The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

July 2020

Editors

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Ron Blum

Departments

Features

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From the Editor

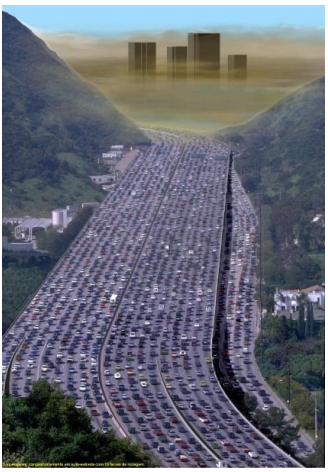
Phil Corman

Ed

Ed

Always Thankful for our Mooney

After being thankful for my family, my friends, and yes, my country, our Mooney is the biggest joy of our lives.



It has shrunk the world for us. We think nothing of flying 500 nm for a weekend away from home, or to visit friends. What would be a 12-hour drive in/out of California traffic is a breeze in our Eagle. It's especially rewarding to see the freeways clogged on holiday weekends with us zipping by at 180kts, or more if the aviation gods are providing a tailwind.

Some of the best friends are those that we met at Mooney fly-ins. My co-editor Jim is the best example. Writing and publishing The Mooney Flyer simply would not be possible without him. We met Jim and his amazing wife Gerry at a Vintage Mooney Fly-In. I could go on forever. The point is that the Mooney Community is amazing. I will never regret owning two Mooneys and having such wonderful friends.

I love our Mooney's speed. Often when Center calls out traffic in the same direction, there will be a transmission like this, "Mooney 530, traffic at 1 o'clock and you are overtaking it at 50kts." Another time during my Instrument Training, we were shooting an approach to KOAK and were told to slow down for the B737 ahead of us. I wish I had a recording of that.

Flying our Mooney has brought my wife Linda and I closer together, as well. Although she has no interest in becoming a pilot, she cannot get enough of flying. She loves participating in pre-flights, setting up the radios, the flight plan on our G750, and looking for traffic. Before we got our STEC 55X Autopilot, she would spell me on long legs and flew as well as the STEC. We will often divert if she finds something interesting. There's lots of childlike wonder when we're flying our Eagle.

Minor Scratches on my Plexiglass

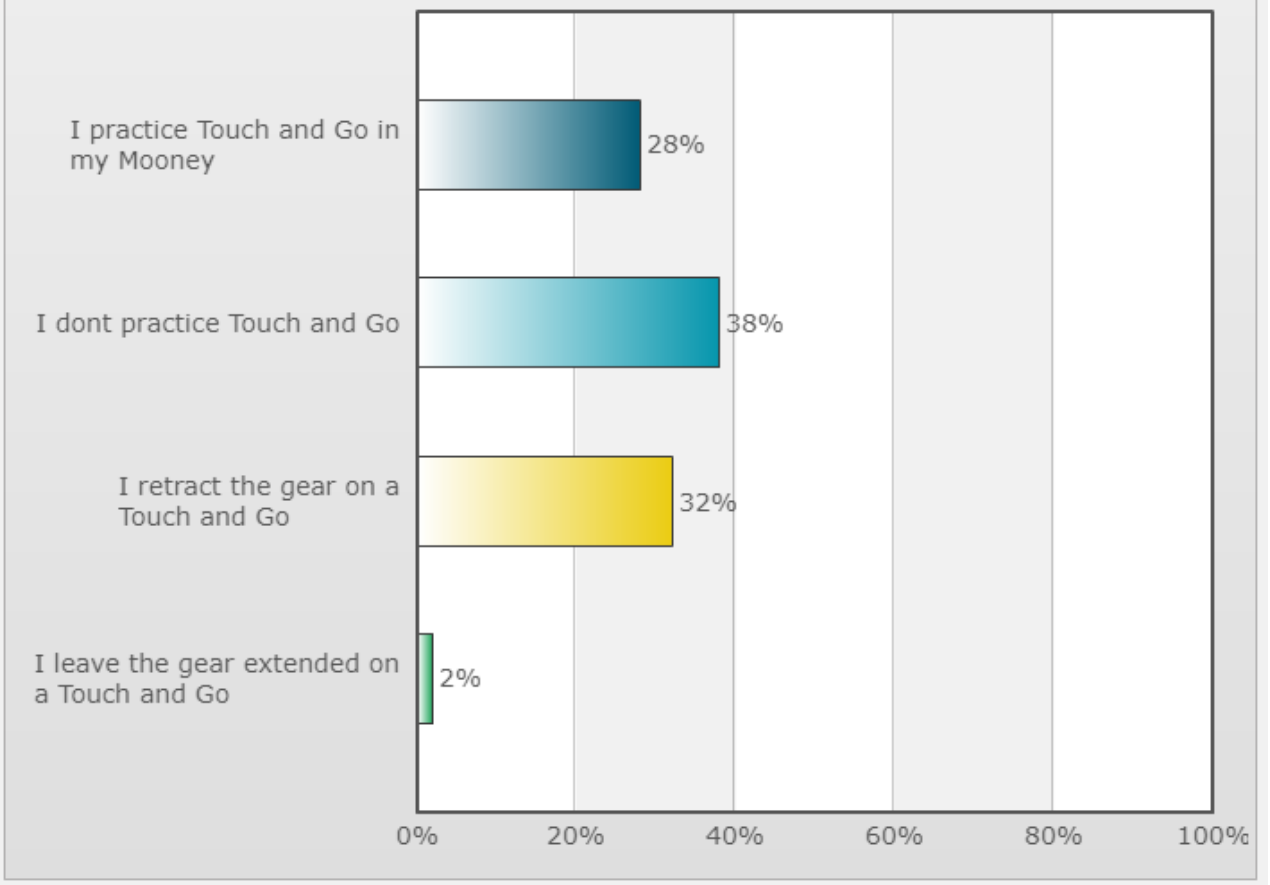
We regularly fly into San Jose International (KSJC) to visit our grandkids. The tower folks seem to remember us and treat us extra special. A few months ago, while our Eagle was parked, we were jet blasted on the ramp and our Eagle was covered with a small particle grit-like dirt. Everything was covered. I did not have a hose, so I tried to wipe off the plexiglass windscreen by lightly brushing it with microfiber. When I was done, there were swirls of small scratches. My heart sank.

Fortunately, I bumped into Chuck R in Sunriver and he recommended Novus #2. He said it removed all the scratches on his 1946 Ercoupe. So, I ordered it from Amazon. Literally 15 minutes after receiving it, I tried it on my Eagle. It is great stuff. Not only did it remove all those scratches and swirls, but the windscreen is almost transparent. Not bad for a 20-year-old windscreen. I heartily recommend Novus #2. To read about it and order, CLICK HERE.

Regarding Touch and Go,

Poll created by Phil Corman on 02/14/2020

Poll Results



Next month's poll: "My Thoughts on Annuals" **CLICK HERE** to vote.

Letters to the EDITOR

Editor@themooneyflyer.com

Re: New Transponder? Crackling/Popping in Your Headset? by Richard Brown

The antenna is electromagnetically shielded from the radios by the metallic fuselage and other structure. Moving the antenna aft a few feet will do nothing to reduce interference because of the shielding by the fuselage. The likely cause of the interference heard over the headset was leakage from the crimped coaxial cable to RF connector interface. This will induce RF currents on the outside of the coaxial cable shield and this RF energy will radiate inside the fuselage and cabin. I suspect this was the original cable with over 50 years of service. Replacing the cable with new RG400 cable significantly reduced the leakage from the cable-connector interface. I experienced a similar interference issue in one of my VHF radios when flying within a few miles of our local high-power commercial FM radio transmitters. The use of notch filters made no difference. Only when I swapped out the old coaxial cables with new RG400 cables did the interference vanish.
Gary M

Thank you for an excellent publication. I've been a subscriber since I purchased my M20C four years ago. This past week I experienced my first "Mooney Bounce Landing", (multiple touchdowns, nosewheel first). It was an ugly experience. Can you please explain the aerodynamic forces that cause the nose wheel to porpoise? Despite back elevator after the first impact the aircraft continued to touch down nose first. Going around did occur to me, but it seemed rather risky and I wasn't sure I had flying speed. I am very fortunate as I bounced three times without a prop strike. I do not want to explore this flight regime again.
Thanks, Ron B
Editor Note: *This happens to more Mooney pilots than you think. The best response for new-to-Mooney pilots is: Perform a Go-Around after the first bounce; definitely after the second. A third bounce almost always results in a very costly prop strike. A second response is to add a little power, while keeping a landing attitude and kill the power once on the runway. We had a great conversation and both Ron and I learned from each other.*

It was great meeting [Phil] in Sunriver. As I mentioned, I really enjoy reading the info on "The Mooney Flyer". I learn a lot! Safe flying and keep in touch.
Craig H

I have a M20K with two alternators. The alternator switch is split and controls Alt 1 and Alt 2. Recently, one of the switches broke. My local MCC's Parts Specialist contacted Mooney. We learned that they did not have any in stock, but could order a part, which would arrive in 12 weeks. The Parts Specialist searched his other usual sources for a new or used switch with no luck. Frustrated, I remembered that themooneyflyer.com has an extensive Parts Network page, so I gave that a try. I was able to find two used switches. Thanks to The Mooney Flyer, my switch will be in my hands tomorrow - not in 12 weeks. What a great resource you are to the Mooney Community.
James D

Incidents That Are Easy to Avoid

Most accidents or incidents are avoidable. Sure, some are not so easy, such as the sudden engine failure that was not preceded by warning signs. We are going to cover some incidents that are somewhat easy to avoid. Each of these incidents came from our readers' experiences. They are not academic.

Fuel Starvation

This is so avoidable that it should never occur. However, it does occur and more frequently than we want to admit. If a pilot experiences compete fuel starvation, he or she is faced with a forced landing, probably off field. This should never happen unless 1) There is a failed fuel pump, or 2) fuel was leaking enroute.

Solution: Never, never, never depart without ensuring that you have an adequate fuel reserve. Just follow the FAR guidelines:

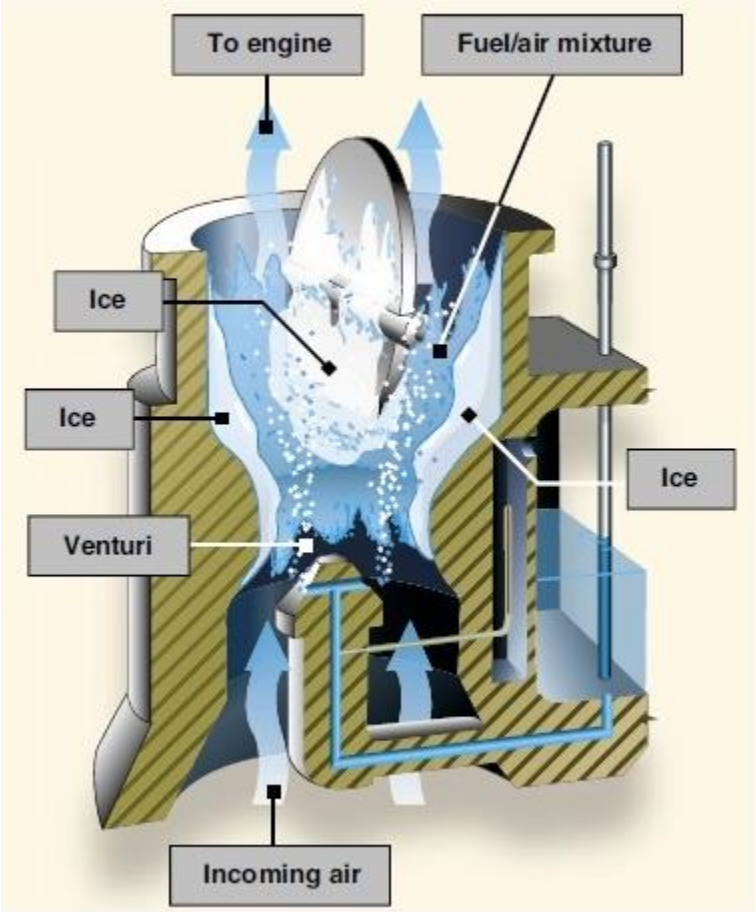
> **§ 91.151 Fuel requirements for flight in VFR conditions.**
>
> **(a)** No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed -
>
> **(1)** During the day, to fly after that for at least 30 minutes; or
>
> **(2)** At night, to fly after that for at least 45 minutes.

In some situations, the FAR reserves may not be adequate and you should carry extra fuel reserves. A few good examples are marginal weather, or unanticipated stronger headwinds. If you are enroute, land and add fuel. See how easy it is to avoid fuel exhaustion?

If you inadvertently run a tank dry, flip tanks, and refer to your POH for use of the auxiliary fuel pump to get things restarted.

Carb Heat

This is another oops moment and can be easily be avoided. Carburetor Icing is not terribly common and if you have been flying airplanes without a carb, you might not recognize a rough engine caused by icing.

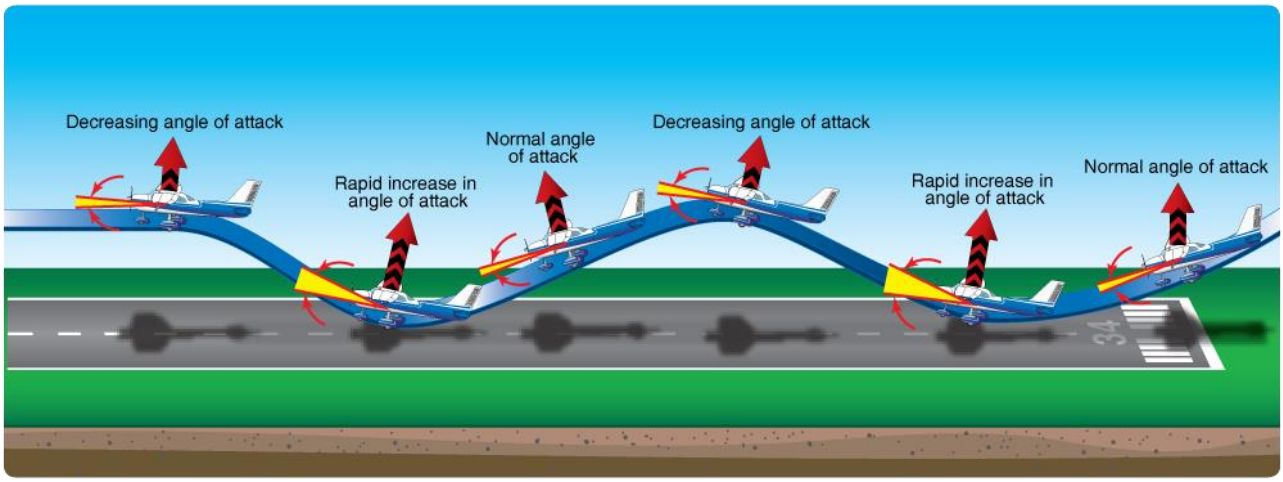


Solution: A rough engine response includes applying full Carb Heat. Expect a momentary increase in the roughness as the ice melts, followed by a smooth running engine. Other causes could be a failing spark plug or magneto, but an easy response is to quickly check icing. We have had two readers that have experienced emergency landings due to a very rough engine, only to realize that it was caused by icing. Expect the unexpected. In both situations, the pilots had significant flight hours. It can happen to anyone.

Alternate Air

Flying along at night in IFR and encountering a little ice buildup, the PIC had a sudden onset of engine roughness. He immediately contacted the Center controller and dialed in the nearest airport. It was going to be close, depending on the winds aloft. He glided downward and as he broke out of the clouds, he realized that he would not make the airport. He landed on a high school football field surrounded by somewhat inhospitable terrain. His K incurred extensive damage. He later realized that his air filter had “iced up” and an easy solution would have been simply pulling/activating the Alternate Air. Note: The Alternate Air is supposed to activate automatically when icing is sensed. That “supposed to” is not backed by a money back guarantee, so be on the alert.

A Porpoised Landing



Transitioning to Mooneys is straightforward, but landing them requires some time. To feel 100% comfortable landing, most Mooney pilots need 25 to 50 hours. Failure to compensate for a hard landing can lead to a porpoise, which ends in a prop strike, engine teardown, and lots of anguish.

To avoid a porpoise, ensure that all your approaches are stable. You accomplish this with a 3° glide path approach with about 400 – 500-fpm descent while maintaining $1.3V_{so}$. Remember V_{so} lowers as your weight lowers. Multiplying your groundspeed by 5, will give you a good descent rate. For example, an 80 knot groundspeed would require a 400-fpm descent when on a 3° glide slope. With my Mooney Eagle, I reduce my approach speed by about 3-4kts for every 300 pounds under Gross Weight. Coming in faster and not flaring with the stall horn increases your chances of a bounce and porpoise.

The bounce solution for a new Mooney pilot is to Go-Around. Practice this with a CFI immediately upon getting your new Mooney. Going around in a Mooney takes a little more skill, as you may have to trim the nose down, dump some flaps, add power gently towards "full", and retract the gear. Hence the CFI upfront.

After the Go-Around becomes second nature to you, you might consider adding a half turn of power after the first bounce. Keep the nose slightly up in landing configuration. The Mooney will settle back gently down to the runway, and then kill that slight power.

Heat Management and Cold Management

Let's start with heat management. Many of our Mooneys like to run hot, especially during climb out. My CHTs like to exceed 380° on a warm day. On Lycomings, you can go a little higher, perhaps 400°. Here's how to easily avoid high CHTs:

- Enrichen the mixture
- Flatten your climb to get more cooling air inside the cowling
- Open cowl flaps, if not already open
- Reduce the RPM a bit. This seems to cool my engine.

If you are regularly operating in hot climates, consider a thicker oil; perhaps not a multi-viscosity.

Cold Management

In cold weather, preheat your engine. If you do not have an engine heater, consider installing one. I have a Tanis heater for my cylinders and the engine sump. Turn it on 30 minutes before engine start. This thins the oil and saves your starter. It usually starts as if it's a nice spring day.
After the engine starts, bring it quickly to low idle as the first 15-20 seconds on a cold engine produces an amazingly high level of unnecessary wear. Remain at idle power until the engine temperature starts coming up to operating temps.

Engine Failures

Sticky valves can cause an engine failure, but you might be able to address the problem(s) before the prop "stands at attention".

Early Warning Signs

1. If your engine runs rough after starting, you are most likely suffering what many of us refer to as Morning Sickness. It is very often an indication of one or more of your valves sticking. As the engine warms, they free up. The solution is easy. Check your compressions and do a Borescope. A compression test and a borescope exam will not discover an exhaust valve sticking in a Lycoming engine. For that you need to do what is known as "the rope trick", followed by a wobble test. It involves removing the plugs, filling the cylinder with rope through one of the plug holes, and bringing the piston up to press the rope against the valves to hold them in place. You then remove the keeper and the exhaust valve spring. Turn the prop to lower the exhaust valve part way down into the cylinder and "wobble" the valve stem in the guide while measuring the amount of play at the end using a dial gauge. Lycoming shows how to do it and how to make the holder for the dial gauge. All of this is described in Lycoming SB-388C.

2. If you put your Engine Monitor into Normalized mode, this will show all your EGTS as flat. Watch them fluctuate during cruise. If they oscillate up and down on any valve, that could be a sign of a sticky valve. This is an easy check and can help you avoid a "not so easy" off airport landing.

A Derecho

A **Derecho**, (Spanish, meaning "straight"), is a widespread, long-lived, straight-line windstorm that is associated with a fast-moving group of severe thunderstorms known as a mesoscale convective system. Derechos can cause hurricane-force winds, tornadoes, heavy rains, and flash floods. Unlike hurricanes and tornadoes, derecho winds follow **straight** lines.

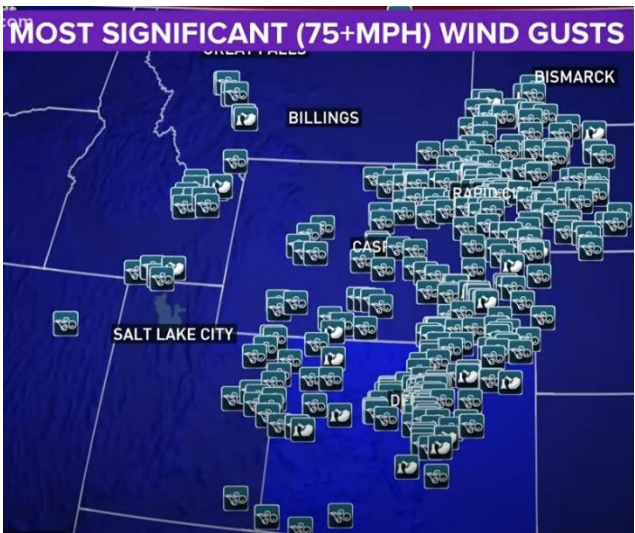
How a Windstorm Qualifies as a Derecho

A derecho must persist for 240 miles and create a damage path of at least 250 miles. Wind gusts must be at least 58 MPH for most of that 240-mile length. It also must have several, well separated, 75 MPH gusts.

Derecho winds can be as strong as those found in a category two hurricane **(96-110 mph)** or an F0 “Gale” Tornado (**40-72 mph).**

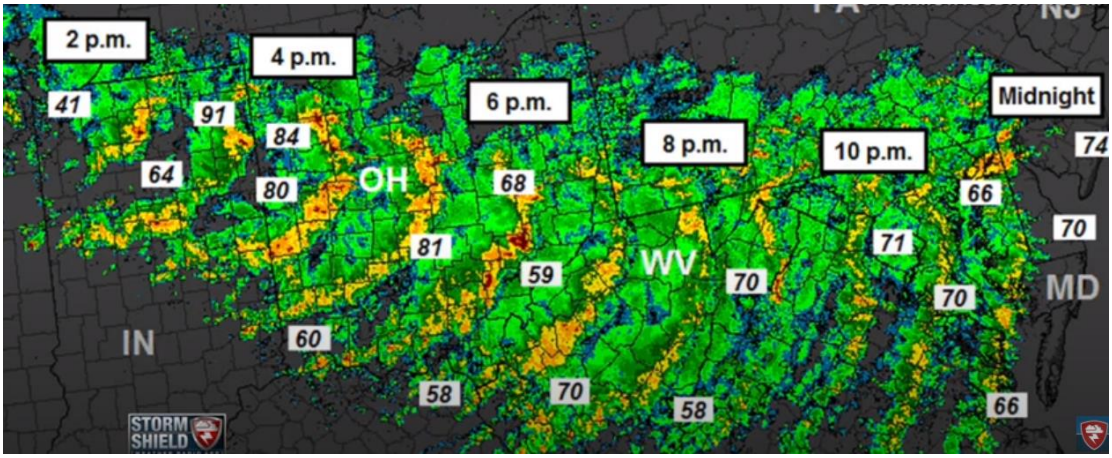
Saturday, June 6, around 9 a.m., the first wind and hail report came from a line of storms in southeast Utah. About 12 hours later, the last wind report was measured in southwest North Dakota. In one day, this derecho covered nearly 900 miles.

This line of storms moved at an average speed of 60 mph, but at times, it was moving between 100 and 120 mph. Moreover, what made it so uncommon is that the derecho crossed over the Continental Divide in Colorado. The Divide typically tears storms apart with its dramatic topography.



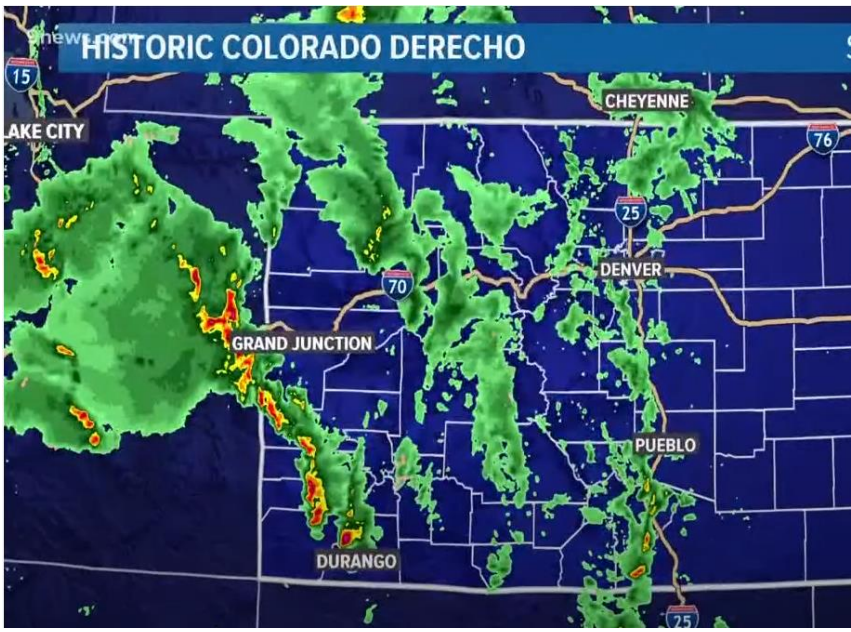
What a Derecho looks like on Radar

A derecho has bow echoes, small and large, spanning across a very large area.



Peak Wind Gusts in Colorado, June 6, 2020

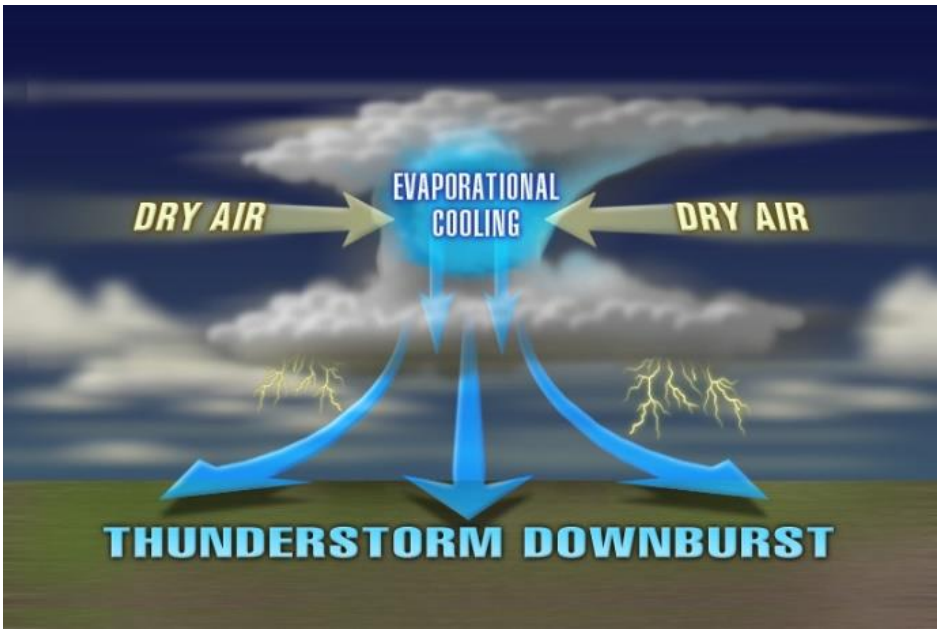
Winter Park Resort: 110 mph
Copper Mountain: 90 mph
Denver International Airport: 78 mph
Commerce City: 73 mph
Broomfield: 71 mph
Morrison: 70 mph
Monument: 61 mph
Dillon: 60 mph
Loveland: 58 mph



Downbursts form the Strong Winds

When the wet air in a thunderstorm meets the drier air surrounding it, the water in the air evaporates. When water evaporates, it cools the air around it. Since the cool air is denser, it rapidly sinks to the ground and creates strong winds.

The downburst can suck more dry air into the storm, making even stronger downbursts or clusters of downbursts. Derechos occur when the conditions are right for downbursts over a wide area.



She Finally Flew the Mooney

by Richard Brown

We have had our plane now for almost 3 ½ years. My lovely wife has probably spent over 200 hours with me in the Mooney in that time, but she has never taken the yoke, not once. I have offered to have her take it in cruise a few times, but she always declines. I am a believer that in the case of people that fly often together, when one is a pilot, that the other should learn some basics about flying and working the radios. In the event that something happens to the pilot, it would be very valuable for the right-seater to be able to talk on the radio, navigate to an airport with a long runway, and controllably put it in on its belly so that everyone can walk away.

There are some groups out there that offer training for the right-seater. She has said she would sign up and take the "Right Seat Ready" class, but we have not been able to schedule one yet.

So, how did my lovely wife end up taking the yoke for the first time, and what did she think about it? Well, sit back for an entertaining story, and I'll try to make it descriptive enough, but not too descriptive.

On December 5th, 2019 we flew to Arizona to visit family. There are no restrooms in the plane, and I try to plan my liquid intake accordingly. So far, it has always worked out. (You probably see where this is heading.)

I had eggs for breakfast instead of my usual favorite, Frosted Mini Wheats. (I did not want to be drinking the milk before a two-and-a-half-hour flight). We got ready, headed to the airport, I did the pre-flight. We were soon on our way, climbing into the morning sun. It was a mostly uneventful, smooth flight.

Around the time we were flying over Blythe, about the halfway point, I started to get the feeling that if I was in the car on a trip I would be calculating the distance/time to the next Rest Stop. I looked at the estimated time remaining on the flight and after considering the "internal signals" and a couple handfuls of *Cheeze-Its*, I thought I might make it the rest of the way.

Just West of the Estrella Mountains, I trimmed us out in a nice smooth descent, but by this time, I knew I was probably going to be in trouble. In addition to the constantly increasing pressure in my bladder, I knew from my flight planning that I was looking at a long taxi after landing. Mesa Gateway (KIWA) was formerly Williams Air Force Base. It has three parallel runways which were perfect for training. "Back in the day", when my dad was a T-38 instructor pilot there, it allowed them to simultaneously work the T-37's and T-38's. For our arrival 12R/30L, the closest runway to the FBO was NOTAMed closed because it was being used as a taxiway so they could work on taxiway Bravo.

I looked at my wife and said, “I need to use the restroom.” She looked back and while her face said, “Okayyyy…..” she responded with, “Do you want to stop at Chandler?”

We have made several trips to Chandler prior to my parents move closer to Mesa Gateway. However, Chandler is only about nine miles closer than Mesa Gateway – hardly enough to make a difference. On top of that, what self-respecting pilot wants to make an early stop, nine miles from their destination, when the plane is flying great and you have more than enough fuel?

“I don’t think that will make a difference”, I said.

She responded, “So what are you going to do?”

I noticed that the Kirkland water bottle in her hands only had a couple of swallows left in it. I said, “I’m going to have you finish that water and then fly the plane while I use the bottle.”

There was a little protest about flying the plane, but I convinced her that it was a “necessity.” Had it been a big Gatorade bottle, it could possibly have been a one handed operation, but we’ll just say that the size of the opening on a Kirkland water bottle requires two hands to make sure everything ends up in the bottle.

I reasoned that this would be no big deal for her because we were trimmed out in a nice straight-ahead descent. All she needed to do was have a light hand on the yoke to make sure it didn’t drift into a shallow bank while I was occupied.

My lovely wife, still under slight protest, took the yoke and I went about my business. There was a little drifting side to side, and the nicely trimmed out descent began to level off. We were climbing a little, but in short order, my situation was relieved, and then I relieved her of her pilot duties. So, what did she think of her first experience? Well, she let me know later that the only other time she has been that scared was the first time she went through childbirth.

I was beyond grateful because without her, I never would have made it to Gateway. The pattern at KIWA was full and we had to circle above the pattern and then fly another 360 before we could enter an extended downwind leg for runway 12C. As we expected, we had a long taxi to the FBO.

When we landed, we saw three F-18’s holding short of the runway. As we taxied in, we were able to watch them take off. What a treat!

It was a successful flight. There were no accidents, (outside or inside the plane), and my wife actually flew it for a moment!

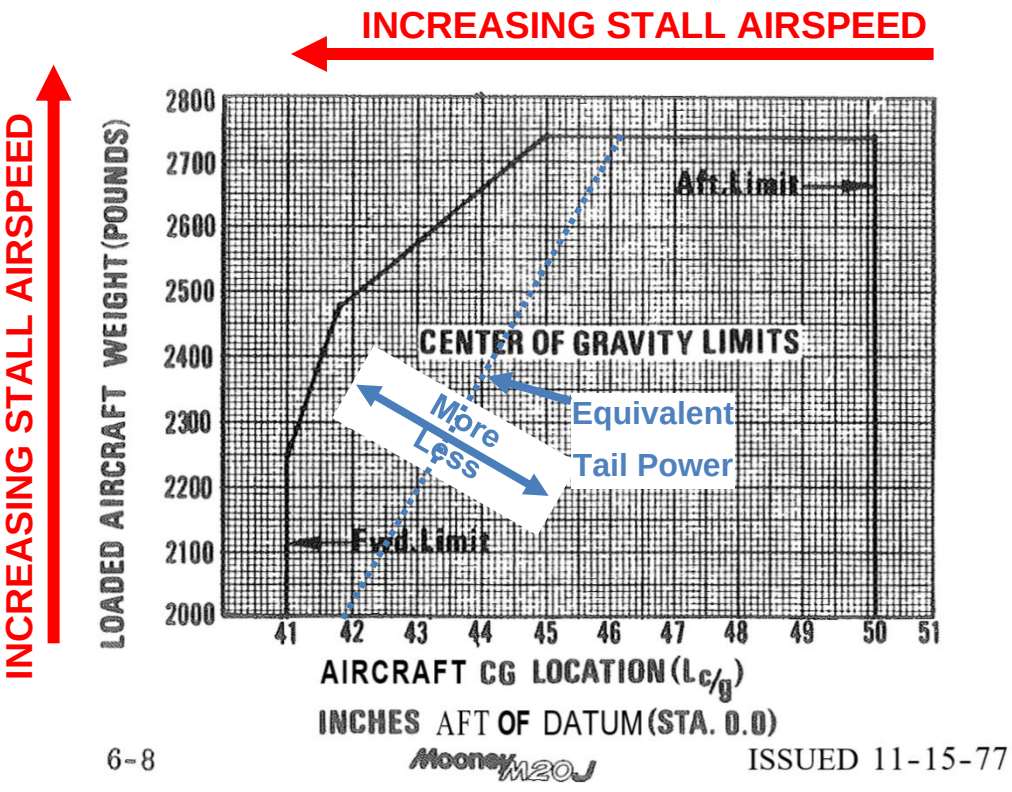
Under the Christmas tree, three weeks later, was a TravelJohn three pack!"

"BEEEEEEEEEEEEEEEEEP!" Stall, Stall, Stall

Third in the series, by Ron Blum

What is a stall? It seems like a simple question with a straightforward answer, right? The answer depends on what context the question is asked and who is responding to the question. For instance, all airplanes don't stall the same way, and many airplanes stall differently depending on gross weight and center of gravity (CG). Other airplanes don't stall at all, (depending on one's definition of stall). Let's start by looking at an Ercoupe which, eventually, became the Mooney M-10 "Cadet" … sort of.

The Ercoupe in its normal, approved, operating envelope doesn't aerodynamically stall. The tail power (elevator) is not powerful enough to rotate the wing to its stall angle of attack (AOA). The Ercoupe is what aerodynamicists call "tail power limited". Most general aviation (GA) airplanes are also tail power limited at higher gross weights and forward CGs. Although, by another definition of stall, the Ercoupe does stall, because a stall may be defined as the slowest airspeed in which the aircraft can maintain level flight. The Ercoupe pilot's operating handbook (POH) does list stall airspeeds which are the speeds at which the elevator is on the up stop, and the airplane begins to descend … or "mush". Yes, Mooney M20 aircraft do this too – in some conditions/configurations. More on that a little later.



Let's take a quick, generic look at how tail power, weight and CG affect stall airspeed, (Reference the figure on the previous page). As one can see from the red arrows, stall airspeed goes up with

weight and/or as the CG moves forward. Points along the diagonal blue line show where the tail is producing the same aircraft pitching moment. More tail power is required as weight increases, or the CG moves forward (left of the blue line). Less tail power is required as weight decreases, or the CG moves aft (right of the blue line).

The M20 series aircraft have a lot of tail power because both the horizontal stabilizer (trim) and the elevator can be moved to provide increased tail power or aircraft pitching moment. All M20 models have enough tail power to rotate the wing to its stall AOA in some configurations. Tails should never stall, because that's when bad things happen. If one wants to see an M20 "mush" and not aerodynamically stall, trim for a higher speed (1.5Vs?). Now, reduce power and try to maintain altitude using only the elevator. The airplane will eventually lose altitude with the elevator on the up stop.

Most pilots think of stall as what an aerodynamicist would define as an aerodynamic stall. In this case, the wing cannot produce enough lift to sustain the weight of the airplane, (actually the weight times the load factor). AOA continues past AOA for maximum lift (C_{Lmax}), and the nose pitches down, known as a stall "break". Note at this point, the wing is still producing a lot of lift - ~80% maximum … or more. Yet even aerodynamic stalls have two definitions: 1G and V_{min}. The two airspeeds are different.

$$L = \tfrac{1}{2} * \rho * V^2 * S * C_L$$

1G stall is defined by the equation above, which is familiar to aerodynamicists and most pilots. Total lift is proportional to air density, speed, wing area and wing coefficient of lift. Maximum C_L occurs just before the nose drops, (stall "break"). Lastly, and how Al Mooney arrived at the POH numbers, when the airplane is aerodynamically stalled, it continues to slow (slightly) due to inertia and then speeds up again – just a little. The number in the POH is what certification calls $V_{S\text{-}MIN}$ or the slowest airspeed during the stall maneuver. $V_{S\text{-}MIN}$ will be about 6% less than $V_{S\text{-}1G}$. For the most part, $V_{S\text{-}MIN}$ is used in Part 23 airplanes (GA), and $V_{S\text{-}1G}$ is used in Part 25 airplanes (airliners).

The next article will be on how we tailor stall characteristics, both during initial design and during Flight Test after the airplane is built. Until then, I hope your attitude is always Blue on Top.

I would appreciate suggestions on where to take these articles and/or answer any questions that you may have. Email me at solutions@blueontop.com.

Blue on Top

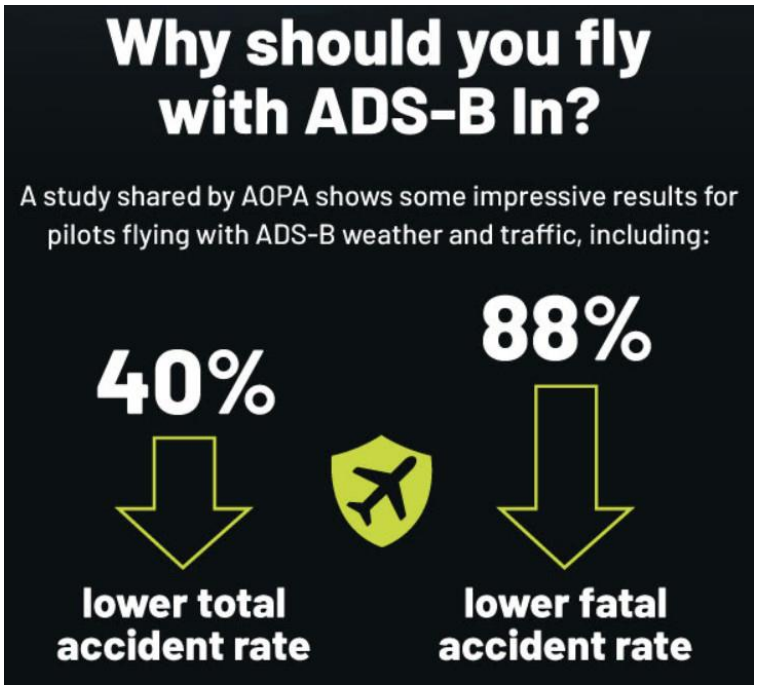
Ron Blum is an aeronautical/astronautical engineer with a 35+ year career managing general aviation Flight Test and Aerodynamics departments from shore to shore and border to border. He was Chief Engineer of the Mooney M-10 in Chino, CA. In 2018, he founded Blue on Top LLC, an Aviation engineering and management consulting firm. Ron provides FAA flight analyst DER services and is a keynote speaker.

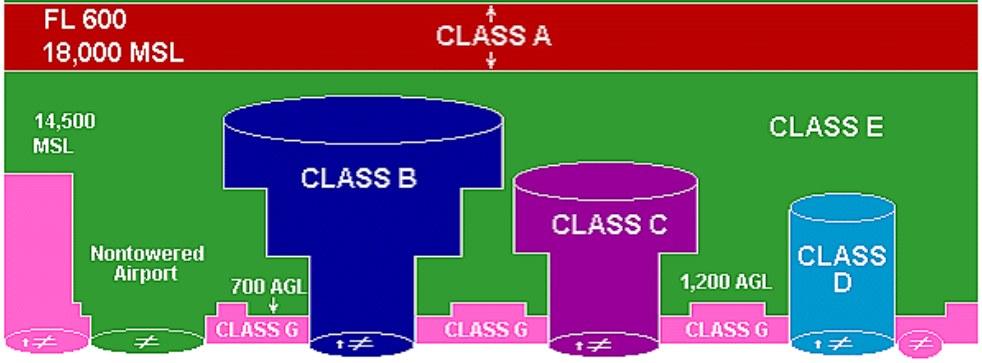
Fasten Your Seatbelt *and* Shoulder Harness!

Before July 18, 1978, GA aircraft were only required to have a lap belt restraint system for each seat. See FAR 91.205(b)(14). In 2013, a 1960 Mooney M20A with single seat belt restraints, was forced to make an off-airport landing in rough terrain 3miles South East of Wikieup, Arizona. The accident took the life of the front seat passenger, (the pilot's wife). If the Mooney had been equipped with shoulder harnesses, would the passenger have survived the accident? We don't know, but the FAA contends that, ***"Using shoulder belts in small aircraft would reduce major injuries by 88% and fatalities by 20%."***

Adding shoulder belts can give you the best chance of sustaining minimal or no injury in many accident scenarios. Some of these systems also integrate inertia reels and rotary buckles with quick-disconnect release mechanisms. It's fairly common to have this kind of equipment installed via a Supplemental Type Certificate (STC) for many older GA aircraft with single-belt restraints.

WHY NOT? Just do it.





Quick Quiz

Class A

You are ADS-B out equipped with uAvionix's tailBeacon (UAT). Can you file and fly an IFR flight at Flight Level 190?

Answer: *No. The tailBeacon is a Universal Access Transceiver (UAT). To fly in Class A airspace, you must have a 1090 Extended Squitter ADS-B transponder and an IFR clearance.*

Class B

What weather and equipment do you need to enter Class B?

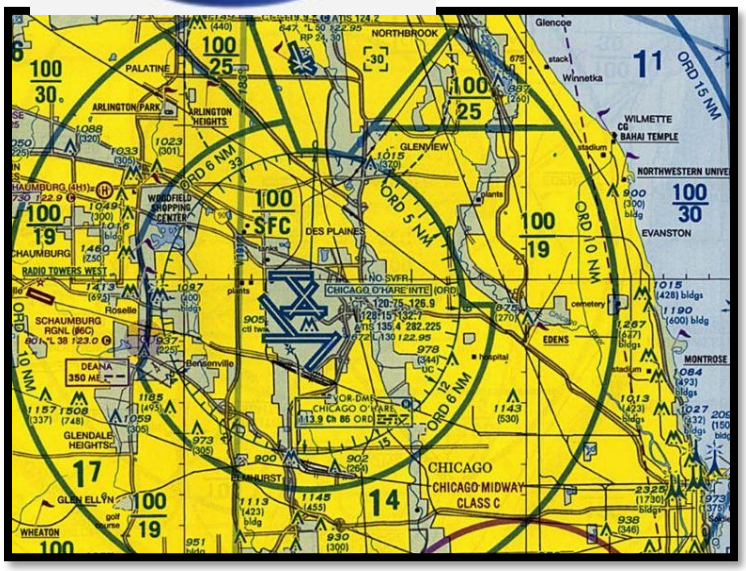
Answer: *3 miles visibility, clear of clouds. You need to be ADS-B Out equipped inside the 30 nm mode C veil. ADS-B Out: Extended Squitter Transponder or a Universal Access Transceiver (UAT).*

What are the magic words you must hear before entering Class B, VFR?

Answer: *"Cleared into class B".*

How high does Class B Extend?

Answer: *Class B tops vary from 7,000 feet MSL at some coastal airports, to Denver's 12,000 feet MSL. The average is 10,000 feet MSL. Applicable altitudes are depicted on Sectionals and TACs.*



What Traffic Separation Service can I expect?

Answer: *Separation from IFR and VFR aircraft.*

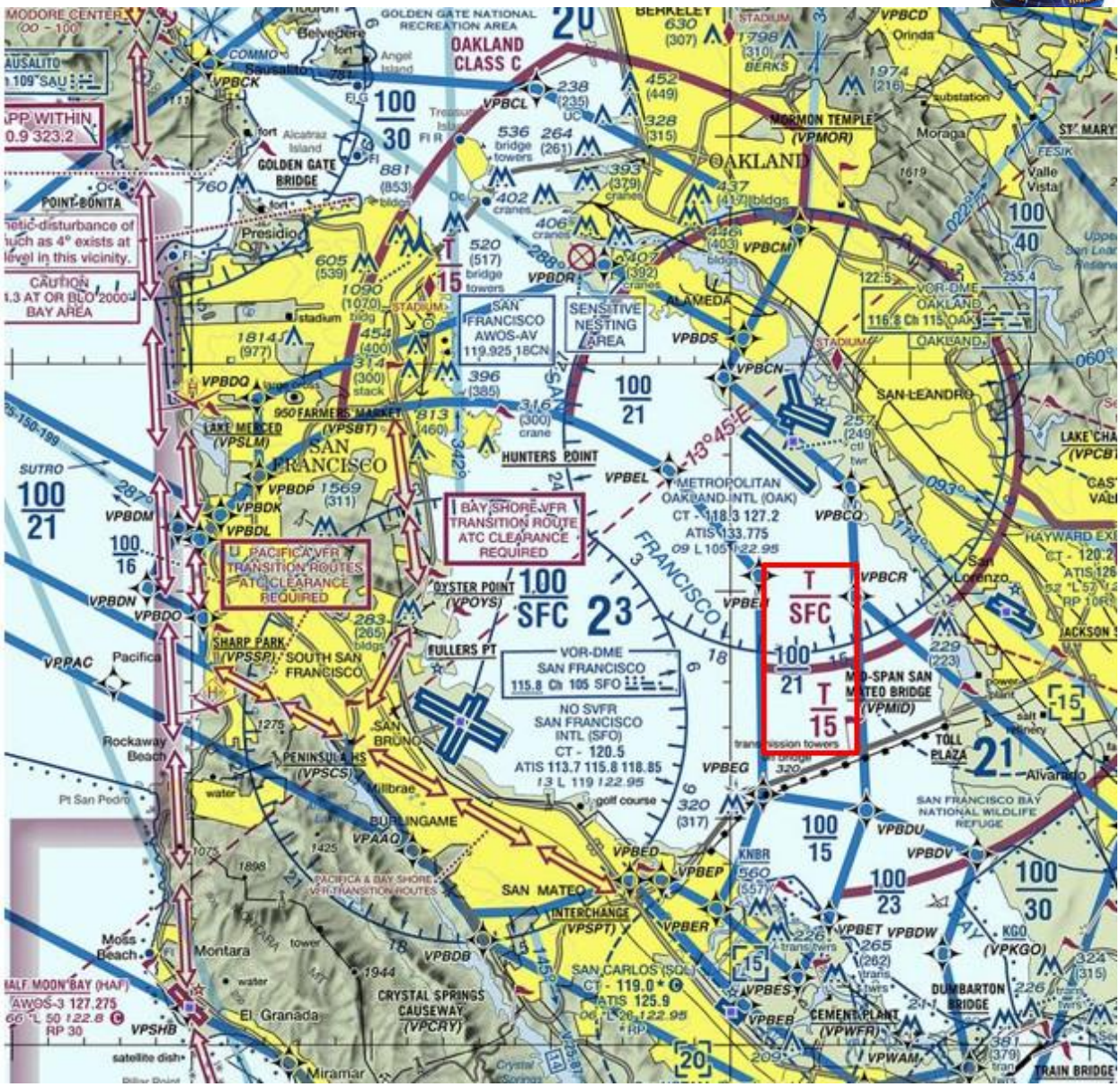
Can I fly Special VFR in Class B?

Answer: *Yes, but some Class B airspaces prohibit Special VFR flights.*

What's the Speed Limit?

Answer: *No person may operate an aircraft beneath Class B airspace, or in a VFR corridor through Class B, at an indicated airspeed of more than 200 knots (230 mph).*

It's complicated man, but it's also the San Francisco area, where you would expect B, C and D airspaces to peacefully co-exist.



What does the "T" in 15 and SFC, (highlighted above in a red box), indicate?

Answer: *Oakland's Class C can only extend vertically to the BASE of the San Francisco Class B airspace (the "T"), which happens to start at 2,100 feet MSL.*

See the Class D section to continue the discussion on peaceful coexistence.

FAASafety.gov offers an online course: ***"A Direct Approach to Class B VFR Operations".*** *This course may qualify for Wings Credit.*

Class C

Do I need to be ADS-B Out equipped, (either a 1090 ES Transponder or a UAT), to enter Class C Airspace?

Answer: *Yes. It's required in and above Class C airspace.*

Must I hear, "Cleared to enter Class C airspace"?

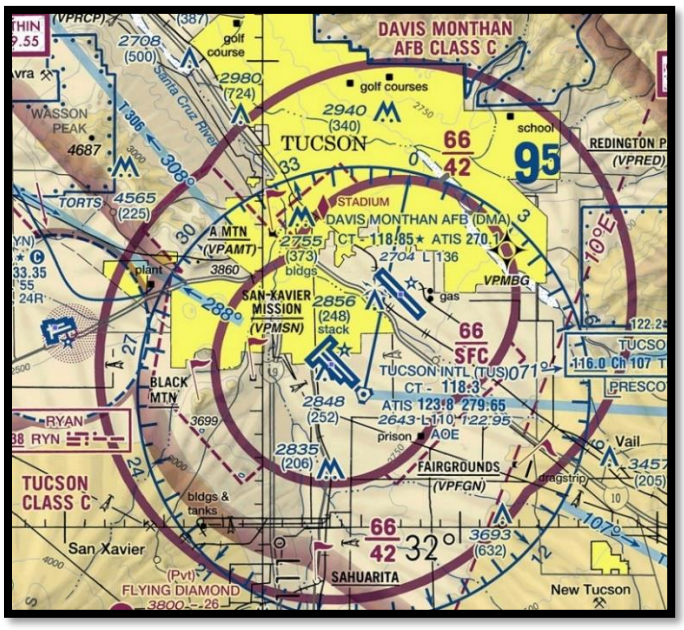
Answer: *No. But when you establish contact with ATC (approach control), the controller must acknowledge you* ***by using your call sign.*** *For instance, "Mooney 7132 Victor, standby," is an acknowledgement. "Aircraft calling Tucson approach, standby," is NOT an acknowledgement!*

What weather is required to fly VFR in Class C?

Answer: *3 miles visibility and cloud clearance of 500 feet below, 1000 feet above, and 2,000 feet horizontally.*

What is the Class C Outer Area?

Answer: *It's a 20 nm radius, but it's not depicted on the chart, and it's not part of Class C. However, participating VFR aircraft in that area will receive Class C service from ATC. This is a good place to initiate contact with approach control.*



What type of Traffic Separation Service can I expect?

Answer: *VFR aircraft are separated from IFR aircraft in Class C with traffic advisories.*

Can I fly Special VFR in Class C?

Answer: *Yes.*

What is the Class C Speed Limit?

Answer: *No person may operate an aircraft at an indicated airspeed of more than* ***200 knots*** *(230 mph) at or below 2,500 feet above the surface, within 4 nautical miles of the primary Class C or Class D airport.*

Class D

How can I obtain permission to enter Class D Airspace?

Answer: Establish two-way communication with ATC.

What do you mean by "ATC"? Is that the Control Tower?

Answer: Contact the tower before invading their Class D airspace. Also, the Approach controller providing Class C or Class B service can coordinate with any Class D surface areas, or they must issue you specific instructions to avoid the Class D. The Controller's handbook specifies that "*a pilot is not expected to obtain their own clearance through a class C or D while obtaining advisories [flight following].*"

Do I need a Mode C transponder or be equipped with ADS-B Out?

Answer: No.

When a tower is closed, what happens to the Class D airspace?

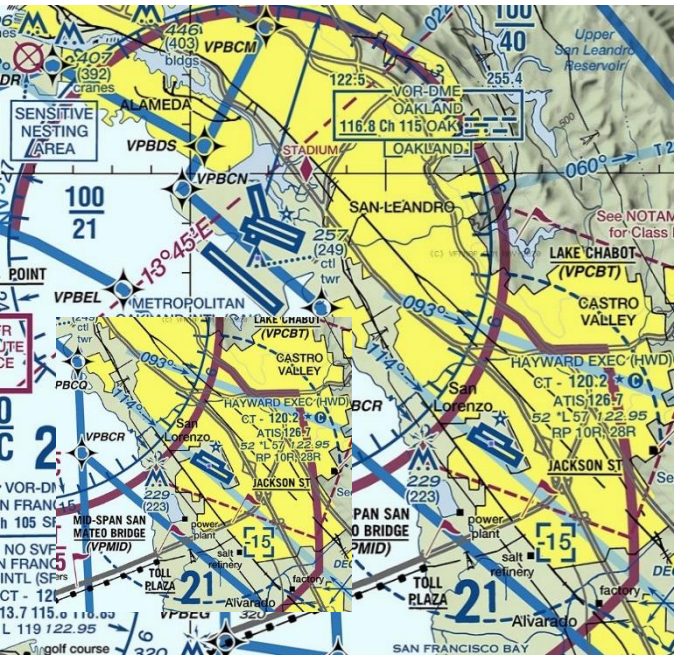
Answer: It becomes either Class E or class G. Check the Chart Supplement (formerly known as the AF/D) for actual airspace reversion.

COMMUNICATIONS: CTAF 120.1 **ATIS** 118.35 **UNICOM** 122.95
PHOENIX RCO 122.6 122.2 (PRESCOTT RADIO)
Ⓡ **LUKE APP/DEP CON** 125.45 (Mon-Thu 1300-0530Z, Fri-Sun 1300-0400Z, clsd holidays.)
Ⓡ **PHOENIX APP/DEP CON** 120.7 (Mon-Thu 0530-1300Z, Fri-Sun 0400-1300Z, clsd holidays.)
GOODYEAR TOWER 120.1 (1300-0400Z) **GND CON** 121.7
AIRSPACE: CLASS D svc 1300-0400Z other times CLASS G

How is the Class D Structured?

Answer: It is generally circular in form with a 5-statute mile radius and generally extends upward to about 2,500 feet AGL. Check the chart for applicable altitudes.

What is the Class D Speed Limit?



Answer: *No person may operate an aircraft at an indicated airspeed of more than 200 knots (230 mph) at or below 2,500 feet above the surface, within 4 nautical miles of a Class D airport.*

What does 15 indicate in the Hayward Executive Class D?

Answer: Class D airspace extends up to **but not including** 1,500 MSL.

Class D airspace generally extends to about 2,500 feet AGL. Why does the Hayward Executive Class D extend to only 1,499' MSL?

Answer: Because the Class C airspace above the Hayward Class D starts at 1,500 feet MSL. C trumps D.

Why is the NW part of the KHWD class D missing?

Answer: *Because it runs into the KOAK Class C airspace, which starts at the surface. C trumps D airspace.*

What kind of weather do you need to fly VFR in Class D?

Answer: 3 miles visibility. The Cloud Clearance required is 500 feet below, 1000 feet above, and 2,000 feet horizontally.

Can I fly Special VFR (SVFR) in Class D?

Answer: *Yes, unless* **"NO SVFR"** is depicted on the chart.

Lawnchair Larry – 38 Years Ago

Lawrence Richard "Larry" Walters' boyhood dream was to fly. He joined the US Air Force but was unable to become a pilot because of his poor eyesight.

On July 2, 1982, his dream came true. Armed with some sandwiches and a pellet gun, Larry strapped himself into his lawnchair to which he had attached 43 helium-filled weather balloons. He planned to float 30 feet above the backyard, where he would enjoy a few hours of flight. To land, Larry planned to pop a few of the balloons with his pellet gun. When the cord anchoring his lawnchair broke, he unexpectedly *streaked* into the LA sky.

He reached an altitude of 16,000 feet (4,877 m) and floated into Los Angeles International's controlled airspace. It dawned on him, as his feet and hands grew numb from the frigid temperatures, that he was not drifting east toward the Mojave Desert, as he expected, but west toward the Pacific Ocean. Determined to land, Larry shot ten or twelve balloons which initiated a rapid descent.

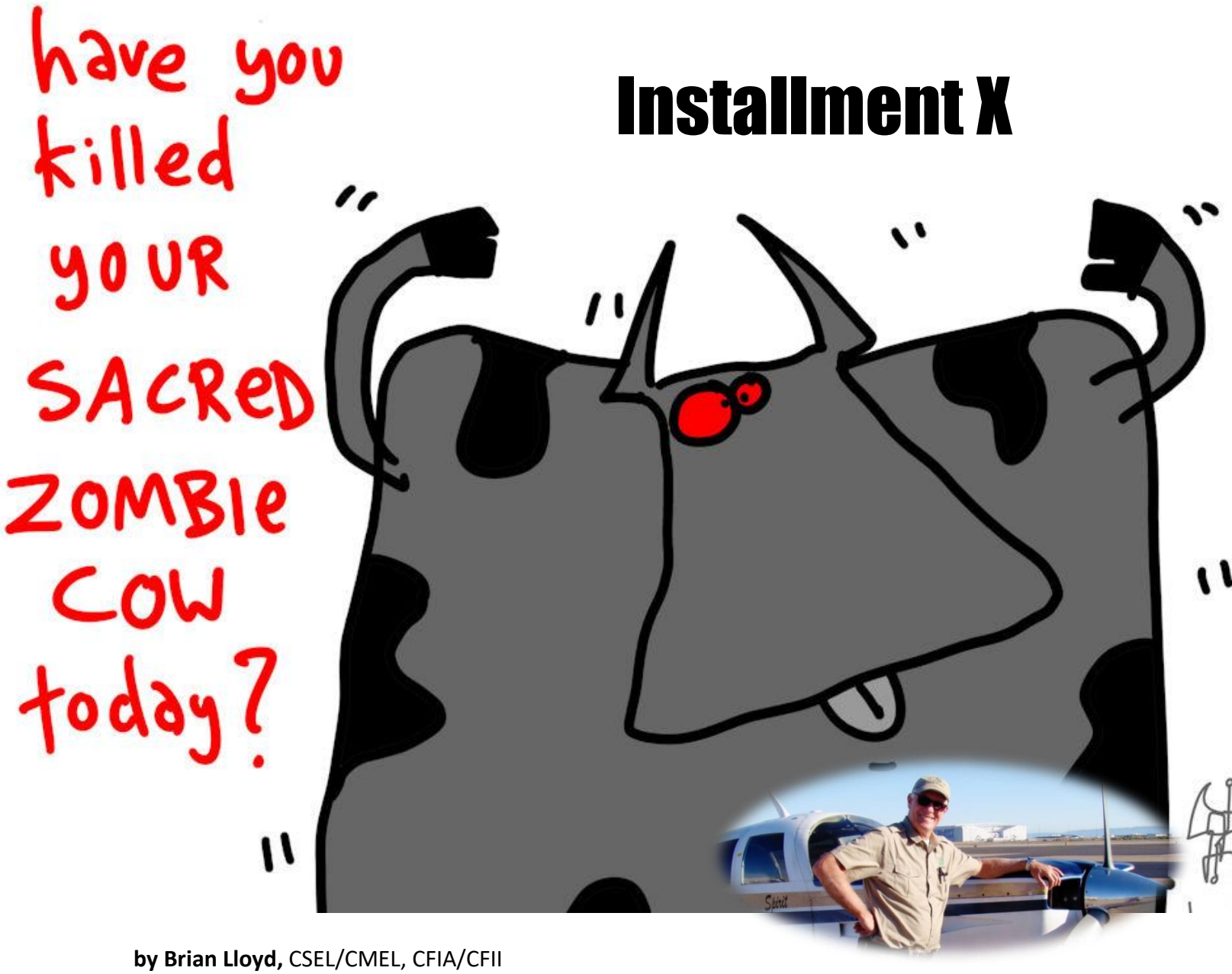
While descending, his tie-down cables caught a power line a few miles Northwest of the Long Beach airport (KLGB). He was able to climb safely to the ground, where he was arrested and handcuffed. An on-scene TV reporter asked him why he had done it. Larry replied nonchalantly, "A man can't just sit around."

The Federal Aviation Administration (FAA) was not amused and Regional Safety Inspector Neal Savoy remarked, "We know he broke some part of the Federal Aviation Act, and as soon as we decide which part it is, a charge will be filed … If he had a pilot's license, we'd suspend that."

Ten days after his flight, Larry appeared on *Late Night with David Letterman*. He was briefly in demand as a motivational speaker and quit his job as a truck driver. Later he could only find sporadic work as a Security Guard.

Larry was awarded the 1993 Darwin Awards title of "At-Risk Survivor". Sadly, October 6, 1993, at the age of 44, Larry Walters hiked into the Angeles Forest and committed suicide.

Installment X



by Brian Lloyd, CSEL/CMEL, CFIA/CFII

Wow, episode 10! I guess I have been submitting articles to The Mooney Flyer for almost of a year. I hope everyone is enjoying my missives. I have decided that, like the NFL and Apple, I should be using Roman Numerals. This is going to be Killing Sacred Cows X.

I suspect that, like most of you, I haven't really been going anywhere. Frankly, my poor Mooney has been gathering dust in the hangar. Fortunately, something came up and I was able to put about three hours on her, but that isn't the one-hour-per-week she really needs. And with other airplanes in the hangar more readily available for just flying around, she unfortunately takes a back seat. I may have to make an unpleasant decision at some point in time. Yeah, it is possible to own too many airplanes.

I think I mentioned earlier that I have two students who were doing their primary training in Mooneys. One was flying an F and the other is flying a C. The one with the F has passed his check-ride in the Mooney and now is the proud holder of a PPSEL certificate.

My other student is still working toward his check-ride. Having done the bulk of his training in a C150 with a STOL kit. The transition to the Mooney wasn't as smooth as it could have been. We had to do a lot of airspeed-control exercises to get him flying the Mooney safely on final. He had a tendency to control climb/descent with elevator and speed with power. Getting low and a bit slow on short final doesn't work if your first reaction is to pull on the yoke. Eventually, he was really good at doing go-arounds. I just kept telling him, "Remember, go-arounds are free. They cost nothing. The only time go-around is NOT an option is when you are out of gas or on fire."

The light bulb finally came on for him after we did the power failure exercise. You should do this too … at altitude, of course. The power-failure exercise really cements, "elevator controls, AoA and hence, airspeed." To do the exercise, put the airplane in a max-performance climb at Vx. Once established in the climb, rapidly pull the throttle to idle. The goal is to keep the airspeed at Vx. This is hard to do. You are going to find that you have to really push the yoke to get the nose to come down fast enough to keep the speed at Vx. This is exactly what you would have to do if the power failed on take-off. If you are high enough and close enough, this is what you have to do to get the airplane turned around for the downwind "impossible turn" landing. A Mooney with a 2-blade prop might be able to make this turn safely if you pull the prop to coarse-pitch (low RPM). Don't take my word for it though. Be sure to try this with your airplane at altitude first. Personally, I harbor no misconception that I could do the impossible turn with my 3-bladed prop 231. I know where I'm going to go if the engine quits shortly after take off and it's not back to the runway.

Speaking of things we should be practicing, I want to reemphasize the need for abort-points on take-off and landing. Two airplanes, one a Mooney, nearly came to a bad end the other day as a result of flukey winds and pilots who clearly were not prepared.

The first airplane was a Cirrus. In the time it took him to taxi out and run up, a dry cold-front had passed through and the wind had shifted to a tailwind on the normal runway. Now, he was taking off with a 10kt tail wind. I was puttering around outside and heard the engine wind up for takeoff. I wasn't paying any real attention until he passed me at midfield and was still on the ground. Just before he went out of sight around the corner of my hangar, he hit the brakes hard and I saw puffs of white smoke from both mains, followed by a screech.

However, he didn't stay on the brakes and the engine remained at take-off power. I ran out to the runway to watch his departure. He cleared the trees beyond the end of the runway by only a couple of feet at best. Definitely a close one. To help him make a go no-go decision, he needed an abort decision point on the runway. He also needed to look at the windsock that was in front of him.

As I am watching the Cirrus stagger away, I saw a Mooney entering a 45 to downwind for the same runway. He would be landing with a tailwind on a 3000' downhill runway. I ran inside to grab my handheld radio. As the Mooney was turning base, I said, "Mooney on base at Kestrel, the wind has shifted in favor of 30. You might want to check." No answer. The Mooney landed… or rather tried to land. As he went past me at midfield, he tried to force the plane on the ground. (My hangar is right at midfield and is what I use for my abort point when landing. If I'm not on the ground at midpoint, I go around!

Anyway, I rounded the corner of my hangar to see the Mooney hopping and bouncing. Each touchdown was accompanied by the sound of a tortured Seal and white smoke. Fortunately, he managed to get it stopped. I bet he'll need new tires.

I just don't get it! What is so difficult about making a go/no-go decision for take-off and landing ahead of time and then sticking to it? Put it in your check list. It should be something simple like: **Abort Point – DETERMINED**

In my 231, I have run into both of these scenarios. I remember coming in, being on speed, but realizing that the airplane just wasn't touching down. If touch down with a light airplane before my abort point, there's no question; Throttle in, go-around. Glancing at the wind sock at the departure end of the runway completes the story, because the wind had shifted and I was landing with a tailwind. This turns out to be a reminder that when landing, a tailwind hurts more than a headwind helps.

And then there is a take-off. This scenario involves me, two friends, my 231, a warm day, max gross weight, and an uphill takeoff. I knew it was marginal, but the book indicated that it should be OK. I briefed my passengers, one who is a pilot and in the right seat, "The abort point is that hangar on the right with the blue pickup truck. If we are not off the ground and climbing by that point, I will pull power to idle and brake to a stop." No question about that decision. It is made.

I taxied onto the runway, set the brakes, increased the power, making sure I had the desired MAP, and released the brakes. Acceleration was sluggish. I was not happy with how slow the IAS was increasing. I passed my abort point and the wheels were still on the ground. I announced, "Aborting take off." I pulled the power to idle and applied the brakes with no squealing. I was able to stop by the end of the runway. I taxied back to my hangar, turned to my passengers and say, "Ok, which one of you fat-butts is getting out?" My pilot friend said that he doesn't really need to go and removed himself from the aircraft. We tried again with no problem getting off by my abort point. It was so easy.

Aha! I am at my sacred cow moment!

You can't trust takeoff and landing performance charts

The AOPA Air Safety Institute (ASI) within the last year made a great little video on landing and take-off performance using a C182, a Bonanza, a perfect day, and a couple of practiced and proficient pilots, to determine the accuracy of take-off and landing performance charts. I have to admit, it was a bit of an eye-opener for me. Here is the link: https://www.youtube.com/watch?v=IMRafSuzkQ8

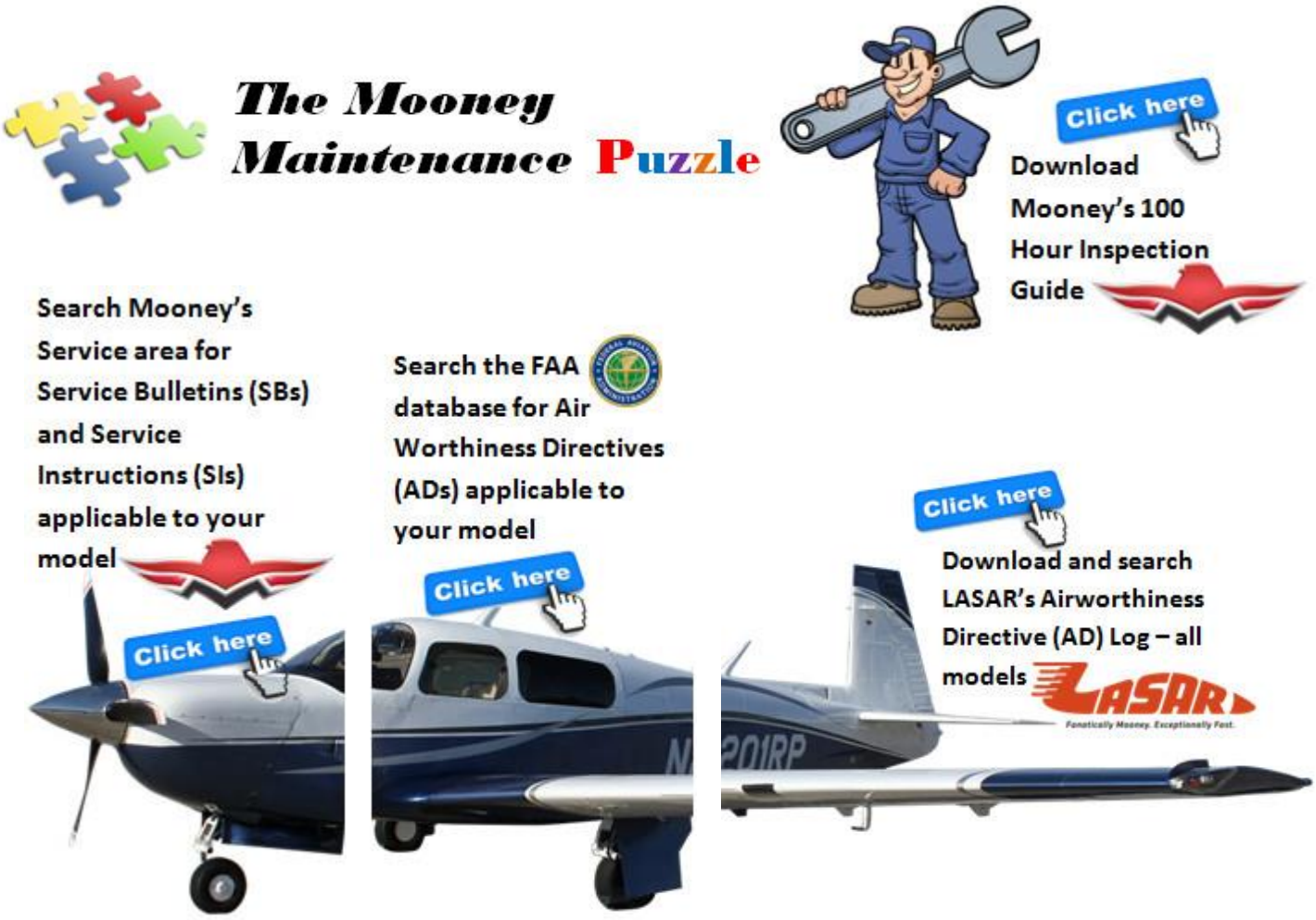
For those of you who don't want to watch a 4 minute video, the bottom line is that on a perfect day, they found the charts to be 30% optimistic. It certainly answered my question as to why my 231 take-off chart had indicated that I could take off, but I had to exercise my abort point. ASI recommends using a 50% increase in take-off and landing numbers. I do believe ASI is correct. That provides a safe margin for those times when we are a bit sloppy with our procedures.

Well, I think my brain is empty of things I want to say right now. Y'all go fly. Warm up that engine oil and exercise your airplane. Don't forget to determine your abort points!

Fly safely. Fly better. Have fun! – Brian

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



Ask the Top Gun

Tom Rouch

Founder of Top Gun Aviation, Stockton, California

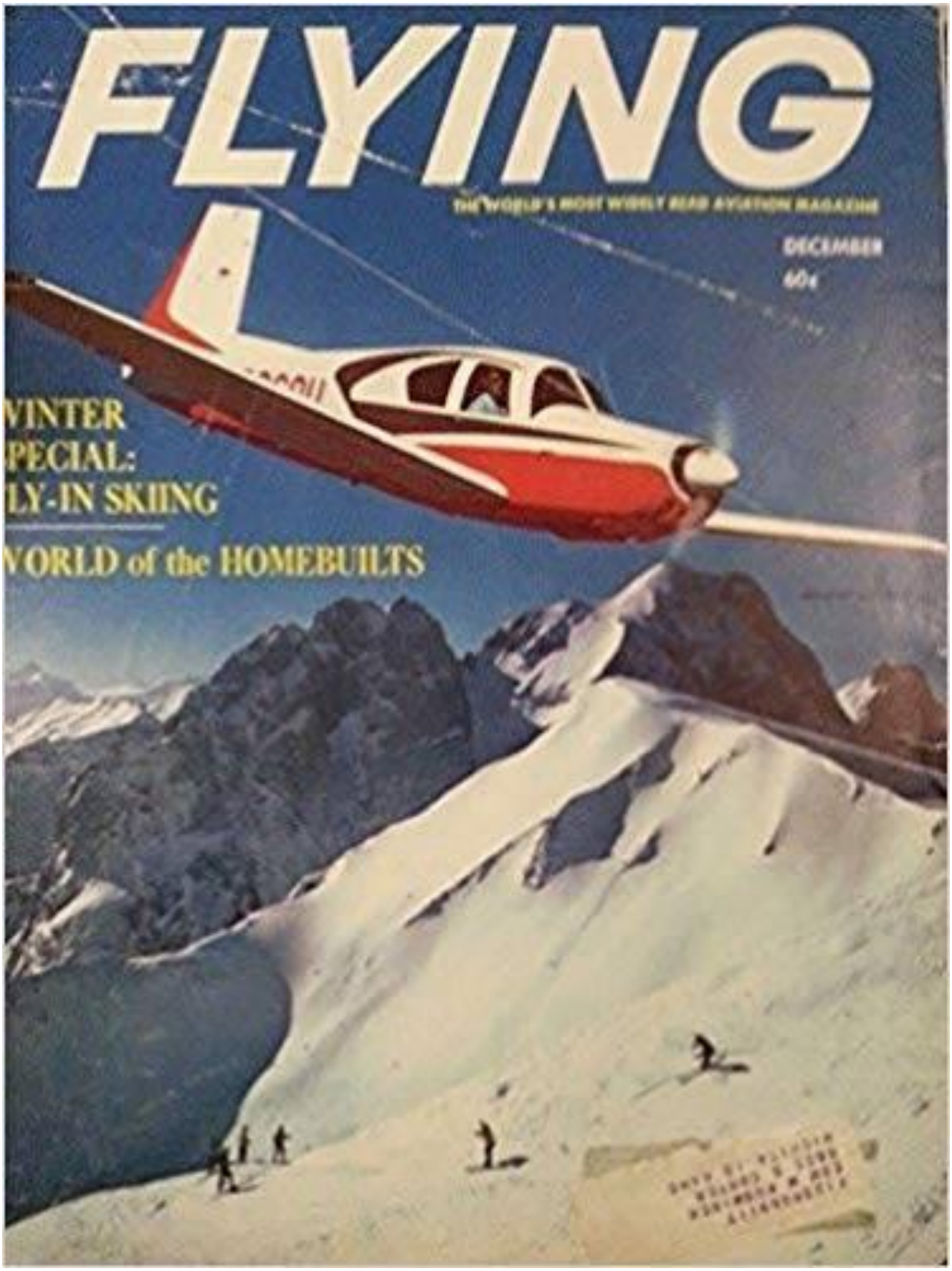
Send your questions for Tom to TheMooneyFlyer@gmail.com

Question: My Continental starter adaptor failed and two of my friends had the same issue recently. My question is this. Are these adaptors sensitive and fail often? I only have 600 hours on mine. Is there advice you could offer to lengthen the life of these adaptors?

Thank you for all you are doing for us Mooney Owners in The Mooney Flyer

Answer: I am assuming that you had a coil spring break on the drive shaft. This has been a high wear part since I worked on the first 231 in 1979. We learned that we could just change the spring and maybe the shaft. There were also oversize parts available, but my memory is not great on the details. We hardly ever changed the whole drive assembly, although I believe that there are rebuilt assemblies.

In the last twenty or so years, the trend is to replace the assemblies. This way, the shop relies on the warranty of the part instead of assuming the risk by trying to save money with just a spring change.


FLYING
DECEMBER
60¢
WINTER
PECIAL:
LY-IN SKIING
WORLD of the HOMEBUILTS

New Videos Added to FAA's "From the Flight Deck" Series

The FAA's From the Flight Deck video series has returned! General aviation pilots: go to https://bit.ly/373btXJ to learn how to prepare for hot spots and avoid runway incursions at airports throughout the United States. The video series provides pilots with actual runway approach and airport taxiway footage captured with cockpit mounted cameras, combined with diagrams and visual graphics to clearly identify hot spots and other safety-sensitive items.

Recently added airports include: Phoenix-Mesa Gateway Airport (KIWA), AZ; Deer Valley Airport (KDVT), AZ; Falcon Field Airport (KFFZ), AZ; Montgomery-Gibbs Executive Airport (KMYF), CA; Livermore Municipal Airport (KLVK), CA; Baton Rouge Metropolitan Airport (KBTR), LA; Louis Armstrong New Orleans International Airport (KMSY), LA; Fort Worth Meacham International Airport (KFTW), TX; San Antonio International Airport (KSAT), TX; and David Wayne Hooks Memorial Airport (KDWH), TX. For more information and to view an interactive map with additional airport videos, see www.faa.gov/go/FromtheFlightDeck.

Wings to Walla Walla on September 4-6

This is an amazingly fun weekend with other Mooniacs. Stay at the Marcus Whitman. Call them at 866-826-9422 and use "Wings to Walla Walla" for the discount. Enjoy Wine Tasting and food with other Mooniacs. Contact Henry Hochberg at aeroncadoc@comcast.net for more info.

Spatial Interior for your vintage Mooney

Simple, quick and effective repair methods add new life to cracked and discolored plastics. Optional STC approved lower side panels add space and elegance. Installed without screws will please any mechanic.

For details, visit:

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Jaeger Aviation

Email: bruce@jaegeraviation.com

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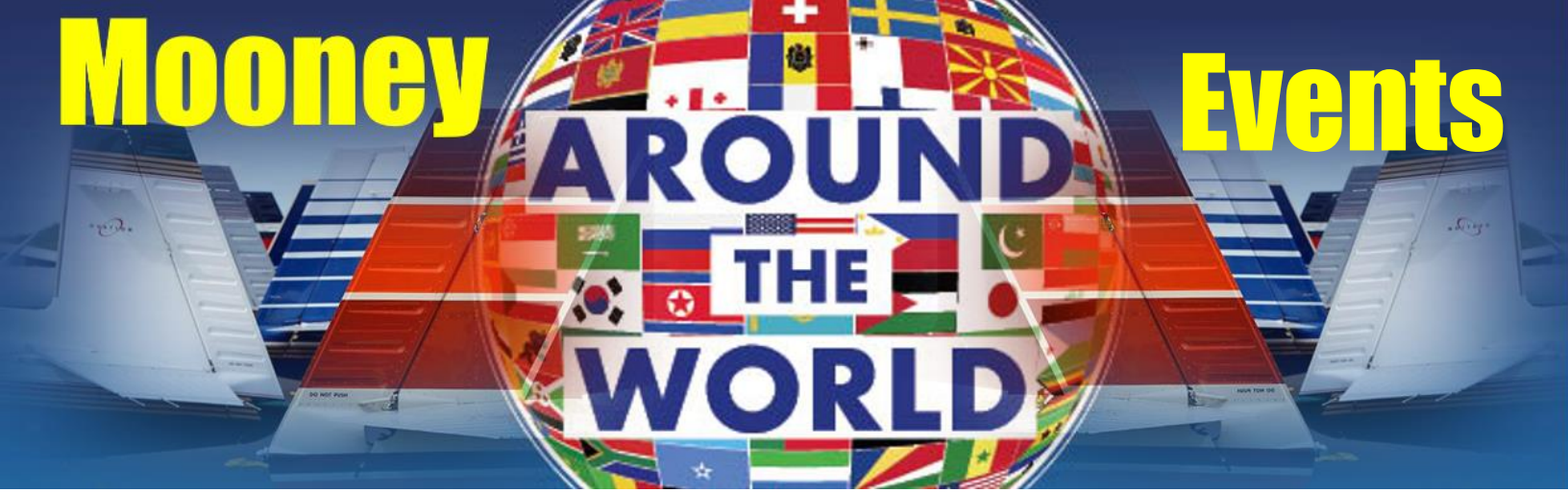

Florida Mooney Lunch Group	*Contact Dave at daveanruth@aol.com or (352) 343-3196, before coming to the restaurant, to have an accurate count. Events begin at 11:30* CANCELLED
Mooney Caravan	~~Sep 10-13: Advanced Formation Clinic (PDT)~~ CANCELLED
MooneySafety.com MAPA Safety Foundation Pilot Proficiency Program	Aug 21-23, 2020: Santa Fe, NM Sep 11-13, 2020: Springfield/Chicopee, MA Oct 2-4: Wichita, KS Nov 6-8: Fort Worth **Sign Up at** https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	~~October 16-18: Tampa O'Knight~~ CANCELLED CLICK HERE for details
Australian Mooney Pilots Association	
EMPOA	CLICK HERE for details
WEST COAST MOONEY CLUB FAST FLYING - FUN TIMES	August 20-23: West Coast Mooney Club Summer Fly-In, Sunriver (S21) CLICK HERE for details
Other Mooney Events	Sept 4-6: **Wings to Walla Walla,** sponsored by Henry Hochberg. Informal get together. Rooms at Marcus Whitman Hotel (866-826-9422, Use "Wings to Walla Walla" for discount). Contact Henry at aeroncadoc@comcast.net

TMF PRODUCT REVIEW

4Patriots Patriots Power Cell

The Patriot Power Cell is great for teens and families on road trips, in power-outage emergencies or long outdoors trips where electricity isn't available.

You can power any device that charges via USB. Simply use the cord that came with that specific device.

- Phones -- iPhones, Samsung, LG, etc!
- Tablets
- E-Readers & Kindles
- GPS Systems
- Personal Cooling Fans
- Cameras
- Handheld Games
- Music Players & iPods
- Bluetooth Speakers
- Radios
- LED Lights
- And much more!
- Fits in your pocket
- Recharges with the SUN
- "Ruggedized" for the elements
- Built-in flashlight
- Weighs less than 7 ounces
- Only 5.4" L x 2.9" W
- 2.1 Amp max output

Push button on the side to TURN ON Power Cell, press and hold to use the flashlight

The 2.1 Amp Limitation

2.1 Amp max output means that it can charge a full-sized iPad that is OFF. That's because full sized iPads require 2.4 Amp or more to maintain 100% charge, especially if they are running an app like ForeFlight or Garmin Pilot. iPad Minis, and mobile phones only require 2.1 Amp to stay charged at 100%.

6 Times

The lithium-polymer battery stores 8,000 mAh. It can re-charge a smartphone up to 6 times on a single charge, depending on the model. You can charge the Patriots Power Cell and drain it down about 500 times.

Rugged

Waterproof rating IP67 means that it will stand up to splashes and rain. The rubberized exterior protects against drops. 4Patriots has dumped it on rocks, plunged it in ice water, and thrown it in the snow.

The Patriot Power Cell still works!

To see an informative quick start guide, CLICK HERE

To read more and order CLICK HERE

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)

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 installed 2 1/2 years

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

1979 M20K For Sale

TTAF: 5155

SMOH on TSIO-360 LB Engine with 1800 TBO: 662
SMOH – engine was completely rebuilt again but was not zero timed. Brand new cylinders were installed. 119 hours

Garmin G500 MFD
Garmin GTN750 GPS
Garmin GTN430W GPS
Garmin GDL 69 XM Weather displayed on G500, GTN750, and GTN430
Garmin GTX330 transponder with ES
Garmin GI 106A CDI
TIS traffic displayed on G500, GTN750, and GTN430
406Mhz ELT
Garmin GMA340 audio panel
EI MVP50 engine monitor with %engine power and vacuum options

Backup AI – last vacuum gage
Backup altimeter
Backup airspeed indicator
Garmin 106 glide slope gage
Century 41 3 axis AP. G500 linked to provide GPSS
Precise speed brakes
LASAR smooth one piece belly mod
Merlyn automatic wastegate
GAMI injectors
Fine wire sparkplugs
Intercooler
Brand new 115 ^{ft3} oxygen tank for 4 place
Whalen strobes
LED landing light
MT 3 bladed prop, Recently overhauled
New paint in 2003
Leather Interior – new 02-10
Panel mounted digital clock/timer
February 2020 Annual
Both Magnetos overhauled, new prop governor, overhauled fuel pump installed at annual.
Tanis Engine pre heater installed last year

Damage history: Off airport landing 1985 and off airport landing 2003. Right wing damaged. The plane was repaired by Crown Air in San Diego with a factory new wing

$149,000

Kevin@ 909-790-9359


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