allows for a simpler and better way to increase cabin space and expedite service while giving the Mooney a look it deserves. The Spatial Interior, now 15 years in the making, is recognized worldwide.

For more details, visit: www.WisconsinAviation.com or www.JaegerAviation.com

Wisconsin Aviation's aircraft interiors department, located in Watertown, Wisconsin (RYV), accommodates all types of general aviation aircraft. Its services include minor repairs to complete customized interior replacements. The Jaeger Aviation products and experience will help continue to grow this department.

Wisconsin Aviation offers a complete line of general aviation services including air charter, aircraft maintenance, avionics repair and installation, flight training and aircraft rental, aircraft management, aircraft brokerage, and fueling services. The corporation has locations in Madison, Watertown, and Juneau, Wisconsin.

For more information about Wisconsin Aviation, send email to Interiors@WisAv.com or call 920-261-4567.

Packing Tips for Mooniacs

by Sylvia Diamant

Traveling LIGHT ♡. This is mainly for ladies but some of the basics would apply to men as well.

I traveled a lot for my job, especially the last few years of my career where I had to commute to New Hampshire from Florida every other week. Packing light was a necessity for me. Our Mooney lifestyle has elevated this to a whole new universe!! Here are some fundamentals to traveling light, regardless of whether you are traveling for business or leisure.

1. **SHOES** are space killers!! Minimize the number of pairs you pack. If business travel, pick one shoe color first then select outfits that go with that pair. If leisure, take 1 pair of walking shoes and a pair of casual flats so you can dress up or dress down. Wear your bulkier shoes on the day of travel.

2. Pack clothes that can mix and match so you can get many more "outfits" out of a few tops and bottoms. Do not take a bunch of extras.

3. None of our clothes require dry cleaning or ironing. Many are dry fits, so they dry fast. They are super light in weight and have a small footprint. If bulky, don't pack it! Wear your bulkiest clothes on the day of travel.

4. I do not wash pants, jeans, and shorts every time I wear them. Take 2 pairs of pants for a one-week vacation: 1 pair you wear on the day of travel and 1 pair in your suitcase.

5. Do not take your purse! Think long and hard what you really NEED versus what you'd like to carry around. I have a small crossover bag. Half the time I don't have any bag. Buy yoga pants with big side pockets for your phone and some cash/credit card(s)! What else do you need?

I opt for practicality vs fashion.

A Twisted Affair

Fourteenth in the series
by Ron Blum

At the end of the 1902 flying season, after flying gliders on the Outer Banks of North Carolina for three seasons, Orville and Wilbur Wright were confident they could fly in 1903. Ironically, at the end of the previous (1901) flying season, they proclaimed that man would never fly in 1000 years! By the conclusion of the 1902 season, they had tested three-axis control, including a rudder-aileron wing warping interconnect, plus they found success in overcoming adverse yaw. The last two items left to conquer were finding an engine and designing a propeller.

They wrote letters to the existing engine manufacturers and asked them to design and build an engine that would have at least eight horsepower and weigh 200 lbs. or less. None of their letters produced positive results. Manufacturers either couldn't meet the high demands, or they were too busy making engines for those newfangled horseless carriages. So, the Wright's bicycle mechanic, Charlie Taylor, designed a new engine. Charlie got 12 horsepower from a 200 lb. engine. Success!

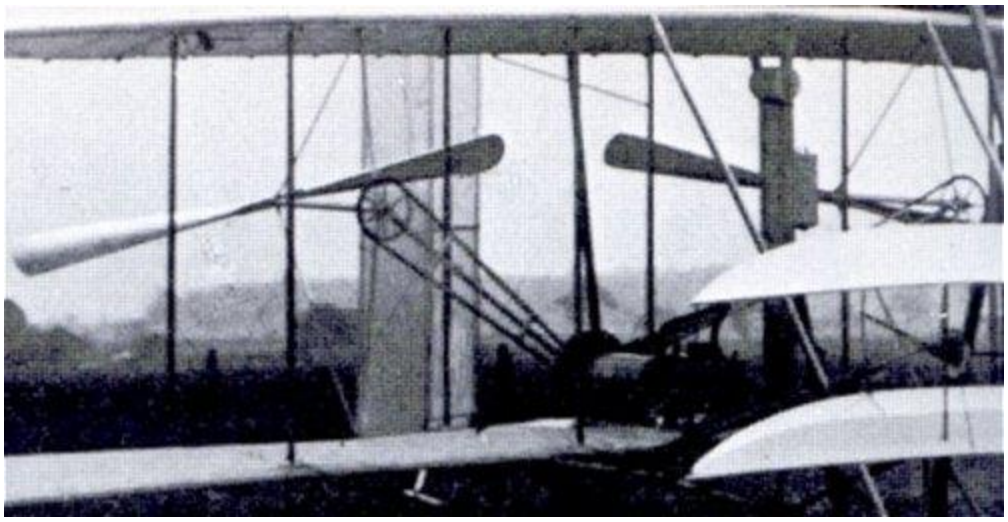
They also wrongly thought that propeller design had already been accomplished. After all, ships had been using propellers (screws) for a long time. Even at that time, there were books on boat propeller design. It didn't take them long to figure out that designing an airplane propeller would be quite different than boat propeller design. Although both types of propellers operate in fluid – water and air are both considered fluids – the differences are significant.

A boat propeller operates in water, and the density of water (about 1 kg/liter) is 830 times greater than air density (about 1.2 g/liter). In addition, (foreshadowing, hint, hint), for every revolution, a boat propeller doesn't advance or move forward very much. As we go forward in this article, we will only discuss the airplane propeller.

The Wright brothers started by determining that a propeller is simply a rotating wing. Sounds easy, right? Not so fast. Simplifying and generically speaking, a fixed-wing airplane wing has relative wind coming from a single direction. Simple. We all remember from flight training that angle of attack is the acute angle between the airfoil chord line and the relative wind. In the case of a propeller, the relative wind is different at every spanwise location along the propeller! In addition, the forward movement (airspeed) of the airplane itself affects the angle of attack at each spanwise location along the propeller … differently! This is starting to get very complicated.

Today, MS Excel can easily handle these computations, but this was 1902/03. Computers were not available at the time to automate thousands of computations. In addition, Orville and Wilbur had but a high school education at best. As it turns out, they did extremely well with the calculations.

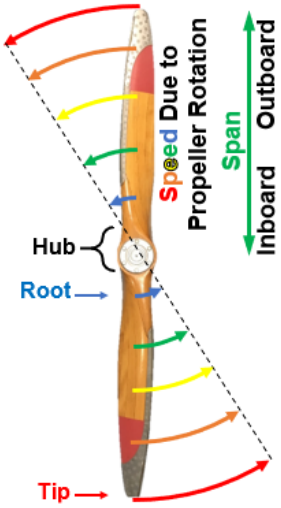
The Wright propellers are estimated to be roughly 70% efficient. Today a propeller is considered efficient at 80%. Yes, the Wrights' first propeller was designed very well.



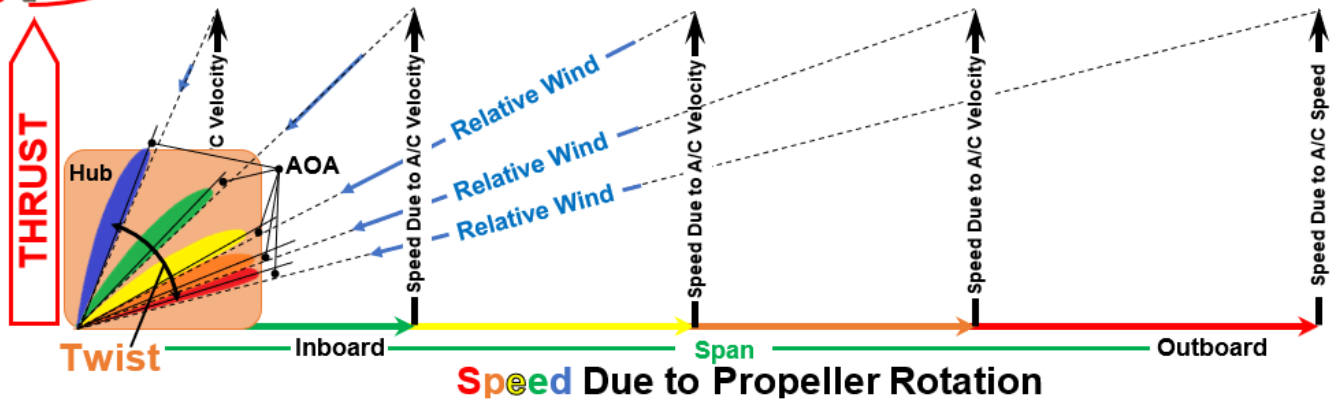
Below is an illustration (poster) I made for the Kansas Aviation Museum in Wichita, Kansas. It explains why propellers are twisted. A picture in this case is worth well over a thousand words. After the poster, we'll conclude the article with a couple more considerations of this twisted affair.

HOW A PROPELLER CREATES THRUST

Blue on Top
www.blueontop.com



- Propellers are rotating wings. Viewing "How a Wing Produces Lift" and "Angle of Attack (AOA)" posters first is very helpful.
- Propellers create **Thrust** by creating lift in a forward direction.
- Propellers have **Twist** because the angle of air coming into the propeller **(Relative Wind)** is different across the propeller **Span**.
- **Relative Wind** is the result of adding two speeds together:
  - **Speed Due to Aircraft (A/C) Forward Velocity and**
  - **Speed Due to Propeller Rotation (increases going outboard)**
- **Angle of Attack (AOA)** is nearly constant across the **Span**.

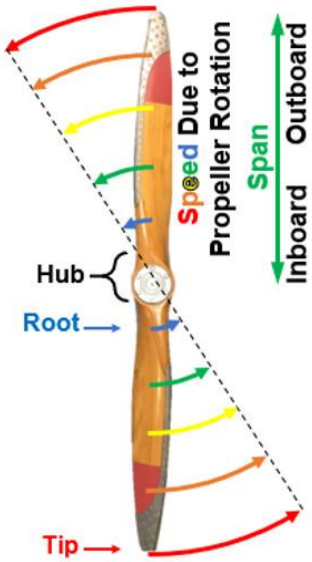


Through this simplified story, we now know how a propeller creates thrust and why it needs to be twisted. All airfoils along the span of the propeller are designed to be at a similar angle of attack at the

design point RPM and forward aircraft airspeed. Note that optimum twist changes with both forward aircraft speed and propeller RPM.

Even though a variable pitch or constant speed propeller changes the angle of incidence of the blades, that angle change is the same at all spanwise locations. Therefore, the twist of the propeller is not quite optimized for all flight conditions. That design is complicated and is a compromise between climb and cruise. It's a good compromise.

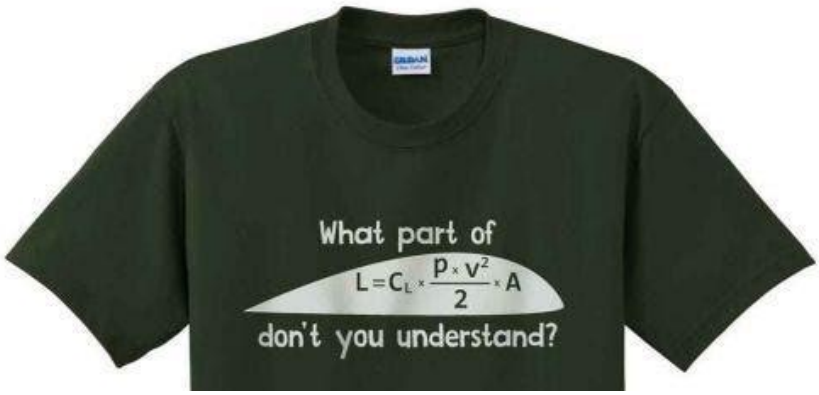
There are a couple more items that designers need to consider. The hub of the propeller needs to handle extremely high centripetal loads. These loads are the forces trying to pull the propeller blades out of the hub and are axial along the span of the blades. This is why the propeller shape near the hub is much thicker and more rounded to handle those high loads.



The last area we will discuss on the overall design of a propeller is engine cooling. What? The propeller span that is in front of the engine, (near the hub), stops the cooling airflow into the engine. Remember, (reference the illustration), that the hub area is not moving very fast. The design goal here is basically to try to get the propeller out of the way of cooling airflow. For this reason, bigger spinners are better. I'm guessing that you'll look more closely at the inboard ends of your propeller now 😊. And there we have completed the first chapter of this "Twisted Affair."

I really want to know your comments, questions and concerns about this article. I appreciate suggestions on where to take these articles and/or answer any questions you may have. Please email me at solutions@blueontop.com. Until next time keep the blue on top.

Ron Blum is an aeronautical/astronautical engineer with a 35+ year career managing general aviation Flight Test and Aerodynamics departments from shore to shore and border to border. He was Chief Engineer of the Mooney M-10 in Chino, CA. He founded Blue on Top LLC, providing engineering and management consulting, Flight Analyst DER services and keynote speaking.



Excluding other Possibilities, rather than Getting it Fixed

This is an excerpt from a report made to the Aviation Safety Reporting System. The narrative is written by the pilot, rather than officials from the FAA or NTSB.

Shortly after takeoff, at approximately 200 feet, we experienced almost total electrical failure in our Mooney M-20F.

A few days before, turning on the landing light recycled power to my Garmin GNS530W; all other systems operated normally.

My initial thought was that the landing light was on its last legs and drawing higher-than-normal current. Runup was normal and I deactivated the GNS530W for takeoff with the landing light.

Gear came up slightly slower than usual and shortly later in the climb the backup radio and transponder died. Immediately we lowered the gear to make sure we had gear down to return to the airport. At that point it became apparent we were at the end of battery power.

By midfield downwind we only had the NAV lights, and the electro/hydraulic flaps were inoperable. Following light gun signals we landed uneventfully.

Human Factors: I made one assumption about the landing light and resolved that was the answer. I was wrong and excluded other possibilities. I worked around the problem with that assumption, and it became worse.

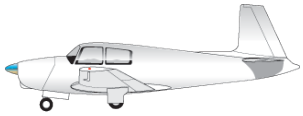
Primary Problem as determined by an ASRS analyst: Aircraft.

When your airplane talks to you, listen!
ACN: 1770726

There is a big inventory of serviceable airframe parts, including wings for M20C, E, F, G, J, K & R models, empennage assemblies, fuselages, rebuilt controls, rudders, elevators, ailerons, flaps, cowls, engine mounts, landing gear and small parts.

Paul Loewen is offering them online, or by phone. The website is www.LoewensMooneySalvage.com, and he can be contacted in Lakeport, California at **707 263-0462** or by cell at **707 272-8638.** Email is PaulLoewen98@gmail.com. The used inventory is also still available through LASAR Parts at 707. 263-0581

Mooney Maintenance



Search Mooney's new website for Service Bulletins (SBs) and Service Instructions applicable to your Mooney

Click here

Download and search LASAR's Airworthiness Directive (AD) Log – all models

Click here

LASAR
Fanatically Mooney. Exceptionally Fast.

Ask the Top Gun

Tom Rouch

Founder of Top Gun Aviation, Stockton, California

Send your questions for Tom to TheMooneyFlyer@gmail.com

Question: Is it possible to convert a 1968 M20F from a Johnson bar landing gear to an electric gear? If it is, what is the process? Thank you in advance.

Answer: It is certainly possible, but it would be an immensely time-consuming job. The main problems would be finding parts and managing the cost. The only source of parts would be junk yards and maybe the few old Mooney shops still around. A very expensive electric actuator would require metal tubular parts, the electrical parts, and of course, the emergency extension system.

If you are familiar with Top Gun's F/J model, it took us years to convert it from an F to a J model. We started with a bellied in F model. My son Mark did almost all the work, so we never totaled the labor cost. My point is that to do the mod, it is very costly. Then, you need to find someone willing to do it. Just to keep up with a normal workload, we don't have enough mechanics.

Once you find someone to do it, you'll need to research the parts manuals to determine which parts are needed. Then, I am sure there would be some welding involved. I would want to write workplans, and I am not sure what the FAA might want. If the project only involved original Mooney parts, the FAA should not find it a problem. The best place to start would be to find a wrecked Mooney with electric gear. The biggest problem would be finding a gear actuator because most of those have been stripped out and sold as a part.

I would suggest that you sell the Mooney with the Johnson bar and find one with an electric gear. I will guarantee it would be less costly than trying to convert the 68 M20F. If you had asked me about 25 years ago, I would have jumped at the chance.

STAYING IN THE GAME AFTER A FLAG

By Ray Reher

When the referee blows the whistle, throws the flag, and points at you, it's never a good thing. When you get a call or letter from the FAA "investigating" an occurrence, incident, or reported pilot deviation, it's generally not such a good thing either. Are you going to be sidelined, and for how long? Will you get thrown out of the game? In June 2015, the FAA made a huge change of policy on how they handle your case after the whistle has been blown. There is much more emphasis on the carrot before the stick. Below is a reprint of paragraphs 4c through 4f of FAA Order 8000.373 dated 06/26/2015 and revised FAA Order 8000.373B on 04/22/2021. The subject of the letter is titled: "Federal Aviation Administration Compliance Program." Pay close attention to the words in bold print. It may be worth your while if you ever hear the whistle.

4. Compliance Program

c. To promote the highest level of safety and compliance with regulatory standards, the FAA is implementing Safety Management System constructs ***based on comprehensive safety data sharing between the FAA and the aviation community****. To foster this open and transparent exchange of data, the FAA believes that its compliance program, supported by an established safety culture, is instrumental in ensuring both compliance with regulations and the identification of hazards and management of risk.*

d. When deviations from regulatory standards do occur, the FAA's goal is to use the most effective means to return an individual or entity that holds an FAA certificate, approval, authorization, permit or license to full compliance and to prevent recurrence.

e. ***The FAA recognizes that some deviations arise from factors such as flawed procedures, simple mistakes, lack of understanding, or diminished skills****. The Agency believes that deviations of this nature can* ***most effectively be corrected*** *through root cause* ***analysis*** *and* ***training****,* ***education*** *or other appropriate improvements to procedures or training programs for regulated entities, which are documented and verified to ensure effectiveness. However,* ***reluctance or failure in adopting these methods*** *to remediate deviations or instances of repeated deviations* ***might result in enforcement****.*

f. The FAA views those ***intentional or reckless deviations*** *from regulatory standards, as defined in the Agency's safety oversight guidance, or deviations from regulatory standards that otherwise present an unacceptable risk to safety, as posing the highest risk to safe operation of the NAS, and thus* ***requiring strong enforcement****.*

Paragraph (e) was a huge change to their compliance/enforcement philosophy. But we're not done yet. Consider the Aviation Safety Reporting System program (ASRS), which is implicitly referred to in paragraph (c). If you're not familiar with how to use this program to your advantage, you're missing the boat.

Here are some excerpts from Advisory Circular 00-46F dated 4/2/21: "**Aviation Safety Reporting Program".**

1. PURPOSE

NASA serves as a third party to receive and process Aviation Safety Reports.

Based on information obtained from this program, the FAA will take corrective action as necessary to remedy defects or deficiencies in the National Airspace System (NAS).

8. PROHIBITION AGAINST THE USE OF REPORTS FOR ENFORCEMENT PURPOSES

8.1 Background. *…. reported occurrence or incident.* ***The FAA will not seek, and NASA will not release or make available to the FAA, any report filed with NASA under the ASRS or any other information that might reveal the identity of any party involved*** *in an occurrence or incident reported under the ASRS. There has been no breach of confidentiality of the ASRS under NASA management.*

8.2 Use Restrictions. …. *(14 CFR) part 91, § 91.25 (which* ***prohibits the use of any reports submitted to NASA under the ASRS (or information derived therefrom) in any enforcement action*** *within the scope of 14 CFR part 91, except information concerning criminal offenses or accidents).*

12 ENFORCEMENT POLICY

12.3 Waiver of Imposition of Sanction*. The FAA considers the filing of a report with NASA… to be* ***indicative of a constructive attitude****. Such an attitude will tend to prevent future violations. Accordingly, although a finding of violation may be made,* ***neither a civil penalty nor certificate suspension will be imposed if:***

12.3.1 *The violation was* ***inadvertent*** *and* ***not deliberate;***

12.3.2 *The violation did not involve a criminal offense, accident, or action under 49 U.S.C. § 44709, which discloses a lack of qualification or competency, which is wholly excluded from this policy;*

12.3.3 *The person has not been found in any prior FAA enforcement action to have committed a violation of 49 U.S.C. subtitle VII, or any regulation promulgated there for a period of 5 years prior to the date of occurrence; and*

12.3.4 *The person proves that,* ***within 10 days*** *after the violation, or date when the person became aware or should have been aware of the violation, he or she completed and delivered or mailed a* ***written report*** *of the incident or occurrence* ***to NASA.***

As much as possible, I have attempted to boil down both the FAA Compliance Policy Letter and the Aviation Safety Reporting Program Advisory Circular. At the same time, it may allow you to see important points contained in both publications, word-for-word.

The ASRS program is nothing new, but taken in context of the FAA policy letter on enforcement philosophy, you can read between the lines; or even read the lines outright, about its newly emphasized importance.

You might find this unbelievable, but occasionally, even pilots make mistakes.

The mistake may be a simple, unintentional error that can be mitigated with counseling or training to bring the pilot to standards without administrative or punitive action. The idea is that moving to a constructive process can help prevent future individual errors and enhance safety.

If the pilot in question has filed an ASRS report, is cooperative, and has a history of participation in aviation continuation training, such as the Wings Program and the AOPA Air Safety Institute courses, that is what the investigator is looking for. The pilot's history should be unquestionably indicative of a "constructive attitude" or a willingness in "adopting these methods to remediate deviations". And just as a side note, participation in safety and training programs, may just make you a safer and more skilled pilot.

However .... If the incident or deviation is deemed to be intentional, reckless or high-risk behavior, or a continuation of a bad actor's rap sheet, he or she might expect to be sidelined or even sent to the locker room. I submit that this is a very small percentage of the flying community, and most of us probably don't want them in the game anyway.

The larger point is, that the ASRS program, combined with a continuous effort to improve your knowledge and piloting skills, may be a level of insurance against an innocent mistake and its consequences. And maybe that's the FAA's intent of this whole thing. If you really read into it and think about it, this is a very positive step, and both documents seem to repeat "**constructive attitude", attitude, attitude**.

A round of applause for the FAA's "Constructive Attitude."

Fun and Useful Apple Watch Apps for Mooniacs

Aithre Connect 	This health and oxygen monitoring app allows you to view the vitals of your compatible pulse oximeter, portable oxygen tank monitor and carbon monoxide detector. (Learn more about Aithre's aviation monitoring products here).
Altimeter+ 	Display an altimeter flight instrument on your watch. You can choose to use the barometer, GPS or ASTER calculations as the source to determine altitude.
AltitudeAlert 	Receive haptic alerts directly on your watch when deviating from pre-selected altitudes when using the AltitudeAlert app.
Aerovie, electronic flight bag (EFB) 	This is the most capable aviation Apple Watch app available today. It offers the following features: weather radar, flight timers, digital checklists, pilot health monitoring, and nearby airport information. It also offers customizable watch face complications, allowing you to display widgets of nearby METARs and TAFs (with time travel support) on the home watch face.
Aviation Altimeter for Watch 	This altimeter watch app goes beyond the basics and includes altitude alerting features, along with an oxygen alarm to remind you haptically and visually when you exceed 12,500 ft.
Bad Elf GPS Utility	Monitor and control your Bad Elf GPS accessory right from your Apple Watch. The app provides a moving map view and basic navigation information, including ground speed, track and GPS altitude.
Civil Twilight for Watch 	This simple app automatically calculates the times for civil twilight and sunset/sunrise based on your locations, so you know when to turn on the nav lights or when you can legally log night flying.
Cloud Map 	Quickly check any of the 120 NOAA weather station satellite images for visible cloud cover. When on the go, you can use the GPS feature to find the nearest weather station image.
FlightRadar24 	Turn your Apple Watch into an air traffic radar and see a listing of nearby airplanes, including relative location, flight details and position on the map.
MiraCheck CoPilot 	This app for iPhone and iPad provides smart checklist functionality for iPhone and iPad that you control with your voice. The companion Watch app provides an alternate means to advance the checklist from your wrist.
EFIS 	IPhone App that provides Artificial Horizon and GPS Info. (FREE)

learn to fly...the fun one

Discover the Mooney CADET. This is the sporty new 2-place trainer that makes learning to fly easy and more fun too!

Take off, open the canopy and discover the thrill of flying. Old fashioned, high-wing trainers are strictly dullsville after you've flown the CADET.

CADET features include: dual controls, full instrument panel, comfortable cabin, spring steel landing gear and modern low wing flight stability. In the CADET, you get better climb, better landing characteristics, better response on the controls, and economy of operation.

Bubble canopy affords true panoramic visibility for maximum safety. When the mood strikes you, slip the canopy back and catch the breeze. Wow! Fun and how!

Look to the future. A CADET trained pilot is a better trained pilot to take that next step—a retractable rating in a fast high performance airplane. Start now on your first step to modern flying, fly the fun one . . . Mooney CADET.

step up to retractable rating

Retract now! Join the revolt against old-fashioned wheels-down slow flying. Fixed gear is fine to learn in (if it's a CADET), but NOW you're ready to get up and go. Speed is the name of the game in cross-country flying. The Mooney offers you more speed per horsepower, more range per gallon, and value engineered features that you only get in planes costing a great deal more. The Mooney lets you step up performance at a reasonable price.

Want proof? Ask your Mooney dealer for the $8.00 introductory ride. Your dealer can prove to you that the Mooney gives you more airplane and more performance than any plane near its price. He will introduce you to a low cost program to start you on your way to a retractable rating. It's easy and you'll discover a whole new dimension in flying with Mooney's exclusive Positive Control.

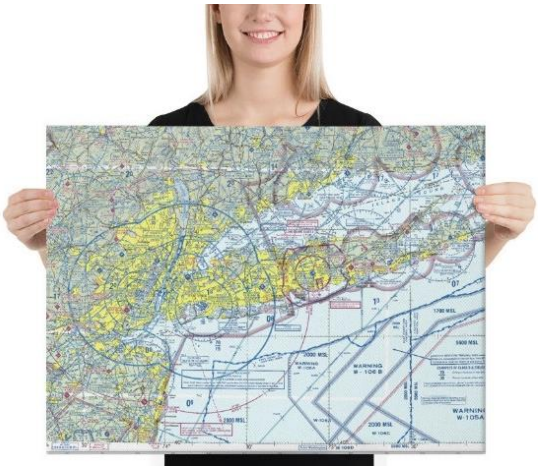
MOONEY

MOONEY AIRCRAFT CORPORATION • KERRVILLE, TEXAS

HYH

BREAKING AVIATION NEWS

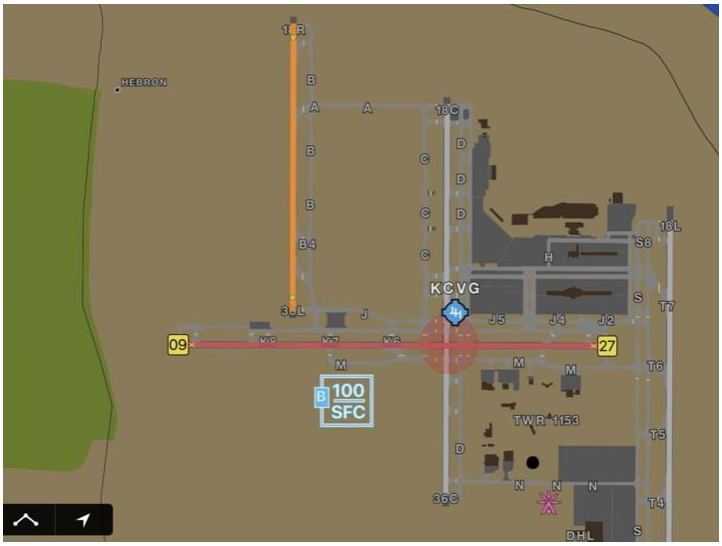
VFR Sectional and TAC Charts Cycle Change



The time interval that VFR Sectional and TAC charts are to be reissued is being changed from every six months to every 56 days. This allows them to be refreshed on the same dates as the IFR charts and publications. This change started on June 25, 2021. For those that fly with an electronic flight bag, this won't be much of an issue. You will only have to press the "Update" button a tiny bit more often.

Garmin Pilot adds visual NOTAMs in latest update

While flashy features like synthetic vision, datalink weather and geo-referenced charts often dominate the conversation when it comes to mobile apps, there are countless other features under the hood that can play an equally important role in improving the safety and comfort of each flight.



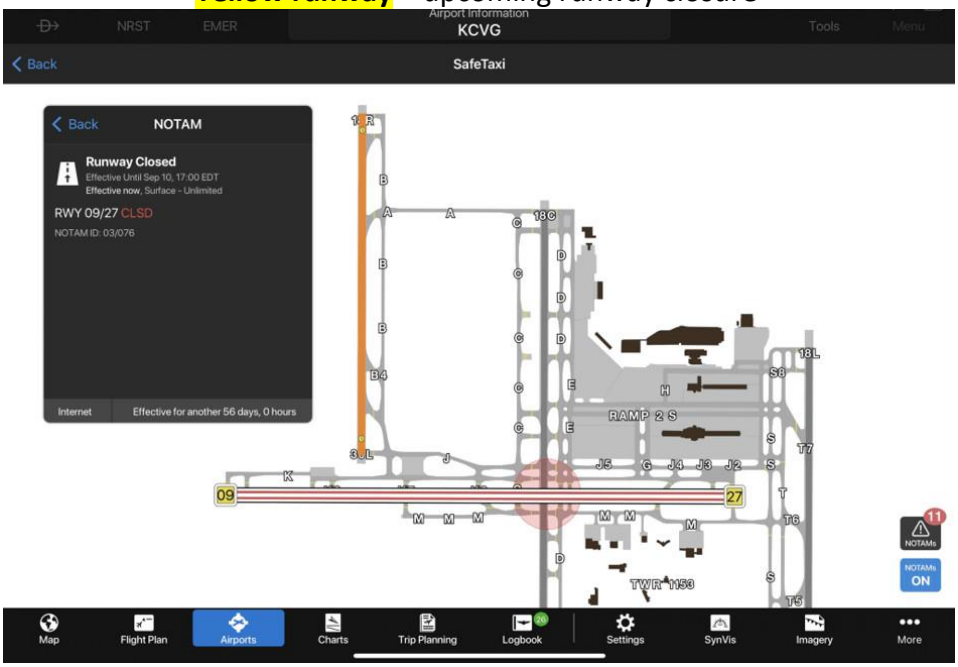
The latest update to the Garmin Pilot app focuses on the latter, by adding a set of new smart features that highlight important information when planning a flight. This includes visual runway closures, contextual instrument approach NOTAMs, flight planning alerts, and TAF overlays on the map. Here's a quick look at each.

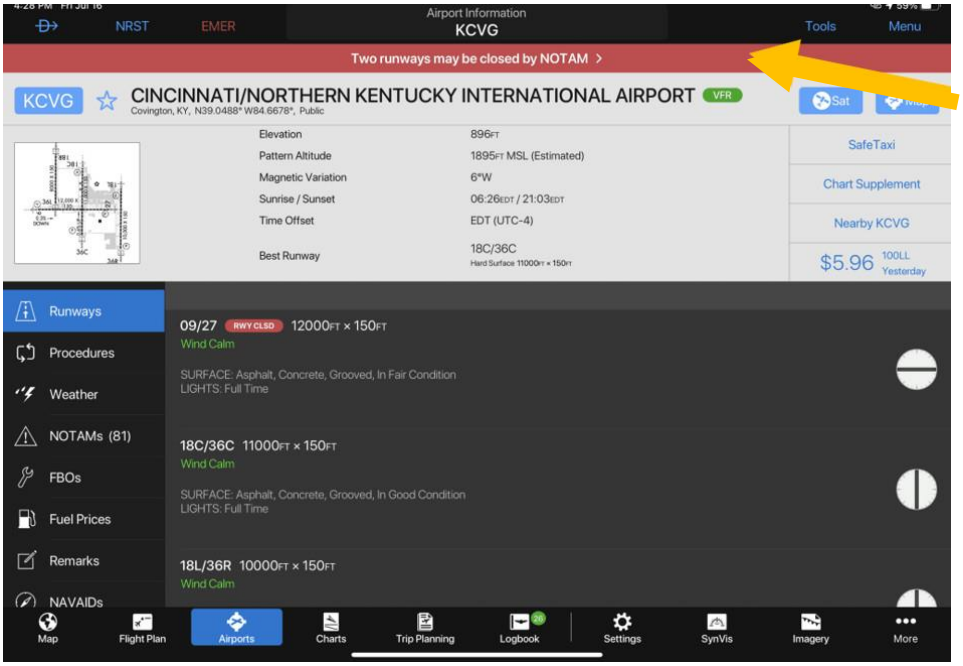
Runway Closure NOTAMs

Depending on the source and presentation of your weather briefing, it can be difficult to isolate the few NOTAMs that really matter. There's nothing more embarrassing than approaching an airport to land only to find that a runway, or the entire airport itself, is closed (and you missed the NOTAM during your pre-flight preparation).

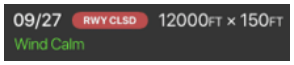
To help with this, Garmin Pilot now visually presents NOTAMs throughout the app to make sure this key information is not overlooked. First, closed runways are color-coded on the dynamic map or SafeTaxi diagram based upon the following classifications:

- **Red runway** with yellow X at each end – runway is closed.
- **Orange runway** with yellow clock – runway is closed; however, there are conditions that require further investigation, such as the time and/or date of its closure.
- **Yellow runway** – upcoming runway closure





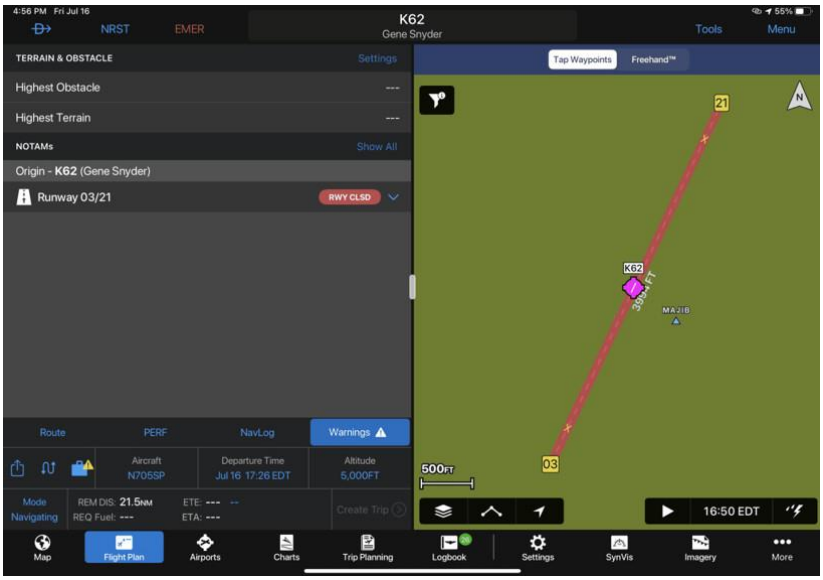
When viewing the dedicated airports page, closed runways are noted with a red banner across the top of the screen, and a red "RWY CLSD" badge is placed next to the specific runway label.



Instrument Approach NOTAMs

When viewing an instrument approach chart or airport diagram, you'll see a NOTAMs button at the bottom right of the screen. Tap on this to display NOTAMs that are applicable to that procedure or chart.

Flight Planning Alerts

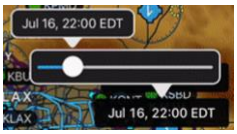


After entering the departure and destination airport in your flight plan, keep an eye on the Warnings button in the lower right corner of the screen. An alert symbol will be displayed when one of the planned airports has a NOTAM for a closed runway. Just tap on it for details.

TAF and MOS Weather Overlays

In addition to displaying color-coded METAR symbols, Garmin Pilot now also displays the same VFR/MVFR/IFR color symbology for the forecast layer. These will display when selecting the TAF or MOS option from the Map Overlays menu and initially shows the forecast for the current time period.

You can then use the slider at the bottom right of the screen to change the forecast period to observe forecast condition trends over a larger area.



LogTen introduces industry first: Pilot Logbook Widgets

Coradine Aviation has released the second major update of 2021 for LogTen, a pilot logbook for iPhone, iPad, and Mac. This release includes an industry first: LogTen Widgets, according to company officials.

Pilots can now monitor vital information directly from their home screens on iOS devices. Upcoming flights, currencies, limits, and certificates, as well as any custom information are available at a glance.

LogTen for iPhone, iPad, and LogTen for Mac is available with a free trial in the Apple App Stores.

CLICK HERE FOR MORE INFORMATION

Garmin Announces Smart Glide Engine-Out Automation

Smart Glide requires at least one of Garmin's latest GTN Xi-series navigators, plus a compatible Garmin display. These include the G5, GI 275, G500/600 TXi and the G3X Touch. Smart Glide is activated with an optional panel-mounted switch, or by pressing the navigator's Direct-To button for two-seconds. Once activated, it recommends an airport that's estimated to be within gliding range and creates a direct-to route to the field so the pilot can execute the dead-stick landing. when interfaced with a Garmin autopilot, Smart Glide automatically engages the autopilot and pitches for the aircraft's best-glide airspeed.

The automation considers a number of factors when suggesting a landing destination, including terrain, winds, runway length and even weather sourced from a connected ADS-B and SXM system. It switches the flight display's CDI to GPS mode and when connected to a Garmin transponder, provides a shortcut for the pilot to tune 7700 (the emergency transponder code) and places the airport's comm frequency in the standby tuning window. The pilot can also select alternate airports as recommended by Smart Glide, based on VFR or IFR conditions. During activation, the Glide Range Ring on the navigator's Map page shows airports within range and dynamically adjusts it based on winds and terrain. Within 4 NM of the airport, the system advises the pilot (via aural and visual cues) that they are approaching the runway environment, while also offering AGL altitude information, distance and bearing to the runway.

Smart Glide will be available as a no-charge (installation is extra), dealer-installed software upgrade for compatible systems starting in August 2021. There will also be a $129 panel-mounted activation switch.

FAA Removes Backup Attitude Indicator Requirement for the Aspen Pro MAX PFD

A recent FAA approval will allow aircraft owners installing a single Aspen Avionics Evolution EFD1000 Pro MAX primary flight display (PFD) to remove the previously required backup attitude indicator, the company announced on Thursday. To meet the requirements of the approval, the PFD must be running the latest software version—v2.11—and be outfitted with an extended-duration backup battery. Backup altimeter, airspeed and turn and bank indicators are still required.

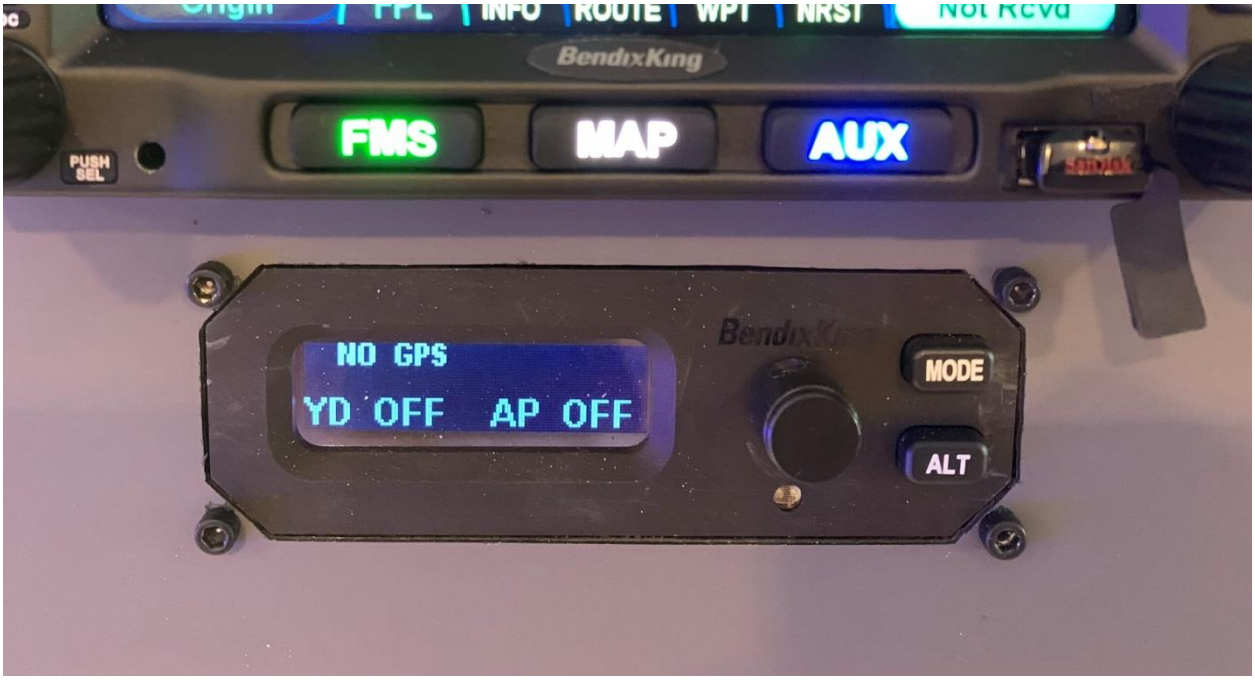
According to Aspen, currently installed Pro MAX PFDs can be upgraded to the extended duration battery and latest software by authorized Aspen dealers. The EFD1000 Pro MAX offers features including GPS-aided AHRS in the event of pitot static failure, airspeed and altitude tapes with an altitude alerter, built-in GPS steering and full electronic HSI with dual bearing pointers. List price for a new Evolution EFD1000 Pro MAX PFD is $9,995.

Getting an IFR Clearance through ForeFlight?

ForeFlight has made more than 100 upgrades to its app in the past two years. Now it is focusing on streamlining the process for filing and obtaining IFR clearances digitally. Instead of relying on telephone calls and radio communications, ForeFlight is pushing for the broad use of clearances that can be obtained online, then uploaded to cockpit avionics wirelessly. At larger airports, air carriers have been digitally receiving and verifying their IFR clearances for several years. It's part of the NextGen/ADS-B program. The process has been shown to be far faster and more accurate.

BendixKing at OSH: Autopilots for Mooneys

BendixKing seems determined to expand the application list for its AeroCruze 100 autopilot, and at AirVenture 2021 it announced that it is working on an STC (Supplemental Type Certificate) for retrofitting the system in Mooney models. The company has teamed with Duncan Aviation for the STC process and said it will soon complete the ground and flight testing required to submit the STC documentation to the FAA within the next few weeks.



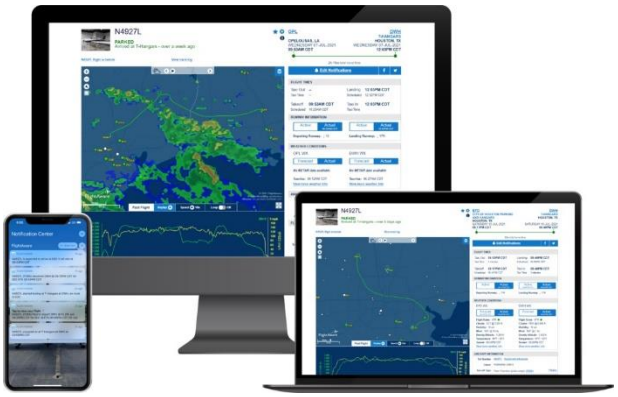
On the list is the M20B/C/D/E/F/G, plus the M20J/K/L/M/R/S, and M20TN/U/V models.

BendixKing didn't announce a price for the future AeroCruze 100 Mooney interface. In its current form, the AeroCruze 100 can function without the BendixKing KI-300 electronic attitude instrument, which has been grounded by an FAA AD.

Aspen Avionics Launches Online Learning Course

Aspen Avionics introduced a new online learning course for its Evolution Pro MAX flight display series at AirVenture 2021 in Oshkosh, Wisconsin. "Evolution Pro MAX 101" is designed to cover basic functionality of the Pro MAX series with an eye toward helping users "streamline their flight operations." The course is hosted by Aspen Avionics director of flight operations James Buck. Individual modules—and the course as a whole—can be revisited at any time. The course is available for free and can be accessed via Aspen's website.

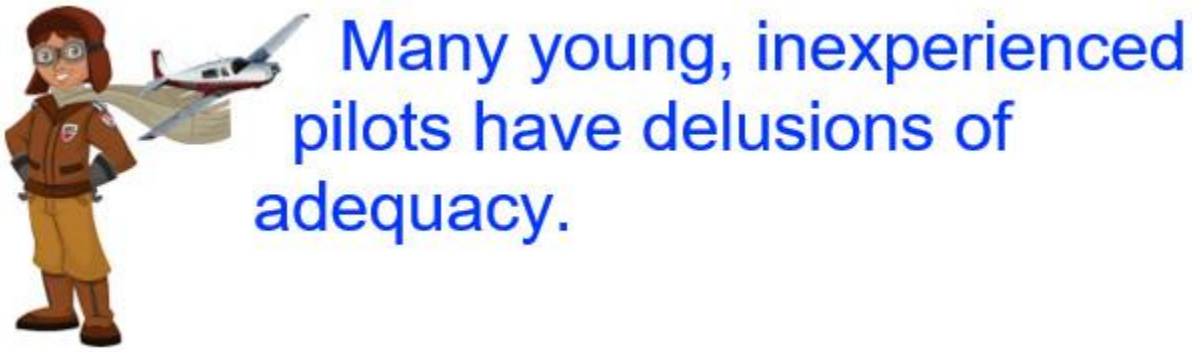
FlightAware Introduces Enhanced 'Aviator' Subscription Service

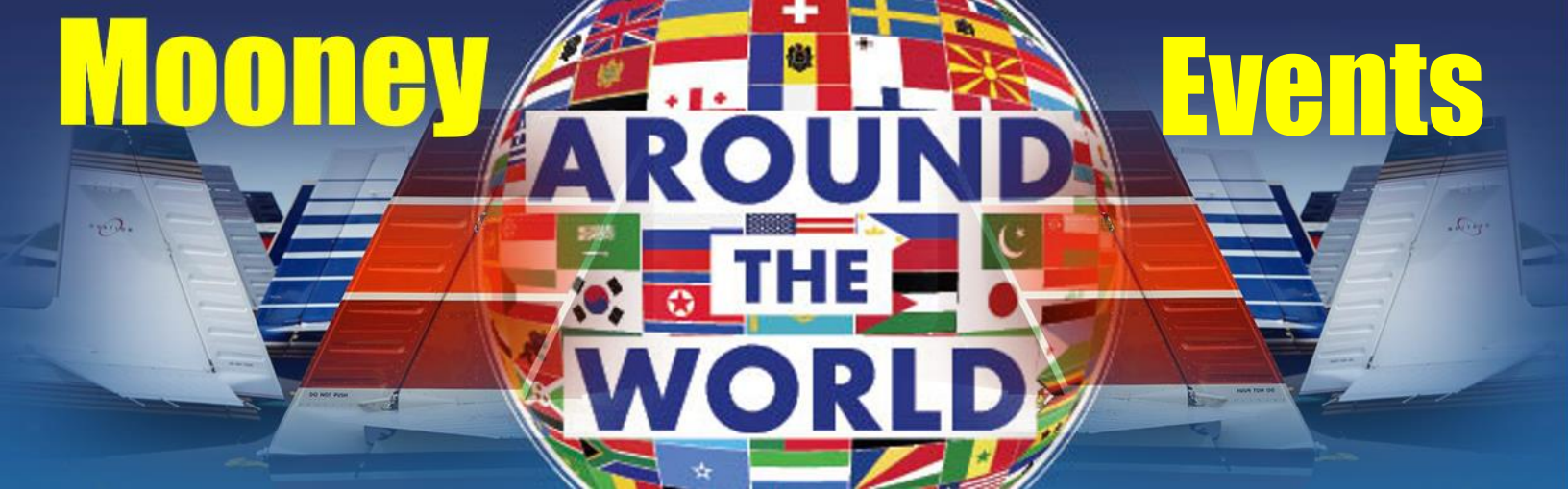


During EAA AirVenture, flight-tracking specialist FlightAware announced Aviator, a new subscription-based service. FlightAware's free service is popular among pilots and others with an interest in keeping tabs on airline flights and other aircraft activity. Aviator ramps up the sophistication of the data available, and FlightAware believes pilots, aircraft owners, renters, their family and friends, FBOs and others will find the data-rich product highly useful.

An offshoot of FlightAware's business-aviation program known as Global, Aviator adds detailed information on surface movement (power-on time, taxi-out time, departure and arrival times, parking info) and much more extensive flight history, and enables a new opportunity called Flight Intents—the practice of using resources to plan a flight without actually filing a flight plan. The Flight Intent can access forecast and current weather information on cloud cover, visibility, density altitude, winds and active runway information at departure and destination airports. The graphical presentation tracks the route of the flight. Parkman also projected that Aviator subscribers could connect via social media; maybe even practice "badging" like runners and cyclists do—citing those who accomplish weekly or monthly milestones such as number of airports visited, for example.

Subscribers can track multiple tail numbers. Future plans include adding more data to the mix, including power settings, engine performance and temperatures, for better tracking and scheduling maintenance. You can compare "Aviator" subscriptions at https://flightaware.com/commercial/aviator/





Florida Mooney Lunch Group	*Contact Dave at daveanruth@aol.com or (352) 343-3196, before coming to the restaurant, to have an accurate count. Events begin at 11:30* August 14: Okeechobee (KOBE) September 11: Venice (VNC) October 9: Flagler (FIN)
Mooney Caravan	July 23: Arrivals at MSN July 24: MSN- OSH, Arrival at KOSH at 11:30am CLICK HERE for details
MooneySafety.com MAPA Safety Foundation Pilot Proficiency Program	Sep 10-12: Chicopee, MA Oct 15-17: Wichita, KS **Sign Up at** https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	October 22-24: CLICK HERE for details
Australian Mooney Pilots Association	October 8, 2021: Spring Fly-in, Merimbula, NSW. CLICK HERE for the AMPA website. March 17-21: Gathering of Mooneys - Coonawarra wine region
EMPOA	CLICK HERE for details
Other Mooney Events	

TMF PRODUCT REVIEW

Lemon Fresh Pledge

You are probably wondering why we are reviewing a furniture polish in The Mooney Flyer. Well, it may very well be the best product you can buy to keep your plexiglass clean. Years ago, I bumped into an Ag pilot who was using it to clean his windscreen. He swore by it. So, I got some and have been using it ever since. It works better than any alternative, including expensive aviation products.

If you use it inside your cockpit, your significant other will love that your windows are sparkling clear, and the cabin smells as sweet as a fresh lemon.

Flying is the art of learning to throw yourself at the ground and miss.

Parts for Sale

This Cowling was removed from a M20E and replaced with a M20J (201) cowling. The cowling is located at Fullerton Airport (KFUL) and is in excellent condition. Offers accepted.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

P/N 310309-501
P/N 310309-502

These fairings are new and priced @ $280.00 each or $525.00 for both. Priced elsewhere @ $362.69 each.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Bushing P/N 914007-003 - 2- Bushings in the original package @ $35.00 each. Priced elsewhere @ $45.00 each.

Bushing P/N 914007-005
1-Bushing in the original package @ $59.00
1-Bushing loose @ $50.00
Priced elsewhere @ $69.00 each

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Access Covers P/N 3000-901 (2-available) - 1-without nuts attached.
Make offer. Contact: Bernard Lee – leebern@msn.com (562-865-2547)

N9426V
1970 Mooney M20F s/n 700029

5725 Total Time
475 SMOH in 2013
1384 SNEW Prop, 3 Blade Hartzell $69.900

Paint: AcraGlo in 2010. Condition 8, normal wear
Interior: 2002. Grey Leather. Condition 6

Avionics:
#1 Nav/Com King KX155 w/ GS. Coupled to HSI
#2 Nav/Com King KX170B
King KCS55 Slaved HSI
Narco AT-150 Linked to Uavionix Tail Beacon, ADS-B Out
JPI EDM 930. Full function with Fuel Flow
PS Engineering 4 Place Intercom
Airtex 406 ELT
Vertical Card Compass

Airframe:
201 Windshield and ¼ Side Glass
Aero Resources Cowl Fairing and Landing Light Cover
Lake Aero Gap Seals
StandBy Vacuum System
Brackett Air Filter
M20 Air/Oil Seperator
Spin on Oil Filter
Throttle Quadrant
Fuel Tank Reseal in 2007, No Leaks

Useful Load: 1036 lbs.

Annual 6/2020 IFR/ALT/TXP 5/2019

Damage:
Gear Up Landings in 1981, 1984, and 1997. 337's for repairs with Factory Parts

Contact John Echols at echolsjt@geospectrum.com or 432-559-3119

1/3 SHARE FOR SALE

Two partners are offering the final 1/3 co-ownership share in this excellent, incredibly unique and well-equipped aircraft. Over $50,000 spent over the last two years, upgrading and sorting it out. The share price is $45,000.
TTAF is about 3160, engine SMOH About 1320 (Mattituck Red/Gold). We have Calculated that 1/3 of the fixed expenses will be around $5,250 per year. Reserves TBD. Photos and all records can be provided. The plane is hangered at KCCR Concord, CA.

- Garmin GNS 430 WAAS
- King KX 155 N/C/LOC/GS
- Castleberry electric back AI
- King KFC 150 FD/AP alt hold, climb/descend, simulated GPSS
- King KCS 55A HIS
- Garmin GTX 330 ES TXP with traffic, ADS-B out
- Newly Overhauled KX 256 AI ($1,730)
- King KN 64 DME
- New Garmin GMA 345 Audio Panel
- New JPI 830 with *all* options
- ADS-B in including traffic, weather, Sirius XM, etc. via a new certified Garmin GDL 52R hard wired to a panel mounted Garmin Aera 660. A new yoke mounted Aera 760 will be hard wired to provide IFR charts and Additional features. More Bluetooth connections for portables and iPad available from the GDL 52R
- Newly Overhauled BFG WX 1000+ Stormscope, display and processor ($1,890)
- 28-volt electrical system
- Astrotech LC-2 clock
- Electric trim with CWS
- Yoke mounted AP disconnect and ident.
- Electric Back-up vacuum
- New STC'd gear and stall audio alarm ($1,100)
- Built-in CO2 detector
- Speed brakes completely overhauled January 2020 ($2,800)
- Four place intercom
- 2900 GW STC
- Two built-in David Clark 20-10X ANR headset jacks with headsets
- CYA 100 AOA with custom housing, (not yet wired) ($1,690)
- Useful load 992 lbs.
- Air/Oil Separator
- Reiff Preheater, 2 sides
- Removable back seats
- Articulating seats
- Inflatable lumbar support
- Indirect interior lighting
- Kool scoop
- Wing mounted fuel gauges
- Two place Sky Ox oxygen tank with custom rack
- Sidewinder electric power tug
- B-Cool ice cooler with remote switch
- Annual completed February 2020 by Top Gun Stockton MSC.
- Tan leather interior redone 2012, good condition, front sheepskins coming soon
- Custom black front floor mats, custom cover, cowl plugs
- Original paint. Pleasing colors. Looks very good at 8'.
- The plane starts right up hot or cold, good compressions, does not use much oil, good oil analysis, runs very smoothly, flies great.
- Recent avionics fan, fuel pump, starter, battery, airstop tubes on mains
- New shock discs 2 1/2 years
- No back clutch spring was installed 2 1/2 years ago

Give me a call anytime at 510 377 0129 or email bradinc@astound.net. Thanks! Steve


Rusty Pilot or Old Pro
INSTRUMENT PROFICIENCY CHECK
Study Guide
J D Price, CFII, MEI, ATP
FLIGHT REVIEW
Study Guide
J D Price, CFII, MEI, ATP
Prepare online
FREE
JDPriceCFI.com