The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

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Editors

Phil Corman | Jim Price

Contributors

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

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Ed

From the Editor

Phil Corman

On September 2, 2020, a Wyoming-based financial group, U.S. Financial, announced that they had purchased an 80% share of Mooney International. Meijing Group's Soaring America, who purchased the company in 2013, retained 20% and have the right to manufacture Mooneys in China and Africa. [1] U.S. Financial is composed of a group of general aviation aircraft owners and pilots. All are based in the United States and have a current or past association with Mooney aircraft. [1]

MEET MOONEY'S CEO

Mooney's new CEO is Mooney Acclaim owner Jonny Pollack, an Entertainment Attorney who has been working in the New York City Area. Pollack owned a Mooney M20J 201 for 15 years before upgrading to an Acclaim. "It's the greatest airplane on the planet — you just can't beat a Mooney — you can't even come close. If you've ever seen how these things are built, they're like a Ferrari in the sky." [2]

CHANGING THE PRODUCTION PARADIGM

Mooney builds aircraft using '70s technology. That gives the company a 10% gross margin and that is not enough to survive. Updating will require using composites and automation and a new Type Certificate, engineers, and retooling. [1]

The handcrafted Mooney wing takes 1,800 to 2,000 man hours to build. Pollack explained, "These are not a bunch of folks on an assembly line like Lucille Ball making chocolates. It takes skill and hard work. So, while we're pouring our heart and soul into our aircraft, the competition is pouring plastic into a mold. We're using an older technology that, unfortunately, can't compete. I would argue that the end result is better, but we can't turn the clock back." [1]

BUILDING AIRCRAFT AND PARTS FOR OTHERS

It will be a year and a half before the Kerrville factory floor, once again sees assembly. So, to earn revenue, they manufacture parts for third parties and plan to bid out for more work. They are also discussing strategic partnerships with companies who may want to manufacture their aircraft under Mooney's Production Certificate. [1]

Since January 2020, Pollack has run Mooney behind the scenes. He indicated, "We've been able to make parts and keep the brand alive. Our goal is to put Mooney on solid footing as a parts manufacturer—to stabilize the patient, so to speak—and then pursue future innovations." [2]

NEW PRIORITIES

SUPPORT

Supporting the existing fleet remains the new owners' top priority. When the factory closed in December, there were two uncompleted aircraft on the line, an Acclaim Ultra and an Ovation Ultra. Mooney plans to complete these and sell them. They will focus on the existing fleet, supporting parts production, and delivering the parts more efficiently. [1]

We at The Mooney Flyer agree. There are currently 7,000 + Mooneys that are crying out for support. Without a viable parts supply chain, these airplanes are just expensive paper weights and hangar / ramp Queens.

TRANSPARENCY

Jonny Pollack said, "I'm a Mooney owner and, in all candor, I never had an intimate relationship with the company. I want to change that. I want the company to be transparent. I want to reach out to the community." [2]

INCREASED MAX GROSS WEIGHT

For long body models with high horsepower engines, a gross weight increase is on the way. This involves a landing gear retrofit for the Bravo, Ovation, Eagle and Acclaim. Mooney service center expert Don Maxwell explained that the M20K, with 210 HP, doesn't have enough power to be included in the weight increase initiative. However, the M20J 205 might be an increased GW winner.

RECERTIFICATION OF OLDER AIRCRAFT

Mooney will use the vacant factory space to refurbish older Moonies and offer factory certifications with one-year warranties. Pollack theorized the program could increase an aircraft's value and provide owners with additional security. [1]

FOLLOWING THROUGH ON PROMISES

For years, Mooney had been promising an upgrade to the Legacy G1000 software. Recently, Pollack announced that the Legacy G1000 software upgrade is now available for installation. This will allow Pre-Ultra Legacy G1000 planes with a Garmin 345R transponder to display ADS-B NEXRAD Radar data on the G1000. Also, they have approval for the Garmin G1000 NXi phase II. In the works is an upgrade of the Legacy G1000 to the NXi Phase II. [3]

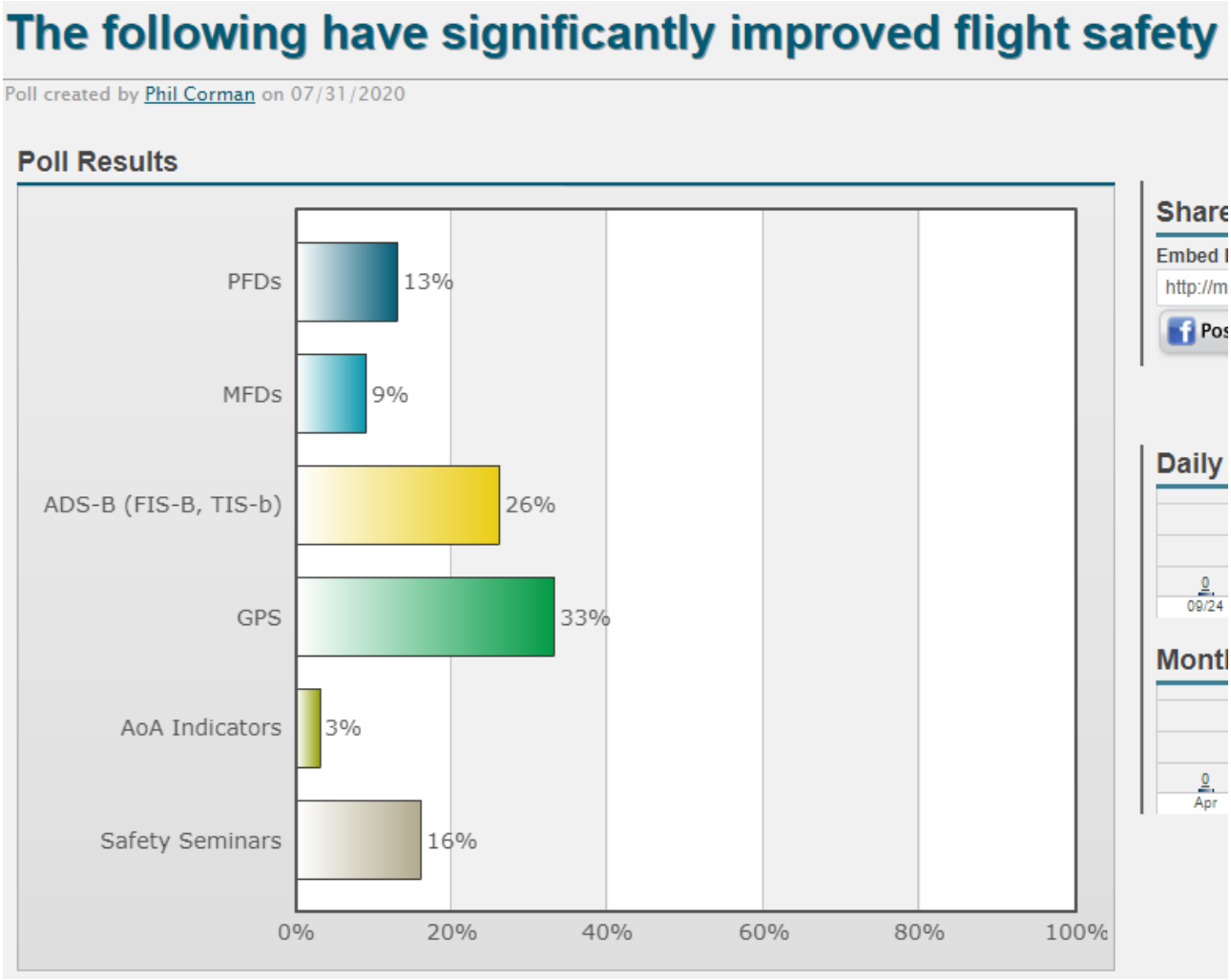
WORDS OF ENCOURAGEMENT FROM JONNY POLLACK

"Be patient" because the changes are "going to take a minute." All the resources are "literally going to keeping the lights on, and to make sure we have parts availability, and I'm going to fight like the dickens to make it happen." [2]

[1] **Aviation Week. Sounding Board: Five Minutes With Mooney International CEO Jonny Pollack**

[2] **AOPA. PILOTS, AIRCRAFT OWNERS BUY MOONEY INTERNATIONAL**

[3] **Mooney.com**



Next month's poll: "Would you plan to attend a Mooney Flyer Fly-In to Paso Robles (KPRB) on May 21-23" **CLICK HERE** to vote.

Letters to the EDITOR

Editor@themooneyflyer.com

RE: My question is: In an Ovation, what airspeed should I use on Final? Thanks for the Landing Tip. Thanks for your note. Such fun. I hope some wealthy group invests in Mooney to bring them back to life.
Tailwinds, **Alan**
Editor Note: 75kts at Max Gross. I fly 4 knots slower for every 300 lbs. under max gross weight.

RE: Killing Sacred Cows

YES, I feel Brian's experiences will be most beneficial to all readers. He can compare and share, which is something we can all learn from. The more versatile, the more valuable!!! In my 44 years of flying MELI and SELI, I have owned 14 aircraft and have learned much from each one. It has made me a much better pilot to be aware, alert, and ever cautious. I have flown border to border, coast to coast, including Alaska and the Caribbean with 5,500 hours. A Mooney owner since 1995, with Bruce Jaeger starting me on my Mooney love affair with 1163G☺

Thank you. Straight ahead, keep up your airspeed
FRED L

I enjoy Brian's articles and suggest he keeps writing for The Mooney Flyer.
Dixon S

I have some experience-based comments related to some of the contents of [the Sep 2020] issue. Maybe some are obsolete, others for sure not.
I have a 1964 Converted D Model. I bought it in about '83 or '84. I had it painted in July of '85. It had the original paint, rather faded and worn. The shop was in Medford, OR and recommended by several of the clients of Frank Nervino in Beckwourth, CA. Yes, 35 years ago! It still looks like new except for a very few rock nicks from what the prop threw at it. The problem? This sort of work put the painter out of that business. He used DuPont "Imron" without knowing he needed an environmental suit. That problem may not even have been known by anyone that early. But that stuff is sure tough.

I thought for a while I was out of the flying game, so sold my hangar at Stead Airport and moved the Mooney to Beckwourth. I should have bought two when I bought the hangar! Inflation at work! Enough tests and the FAA could find no reason to keep me out of the air. I expect a renewal of a Special Issuance next month. The first winter stored at Beckwourth the Pigeons discovered my hangar rafters and settled there for the winter. The deposits on the plane were monumentally heavy! The first warm day I rolled it out and with a spigot nearby and a hose and brush I started what I feared was prep for new paint. The mess ALL came off! Left the paint behind unblemished. I did use some Turtle Wax "Polishing Compound" on it followed by Meguire's. It still looks like new. It just finished an annual last week. Last winter I covered it in Visquene, the heavy black stuff. The Pigeons went elsewhere! Scared them off? I'll include a picture of it at the Nervino shop 2 weeks ago, on jacks, wheels up.

I don't know if Imron is still around, but even if it costs a lot more, the results were amazing, and I endorse it. In my day, it was not extra expensive.

So, I'm am 87-year-old UFO with a pretty Mooney and functional ADS-B Out. No GPS approach capability in it, so if needed, I'll go where I can't see things the old way. Generally avoiding anything much more than the Oakland Marine Layer.

Also, I have comments on Crosswinds, this issue [Sep 2020] mentioned them. At times in odd out of the way places, ingenuity can help, used with caution and with little else available. One being an escape plan, is to go someplace with wide runways. An ex-Military base may be ideal. Area 51 may bring problems as one glider pilot found when they discovered he was a German Citizen, but he and his ship did survive an emergency and it all ended well. "North Town," North Las Vegas had only 2 runways, now 3, and they were joined at one end. Also, at an angle where a particular cross wind would have the same component across them both. One time I got blown off of one approach and circled to the other but did not land on the centerline. I started on the downwind side only a few inches up and planted the downwind wheel followed by rapid lowering of the upwind wheel and the nose wheel. Good contact at the nose gave ground steering plenty of traction and room to bend my path to follow the wide runway alignment. But I had a couple of thousand hours in that machine exclusively by then.

Stead had been built for the military in WWII. Long and wide pavements, runways and wide taxiways. I had a fairly important appointment to keep, none are crucial unless you are being shot at! Crosswind was directly across the only open runway, construction on the other one. I started my roll on the taxiway stub at as much angle as I could get to make my takeoff as closely into the wind as I could after breaking ground. I also knew that the low end of the speed at the start would not hurt the gear. All those years of Engineering have some benefit. I had only reached about 45 degrees to the runway and was not quite to the runway centerline when I left the pavement, as was expected. Yes I was alone without any cargo and half tanks. The rest of my initial climb was over and aligned with the centerline. I have my limitations and know them, as "Harry" said. I would not care to be an Alaskan Bush Pilot. Scary!!

I taught Mechanical Vibrations at a University. Deep respect for those exists. My first engine in the Mooney was a "Home Built." O360A1D, not an "IO." Watched over and signed off by Frank Nervino. I got close to 3,000 hours out of it until worry about loss of a valve head loomed. The builder had built Merlins at the Packard plant in WWII and was a Sports Car race Mechanic, like in Trans Am Class. He had gone to the supplier of parts in Sacramento with his scales and they knew him well enough to allow him to select replacement con rods by weighing them, overall and end to end. Yes, that engine was well balanced! Lycoming seems to do well. I have a Factory "Reman" now and it seems just as smooth; new Hartzell on it, too.

I had a student that took time off from school to work on the Lear Fan plane, data retrieval and analysis; balancing was his main unusual skill. His father balanced Race engines. The student eventually went into the "Predictive Maintenance" business. Yes, balancing is very important! One more flight milestone ahead. PIC at least once at age 90! Maybe a few laps around Laguna Seca again and tours with the Antique Bike Club. Dinner plans finally happening with Martha

Lunken and my wife if the plague lets us get to LUK next year. Lest anyone doubt, she is VERY good in that C-180! Ebby was pretty good in his Ferrari, too. I was a college boy pit crewman with him at Sebring in '57.

A lot of the above is just chatter for you, but sure hope our paths cross someday. I'll be watching for a Mooney gathering. I was at the one at Tahoe. Drove there as the weather was a bit nasty and Reno is close.
Lin M

I'd got out of order in reading the Mooney Flyer and had only just noticed your article about engine failures in the June [2020] edition. I was interested in your comment about Bendix RSA fuel injection servos being implicated in nine IO-360 accidents. My detailed report on my FCU issues is summarized below.

I had two major failures of the FCU during the two years after having replaced my IO-360 with a factory overhaul IO-360 A3B6 - i.e., the two-magneto version of the A3B6D. Fortunately, both failures occurred on the ground as, if they happened in flight, the engine would not have generated enough power to sustain flight. If you look at the attached EGT graph from my EDM-700, you can imagine how roughly the engine was running!

In both cases, the mixture lever connection to the FCU was found to have disconnected internally. The second specialist shop that repaired it identified a weak return spring as a possible cause and replaced it. They also implemented an SB that Precision Airmotive had issued, (see attached), shortly before the second repair that had required the replacement of the idle valve lever assembly. I sent the spring to the manufacturers of the original unit - Precision Airmotive - who tested the replaced spring and said that it was within factory spec. So, after the second inspection and repair of the FCU, I believe the problem to have been resolved – but there is still no definitive cause.

During 2018-19, my aircraft had a serious hot starting problem that I'd not ever had before. After re-fueling, the engine would usually not hot start. The engine coughed but would then not respond to future cranking. The Shadin indicated zero fuel flow when the fuel boost pump operated. The pump did not sound like it was pumping fuel and extended use (two minutes) of the fuel boost pump had no effect. Even after repeated cranking there was no sign of any fuel overflow. But, after waiting about 30 mins, the engine started normally. This pattern had continued right up to the second FCU failure.

I had four experienced mechanics look at the problem over that period and their immediate response was "let me have a try - I've never had one I couldn't start" or suchlike. They were only convinced of the problem after they tried it and failed. As you can well understand how inconvenient it is to have to wait a half hour after refuelling, we investigated and inspected/overhauled just about every part of the fuel system over that period to try to solve the problem - electric boost pump, fuel selector, etc., (total cost of at least $7,000) – but nothing made any difference.

After the second FCU repair, the problem disappeared. I am now convinced that the FCU was the cause, but still unhappy at not having been able to find a definite cause. I am convinced that the problem is solved because the hot start problem has never recurred after that second repair. Over the past six months, I have made at least 30 hot starts and the engine has started every time. So, if you ever have similar hot start issues, then I'd suggest that you consider the FCU as the cause. Pulling the FCU for inspection is not particularly expensive and it might save you from serious grief.

Another thing that I learned from this is that "factory overhauled" does not mean that all the components of the engine have been overhauled by the manufacturer of those components. The FCU that came with this engine was older than my plane and had not been seen by Precision Airmotive since it left their factory in 1993. Presumably the FCU had been overhauled as part of the engine overhaul, but clearly not by the manufacturer of that FCU.
Best regards, John H

Will Your ELT Save You?
Odds are 1 in 3

On October 16, 1972, Louisiana Congressman, Hale Boggs and Congressman Nick Begich, along with an aide and the pilot, disappeared in a Cessna 310 during a flight from Anchorage to Juneau, Alaska. After 39 days of searching, they were not located.


FAIRBANKS Daily News-Miner

Search for four resumes

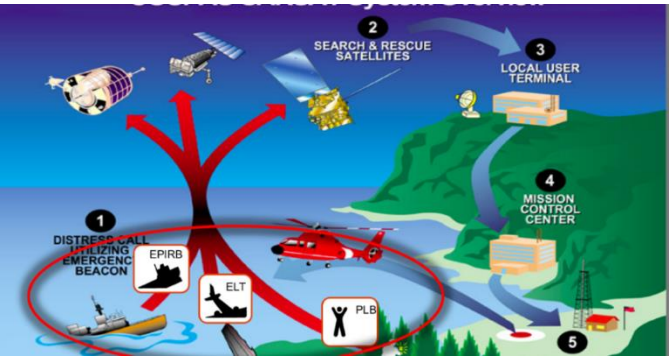
15 craft hunt Boggs, Begich; plane down

In 1973, by act of congress, the aviation world received 14 CFR 91.207 – the Emergency Locator Beacon (ELT) mandate. Most GA aircraft were required to be equipped with an ELT that transmitted on the designated international distress frequency, 121.5 MHz.

One would think that after the 1973 mandate, all our missing aircraft problems would be solved. However, ELTs have only activated in 1 out of 3 crashes. Why the low operational rate?


G Switch

- The G switch that was supposed to activate the ELTs would fail
- ELT Antennas would sometimes break off
- In a serious crash, the transmitter would be smashed to bits
- If an ELT activated after a crash, it may not be detected. However, if it went off accidentally, you could bet that everyone would hear it.



Satellites and Monitoring

In 1983 the National Oceanic and Atmospheric Administration (NOAA) put the first 406 MHz satellite in orbit. 406 MHz signals from an aircraft can identify the type airplane, the N number and the owner.

The International COSPAS-SARSAT Program is a satellite-aided search and rescue initiative. It is organized as a treaty-based, nonprofit, intergovernmental, humanitarian cooperative of 45 nations and agencies. Utilizing a network of 55 satellites, it can provide coverage everywhere on Earth and detect and locate emergency beacons activated by aircraft, ships and people engaged in recreational activities in remote areas. COSPAS-SARSAT sends the detected distress alerts to search-and-rescue (SAR) authorities.

If a 406 signal is broadcast, someone is going to hear it within minutes. In the 48 contiguous United States, the Air Force Rescue Coordination Center (AFRCC) at Tyndall AFB, Panama City, Florida, is responsible for search and rescue coordination. They also support search and rescue operations for lost American citizens in Mexico and Canada. Once an ELT is activated, AFRCC is alerted and they determine an appropriate response, such as a search using the Civil Air Patrol, United States Coast Guard, or other first responders.

Aircraft ELTs

AFRCC reacts to 50 signals per day, which is about 18,000 signals each year. In 2019, 98% of those signals were false alarms. More than half of the false alerts are generated by single pulses – pulses that do not recur. Aircraft ELTs are by far the biggest "offenders" when it comes to false alarms.

Currently, there are over 123,000 406 MHz ELTs. Those in an aircraft are four times more likely to send a false alert when compared to marine Emergency Position Indicating Radio Beacons (EPIRB); 14 times more likely to false alert than Personal Locator Beacons (PLB).
Why? An aircraft ELT is in a more dynamic environment than a marine EPIRB. In fact, the aircraft ELTs are 14 times more likely to false alert just because of mishandling. Boats can bounce around in heavy seas, but they are not subject to the high G forces that an aircraft encounters in a hard landing.

It's important that you register your 406 MHz ELT correctly. When the proper contact information is on file, the Air Force can clear things up with a single phone call. Remember, if you buy an aircraft with a 406 ELT, you need to register it in your name. Be sure to check https://beaconregistration.noaa.gov/RGDB/ to see if the current registration is up to date.

There are currently 200,000 GA aircraft. 80,000 (35%) are still equipped with a 121.5 MHz ELT and the remainder have a 406. Of course, the FCC would like all aircraft to convert to 406 MHz, but for now, 121.5 MHz ELTs are still legal. However, you can't sell or buy a new 121.5 and repair is almost impossible.

121.5 Monitoring

It has been 11 years since 121.5 MHz ELTs were monitored from space. So, who is listening? Air Traffic control facilities monitor the frequency. Also, airline pilots and some valiant GA pilots monitor 121.5 on a second radio.

ELT Failures and Successes

ELTs are designed to help rescuers locate the crash site. When 406 MHz ELTs work like they are supposed to, crash location improves, when compared to the old 121.5 ELTs.
In 2016 there were 1,117 GA accidents in the US and 179 (16%) of those involved fatalities. ELTs helped find the wreckage in 18% of those cases. Over half of the ELTs, both 121.5 and 406 MHz, did not activate. Nine of these accidents involved a 406 MHz ELT and seven of the nine failed to activate. **In 2017**, six crash aircraft were equipped with a 406 MHz ELT. Four of those activated and one of those aided in the location and rescue.

Finding the Crash

In fatal accidents where the crash G forces are high, ELTs were useful in finding the crash site about 20% of the time. Why? Because when the crash is violent, it usually destroys the ELT.
In a 2017 NASA test, it was found that the newer 406 MHz ELTs are more robust, but they have the same failure rate as a 121.5 MHz. The failures are usually caused by severed antenna connections, crash sensing problems and mounting issues.
406s really shine when they function and location finding happens amazingly fast. If the ELT is wired to accept continual GPS positioning from the panel mounted avionics, the crash site can be pinpointed in mere minutes. The mean search durations for a standard 406 MHz ELTs is 11.8 hours. When a GPS aided 406 MHz ELTs is activated, the average site finding time is about two hours.

The Civil Air Patrol (CAP) When searching for a missing aircraft, the CAP relies on cell phone tracking and ADS-B data, rather than ELT signals.

International ELT Requirements

Canada and Bahamas: Either a 121.5 MHz or 406 MHz ELT
Mexico: 406 MHz ELT. NOTE: A friend who regularly flies to Mexico indicated that Mexican authorities have never checked his ELT equipment compliance. However, do you want land in Mexico with a 121.5 MHz ELT on the day that they begin 406 compliance checks?

Personal Locator Beacon (PLB)

The 406 PLB is very unlikely to "false alarm" because it takes a very deliberate series of actions to activate it. PLBs are inexpensive and reliable life saving devices. If the crash disables your ELT and you survive, no worries because the PLB will call in the cavalry! Just turn it on and you'll be found as quickly as if you had a $1,500 406 ELT wired to a panel mounted GPS. An ACR ResQLink PLB costs $310 US for the *400* model and $360 US for the *View,* which includes a digital display for live status and GPS coordinates. Both PLBs have a 5-year battery life and an Operational Life of 28 hours. No subscription is required. You just register it. Should you need to activate it, odds are, you'll be saved! Or, you can take your chances with an ELT. Your choice.

Are You Overcontrolling in the Pattern?

Our high performance Mooneys are very sensitive to control changes, due in part to the laminar wing and the push-pull rods, rather than the conventional cable and pulleys used in most GA aircraft. These are just a few of the reasons that we love our Mooneys.

In the pattern, sometimes our control inputs can be too much. Overcontrolling your Mooney can result in an unstabilized approach. You can also over-control on takeoff, but I'd like to concentrate on the approach and landing phase. (You can apply these techniques to the departure phase, as you wish).

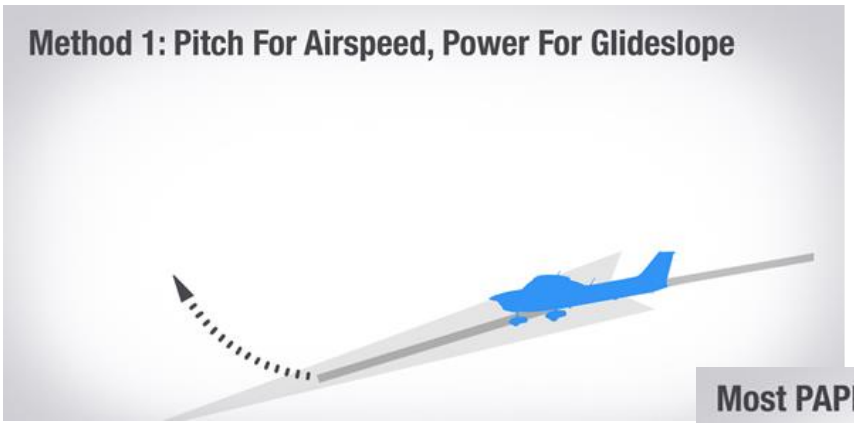
In the ideal landing pattern, you trim your Mooney perfectly and adjust the power so you are on a picture perfect 3° final approach glide slope – never needing to touch the controls until the flare. But alas, Mother Nature keeps many of our landings interesting with squirrelly winds, crosswinds, or gusts. I'm a "pitch for speed" and "power for descent" guy. So, if you're high, then reduce the power slightly. This is easier if you have a Vernier throttle for MP control, but it's not difficult, even if you have a Mooney with lever type controls. A slight power reduction will probably bring you back to your desired glide slope, but if not, reduce the power again, but slightly.

In gusty or crosswind conditions, you should be alert and avoid the tendency to over-control. Slight control deflections will almost always remedy the temporary atmospheric condition and keep you on a stabilized approach. During my primary instruction, about 100 years ago, my instructor forced me to use only my fingertips on the yoke. That lesson of slight corrections sticks with me today! One indication that you are over-controlling is when you have a tight grip on the yoke or heavy feet on the pedals. Another indication is that you keep oscillating the controls left, then right, up, then down and back again – or you're constantly making power corrections. Light touches and small corrections Grasshopper.

Proper trim will make a vast improvement in pitch control. Trim for your desired airspeed and life becomes easier. Being on the correct airspeed is another must in your Mooney. In the traffic pattern, the Mooney Safety Foundation recommends that you fly 90 knots until descending and maneuvering, then reduce speed to no less than 80 knots. Once on final, I fly the POH recommended 75 knots. It is imperative that you are not fast on final. As you near the threshold, reduce your final approach speed by 5 knots.

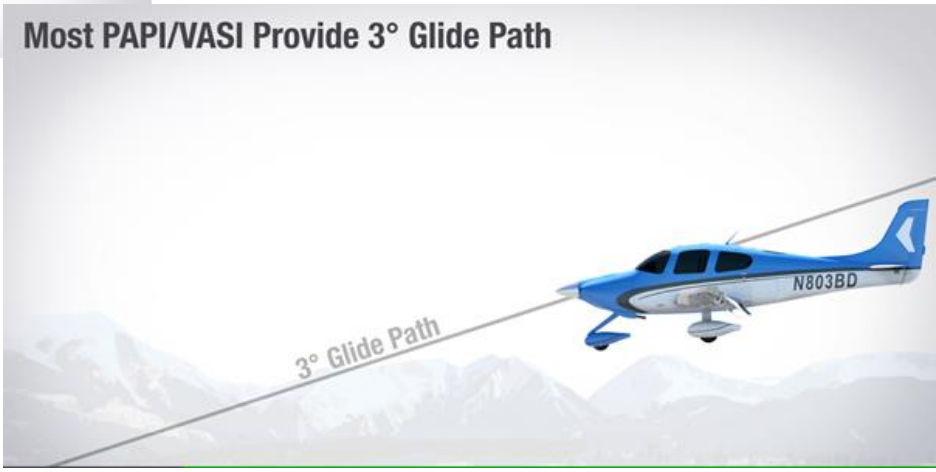
Here's a rule of thumb for most Mooneys: For every 300 lbs. that you are below maximum gross weight, you can reduce your approach speed by 5 knots. If you come in faster, you are likely to float into the next county.

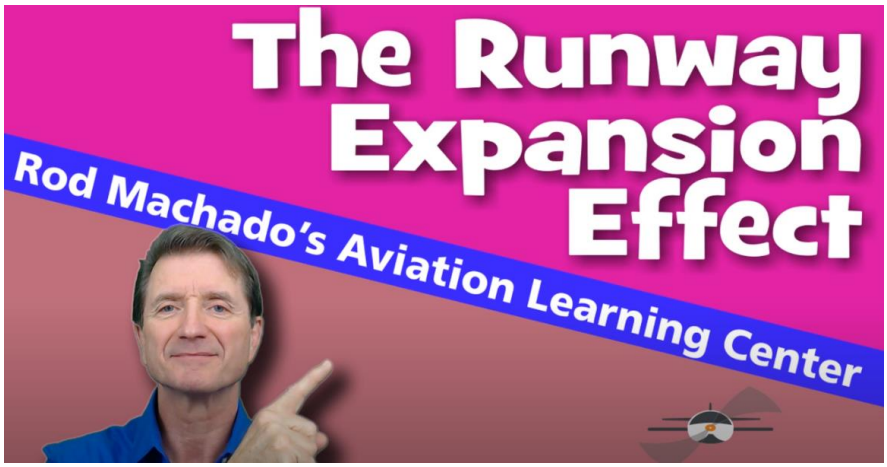
Once in the flare, make your corrections gentle and don't overcontrol. My first Mooney was a C model. In the flare, I would raise the nose slightly, then relax, then raise the nose slightly, etc. Even though they were small corrections, it was sloppy. The best method is to keep the nose up to ensure that you will land on the mains, but not much more. This requires a gentle touch. Too much nose up can result in a less than desirable landing.



I hope that this helps all new and experienced Mooney owners. Hopefully your patterns and landings will improve each and every flight.

In summary, please concentrate on flying a stabilized 3° approach and if you are too high/low or too left/right, always make slight corrections.





Rod Machado's Runway Expansion Effect video is a great lesson on the flare. CLICK HERE to watch it.

EDM 830 to 900

by Richard Brown

Disclaimer – I am not an A&P/IA. I don't work on planes or anything mechanical for a living. I am, however, good at following directions and I have slept at a Holiday Inn a few times in my life. If you decide to tackle this yourself, just know that if you have to pay someone to come in and fix your mess it will be more expensive than if you had just paid them to do the install from the beginning.

When you installed your JPI EDM 830, perhaps you thought, "I don't need to replace all my original gauges because they work great." Like me, you wanted the benefits of an 830, but at the time, you may not have been able to justify the funds for a 900. (I do realize that is akin to death by a thousand cuts, as you end up spending more in the long run.) Whatever your reasoning, perhaps you have been eying the JPI EDM 900. Are you dreaming of pulling all those old gauges, but you just aren't sure what is involved? I can't provide a quote on the labor because I did the work myself under the supervision of my AP/IA. How difficult is it? That is a very subjective answer. I installed a GTX 335 which I would say is about High School level work, it was basically power and ground as I wasn't tying it into anything, and it came with a harness. I also just finished installing dual G5's, a GNC 355, and a PMA450B which I would say is Doctorate level work. The upgrade from the 830 to the 900 is somewhere in between, something like a bachelor's degree level and I think it took me around 40 hours. (The G5's, GNC 355, and PMA450B took about 120 hours).

The JPI EDM 900

I bought the 900 in January when JPI was offering rebates, but didn't get around to installing it until August. Unless you have a pressing need, like one of your factory gauges is inoperative, I would recommend waiting for JPI's December/January rebates. I also recommend that if you are going to do it, that you pay extra for the CiES Frequency (fuel) sending units, the most accurate senders available. I have an O-360A1D engine, so for a 4-cylinder setup with carb temp sensor, flush mount bracket, and CiES senders, I paid $4,650 after the JPI rebate. It will take JPI a couple of months to put it all together. That's because they personalize your EDM 900 to your aircraft and model. Using your POH, they hard program those settings, then, they ship it.

Have you decided to pull the trigger?

Perhaps you are wondering, “If the project is bachelor’s degree level work, what does that mean when it comes to installation?” The sensors (CHT/EGT) that are used for the 830 are the same as the 900. If your AP/IA is okay with it, you can reuse your old ones, but it isn’t hard to swap them out. Pay attention to the way JPI says to crimp the ring terminals and the way the screw/star washer/nut connects to the ring terminals. Poor connections can cause a multitude of problems.

I talked to my AP/IA and he thought I might be able to reuse some of the harnesses, which would save me quite a bit of work as well. I looked at the installation manuals for the 830 and 900 and compared the harnesses. Initially I thought everything would line up and I would just need to run J5 for the fuel senders and fuel pressure. Sadly, this was not to be. Harnesses 1 and 2 could be reused, but 3 and 4 had to be changed out and replaced with the 900 harnesses.

You will spend quite a bit of time removing your old instruments along with the fuel and oil pressure lines that run through the firewall, as well as the tach cable. You will need a cap to close off the tach cable, which will run you about $32.50 at Aircraft Spruce. You will also need a way to plug the holes in the firewall. My AP/IA suggested metal snap-in plugs with high temp RTV. I reused the hole from the tach cable along with the gasket to run some of the harnesses for the 900 through the firewall.

Take your time because Slow is Fast. Pay close attention to which wires go in which part of the connector. It is all laid out in the install manual. Before you start unplugging things, I recommend pulling up all the settings screens on your 830 and take pictures of them. This will be helpful later when programming your 900 because you will have things like the K-Factor readily available. If your AP/IA approves, you can re-use the fuel flow transducer.

The kit comes with the clamps so you can mount the oil pressure, fuel pressure and manifold pressure sensors to the firewall. When you are deciding where to mount them, **BE CAREFUL!** There are lines running up and across the back side of the firewall and you don’t want to drill a hole in one of them. Depending on your plane, this may become a two-person job, with one person inside to hold a wrench on a nut, while someone on the outside tightens it.

I have the 201 windshield. It has the little triangular access panels, so I think it is the SWTA mod. These panels led to a funny moment in the install. It wasn’t funny then (towards the end of a 12-hour day working on the plane) but it is funny now. I had snaked my hand down through the hole with a wrench and put it on the nut to hold it as I tightened the clamp for the fuel pressure sensor.

My watch slid down my wrist and rested above my hand. With the watch held firmly against my hand by gravity, I could not get my hand back out through the opening. That’s how you catch a monkey? Make an opening just big enough for the monkey to put its hand through. After he grabs the food inside, he cannot remove his hand from the “trap”. Well, I couldn’t pull my hand out and the

access hole was not big enough to get my other hand in to move my watch or take it off and extract my hand. Eventually, after about fifteen minutes of inventing new words and moving my hand every which way, I finally extracted my hand. I immediately removed my watch and resolved to never again *wear a watch when working on a plane*!

You will need a crimper that can crimp the connector pins. It is the Molex style that wraps small arms around the wire and also, small arms around and into the insulation.

It is also possible that you can use the lines that ran to the firewall for your oil, fuel, and manifold pressure, although they will likely not fit the sensors that come with the 900. The lines will not fit the fittings that come with the sensors. However, instead of using the ones that come with them, you can use a combination of a coupling and fitting. The manifold and fuel pressure lines on my plane are a -2 size, so an AN910-1D coupling along with an AN816-2D fitting did the trick. The fitting has pipe threads on one end flared on the other. The oil pressure line is a larger -3 hose and it needed an AN816-3D fitting.

Here you can see the black fitting that comes with the sensor from JPI, as well as the coupling and fitting above it, which will fit the smaller hose to the sensor.

The location of the oil temp sensor for the 830 is in the front of the engine. The oil temp sensor for the 900 replaces the factory oil temp sensor which, on my engine, is by the oil filter. When you remove the 830 Sensor, you will need to plug the hole. On the O360-A1D, it is Lycoming part # 1102, a 1/8-27 NPT Allen Plug available from Aircraft Spruce for $1.95.

With everything forward of the firewall done, it is time to do the fuel senders. You do need to remove enough fuel so it's below the level of the senders. The fuel can be pumped into (clean) five-gallon buckets and transferred back into the tanks as you calibrate the senders. The senders are specific to the tank and are labeled "Left" or "Right" on the sender. The instruction manual for the 900 in relation to the senders and the documentation that comes with the CiES senders is terrible. The JPI harness only has two wires going to each sender, although the installation manual shows three, because it needs power, ground, and signal. A call to CiES quickly cleared up the issue. The JPI only provides 5V and the CiES senders need 9-22V. If the harness from the 900 was providing power, it would not be sufficient. A line needs to be run from each sender to a 1A breaker. You will need some unshielded 20-22GA wire and a 1A breaker. Both senders will go to the same breaker. The 900 can be hooked up to the 5A breaker that the 830 was wired to. If you are reusing harness 1, it will already be hooked up.

CiES Sender Tips

Until the senders are calibrated, the 900 will show an error when you turn it on. I spent some time troubleshooting my connections to the senders because I saw the error when I powered up

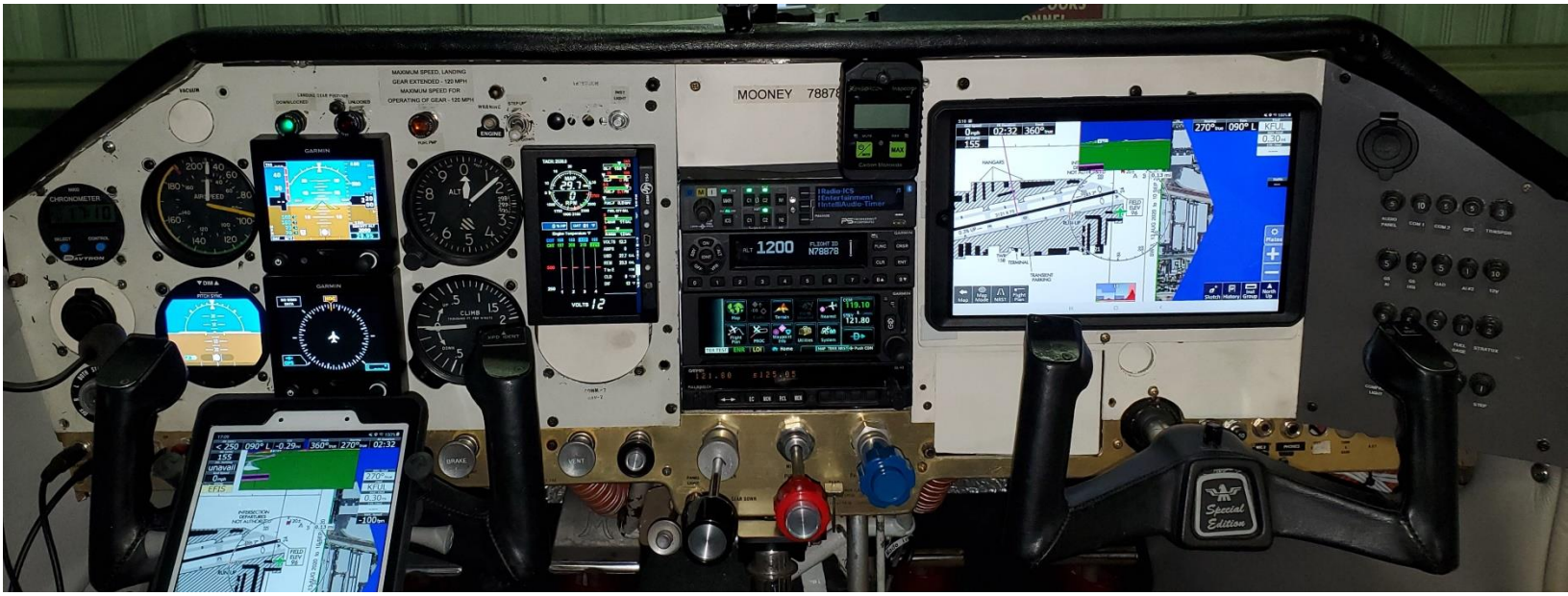
the 900 and I thought there was no signal getting to it. I went into the setup screen where one calibrates the senders. I could verify that they were hooked up and working, because I saw values. You can also check at this point to make sure that they are plugged into the harness where the 900 reads the values for the main tanks. I ordered a two-tank setup, but it still came with two connectors off the 900. One connector is supposed to be for the main tanks and one for the auxiliary tanks. These connectors were labeled backwards on my harness. When I plugged the harness from the senders into the main tank connector on the 900, it was showing values on the calibration screen for the auxiliary tanks. Simply swapping the plug into the one labeled for the auxiliary tanks solved that issue.

The steps to calibrate the senders are simple and easy to follow. If you haven't drained all the useable fuel from the tanks, your readings will not be accurate. However, it is going to err on the safe side, showing that you are at zero, when you still have fuel remaining. You can either drain the rest of the fuel to calibrate them or go flying and burn the tank dry. Then, you can re-calibrate at the fuel pump.

How much Useful Load will I gain?

In my case I pulled the Garwin Cluster (fuel, oil and Cyl temp) (2 lbs.), Ammeter (0.25 lbs.), Factory Tach (0.80 lbs.), and Factory FP/MP Gauge (1 lbs.) This is a 4.05 pound reduction in gross weight. If you're looking for an increase in True Airspeed, this is not the mod you're looking for.

The real benefits are having accurate fuel gauges and freeing up panel space. The EDM 900 display is also crisper than the 830's.



Ron Brown's new panel

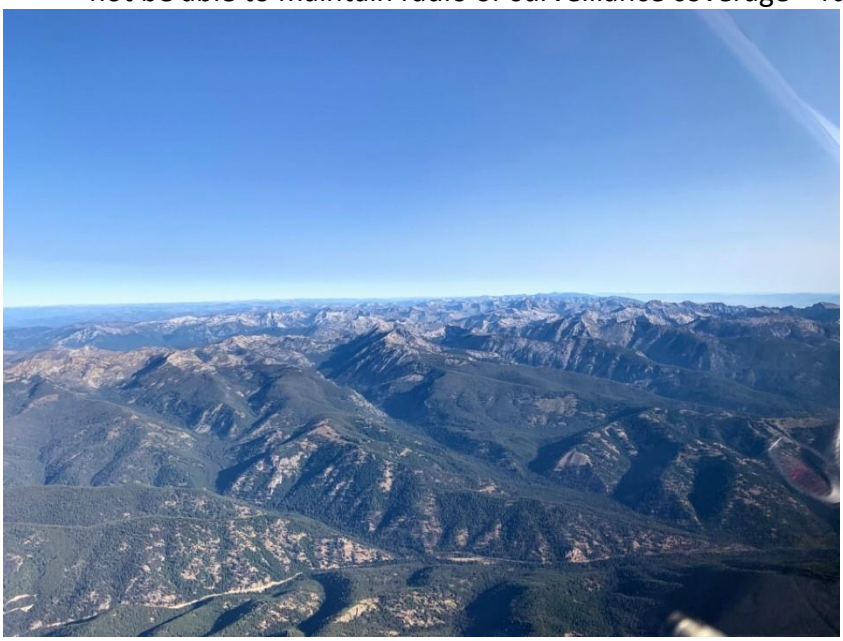
Flying Over Inhospitable Terrain

We recently took a trip from Paso Robles, CA (KPRB) to Boise, ID (KBOI) to Missoula, MT (KMSO) and then onto Sunriver, OR (S21).

The locations were completely enjoyable as were the flights. However, the flight from the Central Valley in California to Boise was over incredibly desolate terrain with little civilization. Because of limited radio coverage, the controllers warned us that we might lose radio contact. The flight from Boise to Missoula passed over some stunning mountains, but the land offered few acceptable landing zones. It made me remember some simple steps that we should take when flying over less than hospitable terrain; steps to give us an edge on SAFETY.

A week before our flight, we watched the weather trends each day. This helped us prepare for weather changes throughout each day. In the western US, it is almost always better to fly in the morning before the heat starts the convection process. We zigged and zagged over waypoints that would keep us within the engine out gliding range of airports, old dirt strips, and flat areas – any place that might be a suitable flat place to land. This costs a few minutes, but significantly increases our off-airport landing options.

Flying a little higher has a few advantages as well. Sometimes, if you are at a low altitude, ATC may not be able to maintain radio or surveillance coverage – radar or ADS-B. Another advantage to a higher altitude is the increased gliding distance available, which translates to more landing options.

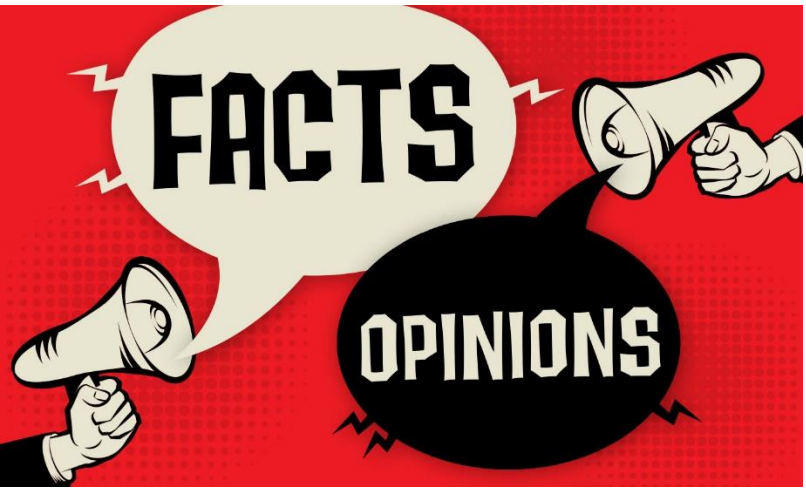


The same advantages occur over high mountains with few landing options. We were flying in the Idaho mountains near places with names that suggest “desolation”, like Hells Canyon. There were no valleys, only deep and narrow canyons. We marked all mountain strips, even if they might not be too “Mooney-Friendly” and cheated towards them with a little zigging and zagging. If you pick the wrong canyon in an engine out situation, there are no

good options. Rivers and canyons tend to have large obstacles.
If there are any mountain roads, no matter how curvy, they may be, these are better landing options than canyons. Finding them during your preflight planning and cheating towards them will increase your emergency options. On our particular flight, we overflew a few valleys, but they were swamped with morning fog, so they were not good options.
It goes without saying that you should file a flight plan with FSS. We also recommend engaging ATC for Flight Following. That way, you will be missed if you don't get to your destination. The new ICAO VFR flight plan forwards your information to your destination airport, thereby speeding up the search and rescue process. Flight Following means you are already talking to Center and if you have an emergency, you can let them know your situation before Squawking 7700. Additionally, you don't have to switch your frequency to 121.5.

Because of the amount of flying we do over remote areas, we invested in a Personal Locator Beacon (PLB). In our case, we purchased an **ACR ResQ 400 PLB**. The price was right, and it is a much better option than a 121.5 or 406Mhz ELT, which have far too many failures. Our PLB can be activated by holding a single button for 2 seconds. It then transmits our location until the battery dies. If activated during an emergency descent, it quickly engages search and rescue (SAR) operations, speeding up the location and rescue process. Because it is GPS driven, SAR is led to the exact site, within 3 meters. With accuracy like that, you will be found!

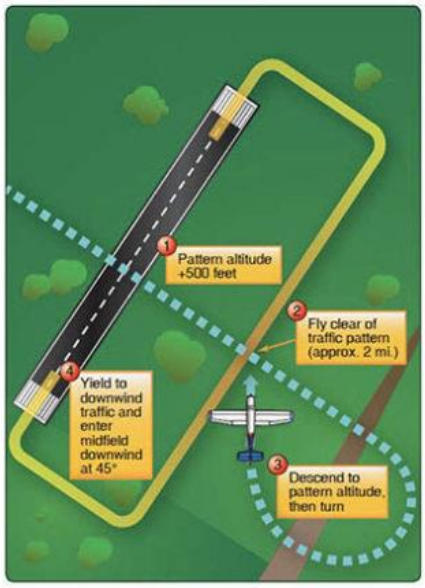
Flying over remote desert areas or inhospitable mountains for hours in your Mooney can be very rewarding. You will see parts of the country that earthbound travelers will never see. The entire earth is beautiful from a Mooney, and it can be quite safe if you take a few precautions.

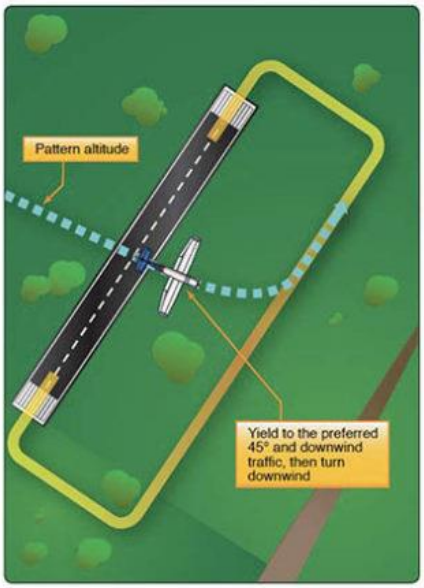


JIM PRICE ATP, CFI-I, MEI

You Could Be Wrong

In the aviation world, neither you nor I are right just because we *believe* we are right. We are right if we can prove or validate our opinion using the FARs, a Sectional Chart, Chart Update, or an Airport Compliance Manual. These will give light and knowledge. They will testify concerning one's opinion, whether it be full of truth and correctness, or downright lunacy. Through these time-honored documents, we can know how we should fly in accordance with the rules.





What we *believe* is immaterial. How we *feel* is irrelevant. There is a document, a reference, a resource that holds the answer to our questions — and it isn't found in a CFI's best guess or your hangar mate's memory.

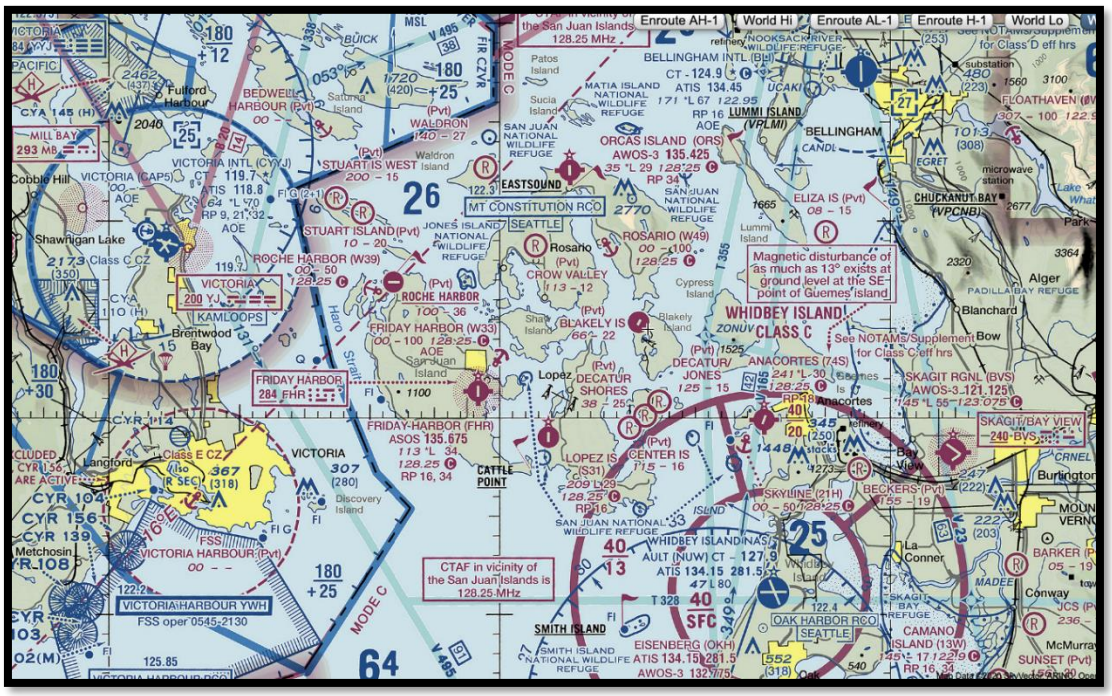
If you don't like a procedure, petition the FAA to get it changed. Until then, just follow the rules, lower your voice, and play nice with others.

Don't let your emotions block the light and understanding that's emanating brightly from the facts. It may take some humility, but you can do it – hopefully without medication and psychiatric intervention.

San Juan Islands - Camping, Kayaking, Hiking, etc.

By Rich, Kim, Becky, & Shelly Hill
N201CD

The San Juan Islands are a beautiful group of islands north of Seattle between mainland Washington State and Vancouver Island. Generally, their weather is not typical of the Seattle area, which is often gray and drizzly. The two largest, San Juan and Orcas, both have airports within easy walking distance of the major towns on the islands. Friday Harbor is on San Juan and Eastsound is on Orcas.

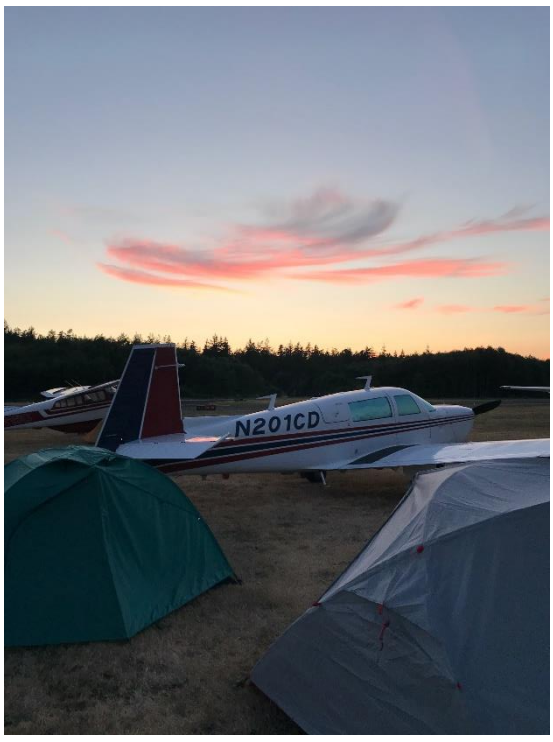


We flew about 700nm from northern California to Orcas Island Airport (KORS) in early August. The route from the south gives you a few choices; a significant one being whether you fly up the east or west side of the Cascade mountain range. I usually chose the west side, Redding to Medford to Eugene and then the Willamette Valley; because it presents less remote terrain and

more landing options. In past years, we have had issues with TFRs and wildfire smoke coming from the California - Oregon border. However, this year was clear and relatively TFR-free. We made a fuel stop in Albany, Oregon (S12) which is a typical small GA airport in Oregon's Willamette Valley. We chose it because of its location and because the FBO was absolutely fantastic during the solar eclipse in 2017. Following Albany, it's a straight shot up through northern Oregon and southern Washington and then the west side of Puget Sound. Also, we avoid Seattle's Class B airspace. This portion of Puget Sound is a gorgeous mix of trees and waterways with interesting views of the Puget Sound Naval Shipyard in Bremerton and the submarine base at Bangor. There is a small restricted area, but it only extends from the surface to 2500'. If you're talking to ATC, the final controller will be Whidbey Approach and if the weather is clear, the approach to Orcas will be straightforward. I recommend that you start listening to the CTAF early to get a feel for the radio traffic. All of the San Juan airports use the same frequency, so it can get busy. Orcas Island is fairly easy to identify from the air, as it's one of the larger islands in the group. It has a distinctive horseshoe shape and 2400' Mount Constitution is the tallest peak in the area. The winds are typically from the south; you'll pass to the west of Mount Constitution on left downwind for runway 16. The airport is located on a narrow part of the island, so the majority of the approach will be over water. Plan your approach considering the significant noise sensitive portions of the island. Base and final for runway 16 will be over the water. The runway is 2,900' long and 60' wide. It has a slight upslope, so the sight picture may trick you into coming in a bit low. If the weather doesn't cooperate, there are three GPS instrument approaches available.

Orcas Island Airport is surprisingly busy, serving three commercial airlines, flying Cessna 172s, 206s, 208s, and 210s, air freight (FedEx, UPS, etc.). There's also sightseeing aircraft, and a varied collection of general aviation aircraft, including a North American T-6 and a collection of Cessnas, Beechcraft, Pipers, Mooneys, etc. Many have a bit more of a bush-plane and amphibious tilt than you'd see further south. We flew in just before the T-6, camped next to a de Havilland Beaver, which dwarfed our Mooney, and saw two different Travelairs, a 1927 4000 biplane that gave frequent sightseeing rides and a 1929 S6000B (a large high-wing) with an interesting (and uninterrupted) service history.

One reason for choosing Orcas Island Airport is the available on-airport camping on the grass just to the north of the paved tie-down locations. There are marked spots with metal tiedown loops in the grass, but I recommend that you bring your own tiedowns and anchors. COVID considerations have reduced the tie-down capacity from the usual 27, to just 10. You may need to tie-down between two of the usual spots. We suggest choosing a location away from the helicopter pad, which is frequently used for medevac operations because there is only a clinic on the island. The airport is well equipped with a small terminal. If you don't want to camp, there are a number of paved transient tiedown spots. Rental cars are available, and in the summer, a shuttle runs between major island sites. Near the camping area, bathrooms and showers are available in a new and well-equipped building. A couple of picnic tables are located just south of the camping area, offering shelter from



winds. In addition, the grass is a fine area for cooking basic camping meals. In our experience, the wind often blows straight down runway 16, sometimes all day and night. The airport is located at a low spot on the island and the wind seems to funnel straight through. Keep in mind that you should bring a good tent and be prepared for wind. There are of course numerous non-camping options available.

Orcas Island is more laid-back than nearby San Juan, but there is plenty to do. The village of Eastsound is easily reached via a short walking path south of the airport. Simply go out of the main entrance, cross the street, and follow the path. The town has a variety of shops and restaurants. Visit the Clever Cow Creamery for a great ice cream stop and the Island Market where you can pick up any food or supplies. It also has a complete wine and beer bar. Darvill's Bookstore has a nice selection of books by local authors, as well as an in-store coffee shop. The former mayor of Eastsound, Tinker the bunny, lives in the store next door. Breakfast pastries and made to order sandwiches are available at Brown Bear Baking, and we have heard good things about Madrona Bar and Grill. We visited the very popular Mijitas Mexican Kitchen for dinner and had a really nice takeout dinner. Further from town, near the ferry terminal, Boatworks Cider Works offers a selection of interesting local ciders. During our visit, the restaurants had limited hours and were very busy. We waited an hour for our takeout order, and we heard the next night it was an hour and a half, so plan ahead.

Popular activities include kayaking, whale watching, cycling, and hiking. It seems almost mandatory to get out on the water when staying on an island. There are several kayaking outfits in Eastsound that offer guided tours. We chose Shearwater Kayak Tours and paddled around a bunch of small islands near Doe Harbor, about a 20 minute drive from the airport. A variety of other locations are available. The water surrounding the islands can have strong currents, so tours or local knowledge are recommended. However, the seas are sheltered from any swells or waves.

If human power isn't your thing, there are Orca, Gray, and Humpback Whale watching excursions. You'll also see lots of Porpoises and Seals. These excursions are available from the small marina just to the north of the airport. Bicycling on the island is surprisingly good, with several lightly traveled roads available. There is everything from relatively level farmland to challenging hills. Similarly, a wide variety of hiking trails cover the island. We spent time exploring the forests and mountain lakes in Moran State Park.

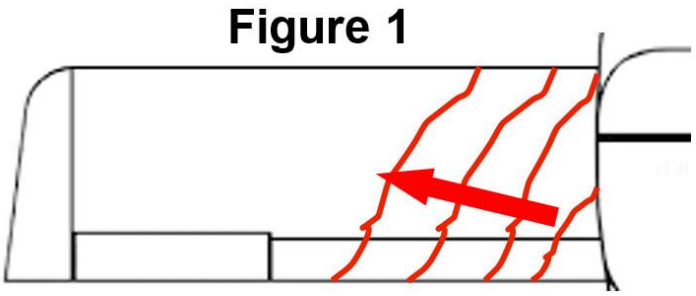
If you tire of Orcas, there are several other islands to explore. An aerial tour in your Mooney is a great way to familiarize yourself with the gorgeous area. Please ensure that you refer to the charts and be aware of the international border just west of the islands. The largest of the San Juan Islands is San Juan and its village, Friday Harbor is within walking distance of the airport. It has a direct ferry service from Anacortes and is the most popular destination in the San Juan Islands, so expect large crowds. Friday Harbor offers more shopping and activities than Eastsound, including several additional whale watching opportunities. Lopez Island is also served by an airport and of course there's Seattle and Vancouver Island. If you fly to Canada, remember your passport and check into Electronic Advance Passenger Information System (eAPIS) and other border crossing requirements.

With good weather, super camping right at the airport, and a bunch of fantastic things to do, Orcas Island is a fun and amazing Pacific Northwest destination.

Tailoring Stall Progression

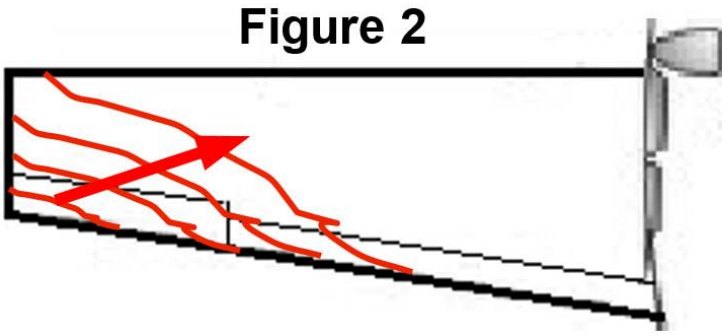
Fifth in the series by Ron Blum

When an airplane wing stalls, it is not lift, lift, lift that is instantly followed by no lift. Even during a stall maneuver, those stalled/separated sections of the wing are still producing more than 50% maximum lift, and the wing in total is still producing more than 80% of the lift required for level flight. How is this possible? We'll show how stall progression and characteristics are tailored and through it all, how we maintain roll control.

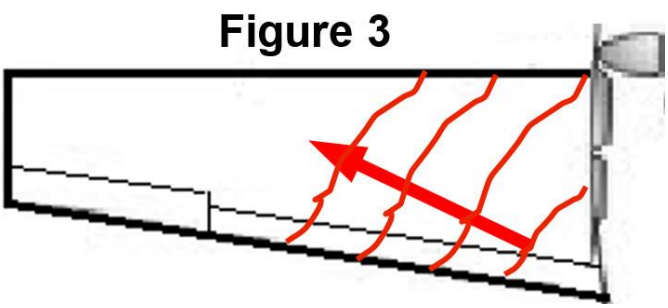


We all learned in private pilot training, (if we can remember back that far), the wing stall/separation progression will be from inboard (near the fuselage) outward to the wing tip. We also act like this is a given and this is how every wing will stall. This is not always the case. Aeronautical as desired: inboard to outboard and not progressing into the aileron section of the wingspan. And, if that doesn't work, Flight Test brings out the big hammer to fix it before certification, (heavy foreshadowing).

Let's start with a basic, rectangular wing like the RV-series of airplanes (Figure 1). This is a constant chord wing with no geometric (physical) twist (often called "washout"). As one can see, the stall progression in this example is nice. In fact, it is exactly the way we would like it to be. For an airplane with a relatively large engine, this is a nice compromise. However, without the larger engine and lighter gross weights, climb performance would suffer. Therefore, the older airplanes, such as Cubs, Champs, Taylorcrafts, Aeroncas, etc., have really long wings. Remember that everything in design is a compromise. As wingspan is increased, both aerodynamic and structural efficiencies decrease and roll rate decreases.

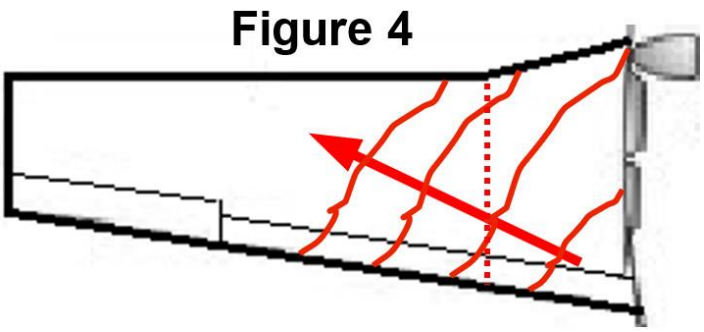


To improve a longer wing's roll rate, structural and aerodynamic efficiencies, and climb rate, the wing is tapered (Figure 2). Tapering the wing planform causes problems with stall progression, as shown in Figure 2. This wing is "very bad" because it would have little to no roll control during a stall. As a direct result, this wing could not be certified. Remembering that all design is a tradeoff or compromise, we will see shortly why the M20G and M20J wings are different. Also note that the M20J is all about speed – 201 mph on 200 Horsepower!



As a result of these compromises, we geometrically (physically) twist the wing or give it washout (Figure 3). What this means is that as one proceeds from the root to the wing tip, the airfoil is rotated nose down to a lower angle of incidence. Washout values can typically be as low as 2^{o} up to 8^{o}. Twist can be linear. That is, 1/4 span is $1/4^{th}$ the twist, ½ span is ½ the twist, etc. Also, the twist can start at the outboard end of the flap and only affect the aileron span portion of the wing. This is all up to the designer and what the lift distribution and stall progression looks like in the computer (Computational Fluid Dynamics, CFD). The M20G wing is twisted, but the M20J wing has a lesser twist. The compromise is that twist decreases top end speed. The idea of the M20J is increasing speed, so more twisting is not good. However, a lack of twist causes stall progression problems, (more foreshadowing). We can also accomplish this by changing the airfoil from inboard to outboard, called aerodynamic twist. Few airplanes designed today use a single airfoil or even a single series of airfoils. In other words, the airfoil at every spanwise location is different.

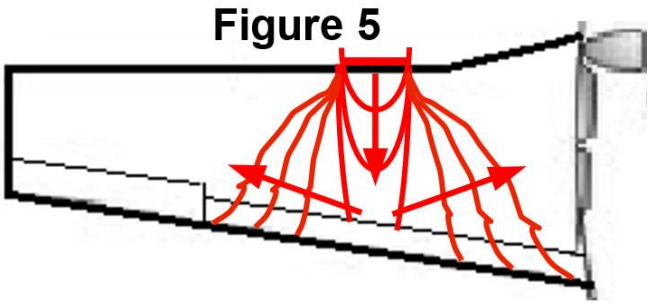
We also try to make sure that a fully down deflected aileron doesn't stall that section of the wing first. Al Mooney did a great job with differential ailerons (up and down travel are not the same). The down-going aileron travels very little, compared to the up-going aileron.



Adding a strake (or crank) on the inboard section of the wing will shed a vortex that acts like a spanwise flow fence (foreshadowing for next month), that delays stall progression from moving outboard too quickly (Figure 4, red dotted line). Remember the earlier foreshadowing notes such as the twist difference between the M20G and M20J, and how Flight Test needs to bring out the big hammer occasionally? Well, the M20J needed the Flight Test big hammer. Taking out the twist in the M20J wing to gain top end speed resulted in a stall progression that was not acceptable to Mooney engineers.

The M20J has a mid-span stall strip to intentionally stall the wing or separate the wing airflow at the stall strip location.

We fully tufted, meaning we taped on little pieces of yarn to Scott Sellmeyer's 1977 M20J right wing to look at stall/separation progression.



ALL the stall/separation progression is determined by the stall strip (Figure 5). It starts at the stall strip and fans out in both directions. This actually surprised me. It should also tell everyone how critical both spanwise location and vertical placement of that stall strip is for both stall characteristics and speeds. If the left and right wings stall strips are positioned vertically different about the leading edge, when the airplane stalls, it will roll toward the wing with the stall strip positioned higher on the leading edge.

As we hinted in the previous paragraph, the next article will be on vortex generators or VGs. We will talk about the good and the bad and roles that vortex generators (VGs) play in aircraft aerodynamics. 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.

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.

Time to Go-Around

JIM PRICE ATP, CFI-I, MEI

If you need to go-around, there is a lot to do in the correct order, while aerodynamics work against you.

The pilot had 1,400 total hours and 400 in M20 aircraft. The week before the accident, he and the instructor had flown his newly acquired M20L aircraft from Florida to Scottsdale, AZ. The CFI had 6,397 total hours and had logged 5,066 hours as an instructor.

On Monday, July 9,2012, the pilot/owner was receiving instruction, practicing touch-and-go landings at the Scottsdale airport (KSDL).

The CFI stated that on the fifth landing, the pilot flared too high, and the airplane dropped to the runway, landed hard, and bounced into the air. The instructor directed the pilot to "go around", and the pilot applied power and ***fully*** retracted the flaps, which is contrary to the procedure in the Pilot's Operating Handbook (POH).

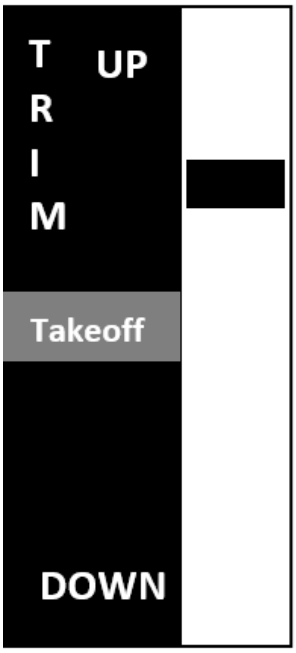
Mooney Go-Around Procedures (POH)

1. Add FULL POWER + CHECK MIXTURE RICH*
2. Airspeed, 75 – 77 knots (depending on the model)
3. Wing flaps: TAKEOFF position (10 degrees)
4. Upon positive rate of climb, RETRACT GEAR
5. RETRACT WING FLAPS and accelerate to Vy
6. COWL FLAPS OPEN

***For Normally Aspirated aircraft, going around at a high Density Altitude (DA) with the Mixture at Full Rich, may not produce full takeoff power. You know your aircraft best, so when landing, think about the DA and adjust the mixture with a go-around in mind.**

Both pilots stated that the engine did not respond. Post-accident testing revealed that the engine was operating normally and damage to the prop indicated that the engine was operating in the mid to full power range upon impact.

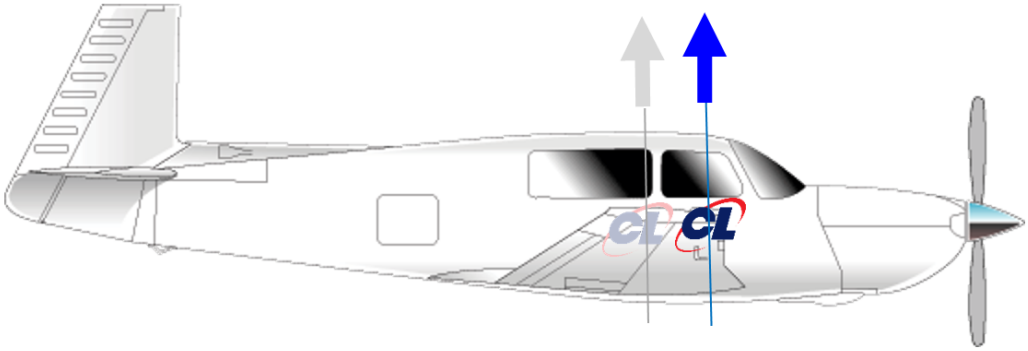
A video recording showed that the airplane's attitude was about 30 feet above the ground when it rolled left to a 90-degree bank angle. The instructor pushed the nose down and attempted to level the wings. The Mooney's left wing tip impacted the runway and the airplane cartwheeled. It came to rest upright about 200 feet left of the runway centerline.



ADDING FULL POWER

When you add power for a go-around, the nose will pitch up. Don't let the aircraft fly you! You'll need to add significant forward pressure while trimming the aircraft nose down until it accepts the increased speed.

Retracting the flaps moves the Center of Lift forward. This causes the aircraft to pitch up



In addition, **retracting flaps increases stall speed.**

Yikes! A go-around creates a recipe for a stall. Please, always "fly the airplane": Add right rudder, push/pitch down and trim nose down.

FLY SAFE, *Jim*

Installment XIII

by Brian Lloyd, CSEL/CMEL, CFIA/CFII

First, I want to thank all of you who have written to ask me to keep writing this column. It is nice to know that my writing is both useful and entertaining.

The anniversary of the 9/11 attack on the US was on my mind this month. A key thought was how the effort and sacrifice of ordinary people can make a positive difference. I grew up in a military family and one phrase always stands out in times of difficulty, “If not me then who?” Don’t wait for someone else, just jump in and do it.

Shortly after my flight around the world in June and July of 2017, hurricane Harvey struck the Gulf Coast and devastated Houston, Beaumont, and other cities along the coast. Patient Air Lift Services (PALS) set up a clearing house for relief supplies at the Georgetown airport just north of Austin, TX. I tried to get my neighbors to assist, but only a few responded. I ended up flying several supply sorties in my airplane to Beaumont and Houston. A Mooney can’t carry much, but this was a positive contribution, assisting in relief and recovery.

As I was flying to Beaumont I was struck by the sheer magnitude of the flooding and the devastation. The roofs of houses and taller buildings were islands in a vast broken inland sea. I thought then that I had seen the worst devastation I was ever likely to see. Little did I know.

Then came Hurricane Irma. Irma devastated St. John and St. Thomas, the Greater Antilles, Turks & Caicos, and the Bahamas. Pretty much all of the places where an aircraft could stop on its way "down island" had been rendered unusable by Irma.

Then came Maria. Hurricane Maria almost destroyed Puerto Rico. Less well known is what happened to the small island of Dominica, a relatively unknown island country in the Lesser Antilles, between Guadeloupe and Martinique.

Dominica calls herself, "The Nature Island." I tell my friends that it is the closest thing to the Garden of Eden we have on this Earth today - or at least it was. Its beauty was breathtaking without too many people. Dominica doesn't have the white sandy beaches of the other islands. It never became a tourist destination … except for people who went looking.

I have been going there to vacation for almost 20 years. I have many friends in Dominica and I am a lifetime member of the Dominican Amateur Radio Club. When hurricane season arrives, I watch the National Hurricane Center website at least once each day to see what is developing. I could see Maria approaching Dominica and called friends, checking to be sure they were prepared for what looked to maybe be a category 2 hurricane. Then, in the last 12 hours I was horrified to see Maria spin up to category 5. I made one last warning call to friends and then there was nothing to do but wait.

Maria's eye struck squarely in the southeastern corner of the island and traveled north along the length of the island right through the center. It could not have taken a more devastating path. Most of the island's vegetation was stripped from the land and sucked up by the roaring rivers.

Trees and boulders cannonaded down the canyons, piled against bridges, and diverted the water and debris through the towns. Most buildings lost their roofs. Shortly after Maria's winds diminished, a few pictures managed to make their way onto the Internet. What they showed was devastation on a par with Hiroshima.

I knew that Puerto Rico and the Virgin Islands were going to get relief from FEMA, but I had no idea where Dominica was going to get relief. It is a tiny little country with only 60,000 people and no Big Brother. If not me then who?

So, I proceeded to set up an airlift. I discovered that the British organization, Rescue Global, would be based in Barbados, which had been bypassed by both Irma and Maria. It is about an hour's flight from Dominica. I started communicating with Rescue Global and learned that they needed airplanes. All they had was one King Air C90.

I began calling my aircraft owner friends, asking them to join me in Dominica. Some people said, "My airplane is too small to do anything." Others said, "It is too difficult to get there." Fortunately, a couple of people stepped up. One gentleman in California, whose name now escapes me, promised his Pilatus PC12 and pilot. A friend from New Hampshire, David Bridgham, promised to help with his Baron 55. Another friend, Barry Hancock, from Utah, pledged to assist in the effort with his BE18 Twin Beech. Including my Mooney, we had 4 airplanes. It wouldn't be a lot, but I figured we would do what we could do – better than nothing.

Barry Hancock and his BE19

I was the advance guard. My Mooney "Spirit" has the capacity to travel from Florida non-stop to Dominica with reserves. The others would have to wait until one of the airports along the way opened up with fuel. Not knowing what I would find, I took food and water for myself, a generator, and communications equipment. I had several sat-phones, portable battery packs, a portable HF station, and many handheld radios that had been donated to the ham radio club. The only communications infrastructure that was left operating on the island was the solar-powered ham radio communications repeater I had built and helped install on top of Morne Anglais, seven years earlier. They needed more handheld radios for relief and rescue efforts.


Brian Lloyd and Spirit

About a week after Maria, I launched for Ft. Lauderdale Executive (KFXE) where I spent the night. Banyon waived all their fees and sold me fuel at cost. The next morning, I discovered that the St Thomas Jet Center was operational for fueling. Only relief flights were allowed in and out. I stopped on St. Thomas and topped off my fuel. I had no idea when I would next be able to refuel and wanted sufficient range to begin any necessary flights that might arise.

When Dominica came into sight, at first, I thought, "Oh, that doesn't look so bad." When I turned final for Canefield airport (TDCF) runway 19, I passed over the main coast road. That is when it hit me. I was entering what looked like a war zone.

On my way in, I was able to use Spirit's HF radio to contact my ham friends. They managed to get a car to the airport and picked me up. We were able to deliver equipment to hams who were doing

rescue and relief work. After many hours of slow-going, they managed to get me to Exotica Cottages, a small eco-friendly resort run by my friends Fae and Atherton Martin. Exotica had survived mostly intact, except for broken windows and plant material that had blown into the cottages. Athie had managed to clear one cottage for my team and me.

I got to Exotica well after dark. The travel was difficult because many of the roads were impassible; still covered with debris. Meeting up with Fae and Athie was a joyful reunion. There was no power, water, cellphone, or Internet. That was pretty much how it was going to stay for the entire month. Eventually, we enjoyed some spotty cell phone service. I set up the generator, lit some lights, and started charging batteries. Then I was off to bed. Athie and I would take stock and start working on a battle plan in the morning.

When I awoke, I got my first close up view of things in the light of day. It was a mess. A rockslide had destroyed Exotica's water pick-up from a nearby river. The river itself was gone, having been filled in by debris that had washed from the flank of Morne Anglais. All we had was the water from the two cisterns. We realized that the most pressing need was going to be finding a source of water and getting it back to Exotica and to the neighbors in the surrounding area. Athie knew someone with a dump truck that was still operational. We found some water tanks we could put into the truck. We heard that the local brewery had been destroyed, but that the spring water feed line to the brewery was flowing good spring water. There, we filled the tanks with water.

As we passed the wrecked brewery, we watched as people carried away cases of beer. I guess that is one way to deal with the lack of fresh drinking water.

We delivered water to all in the neighborhood who needed it and then pumped the rest into the cisterns. We made several runs to fetch and deliver water. At least in our area, people had drinking and cooking water. We would keep that up for several days.

As for eating, that was interesting too. Fae is one of the best bakers on the island. If you live in Dominica and you want a wedding cake, you go to Fae. She has an industrial kitchen that Athie had designed to withstand a category 5 hurricane. As a result of Athie's engineering, Fae had the only working kitchen. In the morning, people would bring whatever food they could scrounge up and Fae would then decide what she could possibly make. At the end of the day, the neighbors who had provided foodstuffs, would come from their own recovery efforts to pick up their share of dinner. We ate some really interesting stews and goulashes. Believe it or not, you really can make something out of Spam that tastes good, or at least Fae can.

I ended up doing some creative rewiring at Exotica and managed to provide power to our three cottages. We would run the generator long enough to charge the communications gear batteries and to run two small refrigerators to make ice and cool fresh stuff … and beer. Looters had destroyed an island cafe and shop, so the owner donated his supply of Kubuli beer, in exchange for food and water. You have no idea just how good a cold beer can be at the end of a day doing relief work.

Once the water problem was mitigated, it was time to get the airlift on-line. At the airport, I arranged with the head of the port authority to use a small area in the damaged terminal as a staging area for inbound materials. I got some friends briefed on how to support the pilots coming in, how to handle customs paperwork, and got them collecting information on what was needed and where. I managed to find a small working 4WD SUV at one of the car rental agencies. It had been badly beaten up, but it ran. Since the island was under curfew, I got my friend Cecil Shillingford, the head of the Office of Disaster Management, to give me a government "all areas, all hours" pass. We were all set to work.

The first plane to come from the United States was the Pilatus PC12, but it was delayed several days because the owner's home had burned down in the California fires. Even though he was dealing with his own disaster, he selflessly sent his PC12 to Dominica. Rescue Global arranged for pilot housing in Barbados and the PC12 started bringing relief supplies, making 4-5 trips per day. At first, we gave the supplies to the government, until we learned that those supplies were disappearing. At that point, I got with my friends and we set up our own distribution system. Through the grapevine, we would find out which village or church needed supplies and what they needed. We would relay that information to Barbados via Sat Phone text messaging, then they would make a custom load-out for the next flight. We would notify the people to be at the Canefield airport when the plane arrived. The customs agents understood what we were doing and would take a break or look the other way when we unloaded the food and supplies.

When the Turks & Caicos opened up, Barry and Dave could now fly down with their loads and join the airlift. Dave and his Baron arrived first with more communications equipment, solar power systems with batteries, and some food. Barry arrived with his Twin Beech filled with donated concentrated food bars. Those went fast. The PC12 had to leave after only a week, but they moved a lot of supplies. It was up to Barry and his Twin Beech to pick up the slack and he did! Since Dave's Baron and my Mooney couldn't carry as much as the Twin Beach, we remained in Dominica. We were the emergency "fetch it" guys. Once I made contact with the Ministry of Health, we handled regular requests for medical supplies, transporting doctors and medical personnel, patients, critical medicines, and blood. With the airports mostly down and the docks in shambles, it was almost impossible for people to travel to or from the island. Having a couple of GA airplanes to handle time-sensitive transportation turned out to be a critical resource. We made a huge difference.

After a month, it was clear that regular deliveries of supplies were making it to Dominica, and we weren't needed anymore. The staff of Rescue Global flew from Barbados on the C90's last trip to Dominca, meeting with us before they departed for the UK. There were hugs and handshakes all around. Barry and Dave took off and headed back to Utah and New Hampshire respectively. I stayed a couple more days to clean things up and shut down. I had enough fuel to make it to St. Thomas. From there I flew back to Ft. Lauderdale and then back home to Texas. Spirit had another 75 hours on the Hobbs Meter.

As you can imagine, after spending a month solving problems, I could turn this column into a book. Some of my stories are heartbreaking. Some are funny, while others are tearfully filled with joy. All are amazing. During our month in Dominica, we made a difference.

So, what is the Sacred Cow takeaway this time?

Don't assume someone else is going to do it. The only way you can be sure that something gets done is to do it yourself.

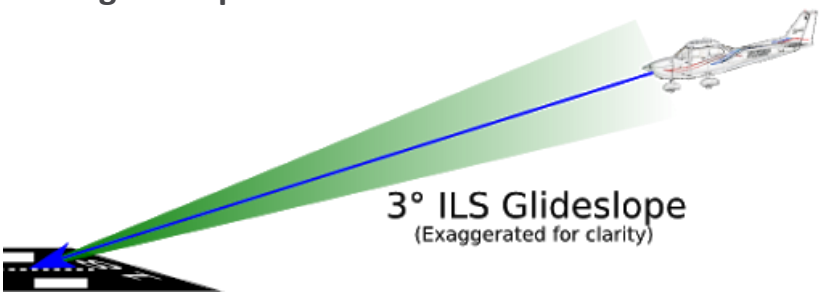
We all have the power and the ability to get things done. Even if you aren't sure, make a step in the right direction. Once you start to move, things will become clearer.

So, step up and help. Join PALS, Angel Flight, or any flying service organization and become part of the solution. Next time someone needs help, it might be you who makes the difference.

Fly safely. Fly better. Have fun!

Rule of Thumb Quiz

1) **Your GPS indicates that your groundspeed on final approach is 100-knot. How fast do you need to descend if you want to fly a normal 3-degree glideslope?**



A – 400 FPM
B – 500 FPM
C – 300 FPM

The answer is "B", 500 FPM descent rate on final.

The rule of thumb is "5 times your ground speed". 100 knots X 5 = 500 FPM descent required to maintain a 3-degree glideslope. 80 knots X 5 = 400 FPM descent.

2) **True airspeed increases about _____ per 1,000' of density altitude.**

A – 3%
B – 2%
C – 1 %

The answer is "B", a 2% increase per 1,000 feet of density altitude.

True airspeed increases 2% per thousand feet. If you're flying at 10,000' DA, your true airspeed is 20% faster than sea level!

3) At a 1-degree descent angle, for every mile you fly, you'll descend _____ feet.

A – 100'
B – 200'
C – 300'

The answer is "A", 100' every mile.

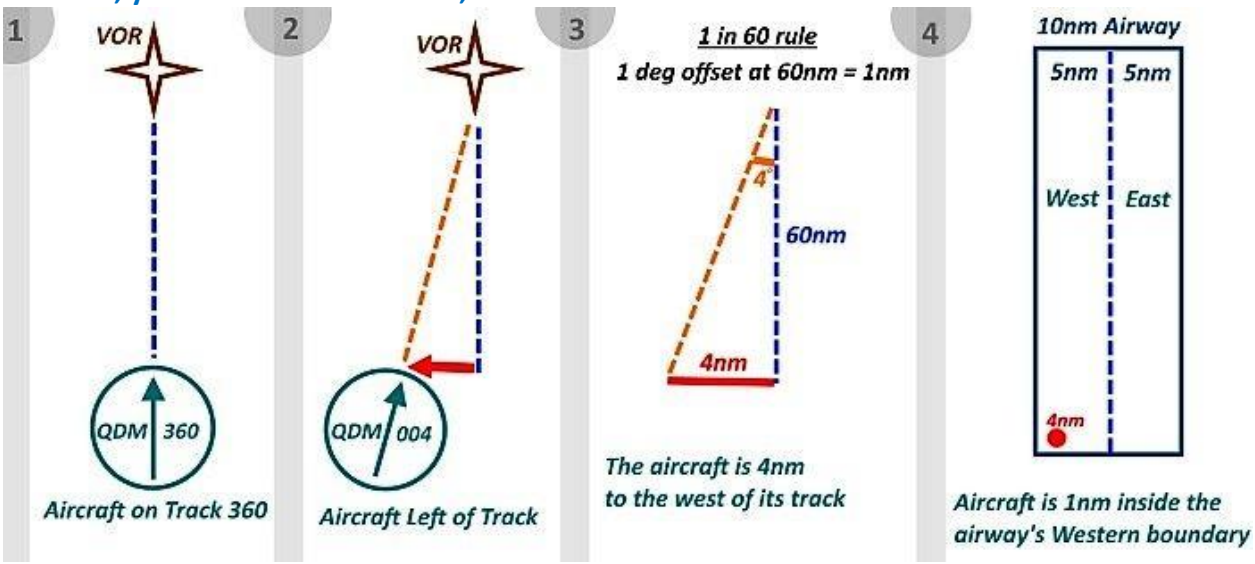
A 1-degree descent gives you a 100-foot descent over 1NM. If you lower your nose to 2 degrees, that gives you a 200-foot descent over 1 NM. 3 degrees = 300-foot descent over 1 NM.

4) You're tracking a VOR and currently, you are 30 nautical miles from the VOR. You notice that you are 1 degree off course from the desired track. In miles, how far off track are you?

A – ¼ mile
B – 1 mile
C – ½ mile

The answer is "C", ½ mile.

If you are 60 miles from a VOR, a 1 degree of track error is 1 mile off course. So, if you're half the distance, you are ½ the track error, or ½ mile.



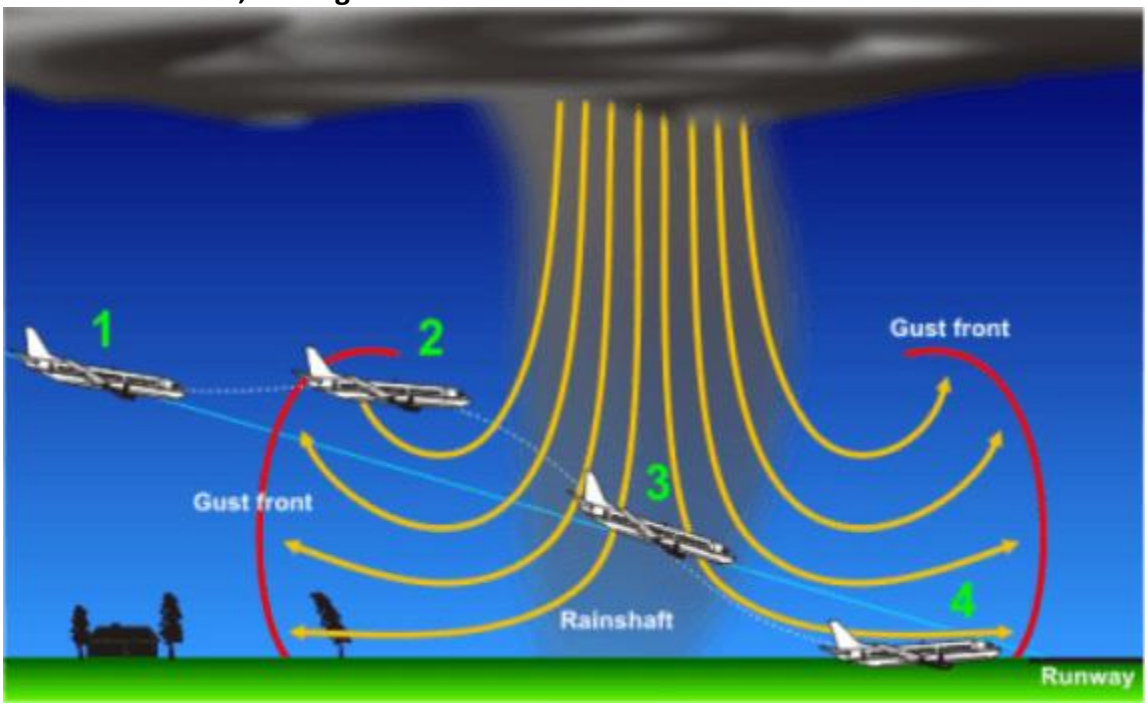
5) Add _____ the gust factor to your windy-day landings.

A – ½

B – ¼

C – 2 times

The answer is "A", ½ the gust factor.



If the winds are 10 knots gusting to 20, that's a 10-knot gust factor. So, add ½ of that, (5 knots), to your final approach speed. This will help protect you from possible windshear and perhaps a stall on final.

6) You're descending from 3,000' MSL to 1,000' MSL at 500 FPM. You're flying 120 knots groundspeed. How far will you travel by the time you reach 1,000' MSL?

A – 6 miles

B – 8 miles

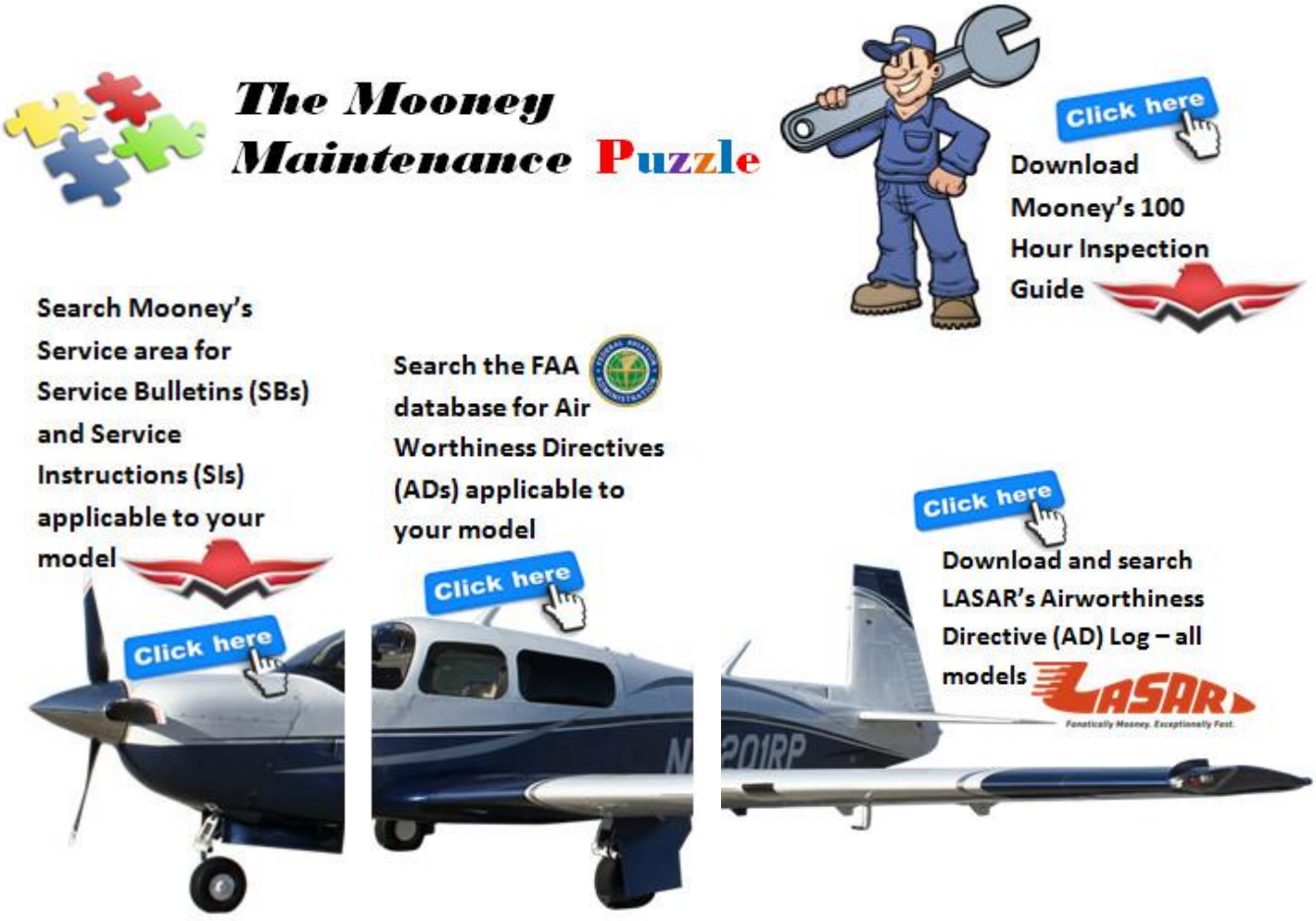
C – 10 miles

The answer is "B", 8 miles.

If you need to descend 2,000', and you're descending at 500 FPM, it will take you 4 minutes to get to your target altitude. At 120 knots groundspeed, you're traveling 2 miles per minute, or .2 mach. If you fly 2 miles per minute for 4 minutes, you'll fly 8 miles. If you're lucky enough to have a strong tail wind, perhaps you are flying at 180 knots ground speed, or .3 mach. How far will you travel by the time you reach 1,000' MSL? In the 4 minutes it takes to descend 2,000 feet, you will have traveled 12 miles (3 miles per minute x 4 minutes).

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: What Annual Inspection items should be checked if you fly your Mooney more than 100 hours?

Answer: **MANDATORY INSPECTIONS:** There are several ADs on different Mooney models that are required every 100 hours or at a minimum, each Annual. Every owner is required to maintain a list of these recurring ADs.

I will list the most common:

1. AD 73-21-01, Flt Control and Gear Lube
2. AD 76-07-12, Bendix ignition switch check.
3. AD 75-23-04, 100/200-hour Gear Actuator lube and gear inspection.
4. AD 75-09-08, Engine mount inspection (until the mount is modified)
5. AD 11-26-04, Lycoming injector line clamp inspection.

Depending on what modifications may have been done to your plane, there may be more recurring ADs. As an IA, these items are law to me. Pilots can discuss the merits of each, but until they are rescinded, they are required.

RECOMMENDED INSPECTIONS:

Each Mooney Service manual lists 25, 50, and 100-hour inspections. The 100-hour Inspection checklist is the same as the Annual checklist.

I recommend doing the engine 100-hour Inspection and the airframe 50-hour Inspection if you are flying more than 100 hours per year.

As a minimum, I suggest a mag timing check, spark plug cleaning, a compression check, and an examination of the engine and exhaust. As for the airframe, check the brakes for wear, batteries for service need, and lube the gear and flight controls.

There are quite a few service bulletins (SBs), none of which are mandatory. However, I highly recommend the SBs that refer to the magnetos. Both Bendix and Slick recommend 500-hour inspections. In addition, there are separate inspections for pressurized mags. I also recommend Lycoming's SB 388 - the valve wobble test. Just two months ago we had to repair a broken Bendix pressurized magneto that was only 600 hours old. It had stripped about 12 teeth off the magneto distributor gear. I find problems are more prevalent on both Slick and Bendix pressurized magnetos because of the hot air used to pressurize them. Do everything that you can to keep the mags in top shape.

Question: What Annual Inspection issues do you see that were caused by the pilot?

Answer: That's easy, almost everything. Mooney pilots, as a group, are pretty good at not abusing their airplanes, especially when compared to the "Clorox bottle" pilots (Cirrus and other plastic planes). If I had to pick a few things, flat-spotted tires would be #1. Too much oil in the engines makes for messy gear doors. We have changed a few tail skids, but the Mooney is built strong and it can take a beating. I have two customers that had midair collisions and landed safely. One aircraft had the rudder torn off and the vertical laid flat, while the other had about six feet of a wing torn off. Both landed easily. I could probably make a case about how some pilots operate their engines, but that subject is well covered on the chat page.

One suggestion: Quit trying to make the first turnoff on landing and you will save a lot on tires and brakes.

Emergency AD Issued: Sandia/BendixKing Attitude Indicators

The FAA has issued an emergency airworthiness directive (AD) telling those who have Sandia SAI-340A attitude indicators that they cannot fly them under IFR or night VFR conditions and that the instrument must not be coupled to an autopilot. The device is also sold as a BendixKing KI-300. The agency is aware of 54 units that have malfunctioned and displayed incorrect attitude information or sent that erroneous data to the autopilot. In some aircraft, the instrument might be the only source of attitude information in the cockpit while in those with other AI displays the Sandia device might give conflicting information and the pilot wouldn't know which instrument to believe.

There will be more to come on this and the FAA calls it an "interim action." In the meantime, the AD can be satisfied by a pilot with a private certificate or greater amending the airplane flight manual noting the AD restrictions and by entering the action in the aircraft records. "The FAA is

issuing this emergency AD to prevent aeronautical decision-making based on erroneous attitude information, which may result in loss of control of the aircraft."

New From uAvionix

Install two AV-30-C displays, one configured as an Attitude Indicator and the other as a Directional Gyro. No vacuum system required.

[Read more HERE]

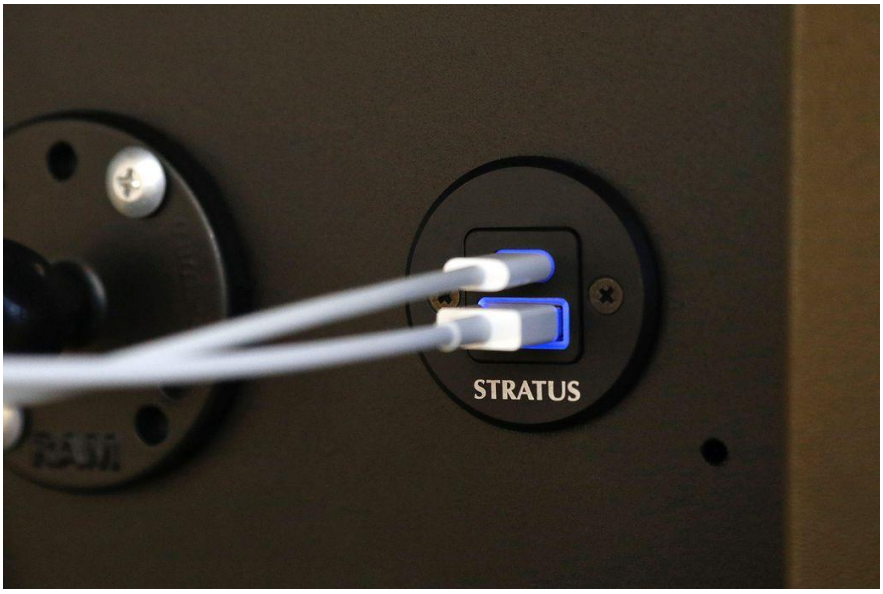
Some Disinfectants Can Damage Airplanes

Be careful in choosing the disinfectants used to keep aircraft COVID-19 safe. A Florida flight school had to remove the instruments and switches and resurface the panels of two Cessna 172s after a well - meaning renter used ethanol-based sanitizer to clean the yokes of the aircraft. The overspray hit the panel and damaged the paint on the panel of the aircraft owned by Atlas Aviation in Tampa. The client got the disinfectant from a distillery and used it despite the

school supplying safe disinfectant wipes and instructions on how to use them, according to AOPA. Ethanol can play havoc with rubber seals, shellacked surfaces and plastic parts in airplanes and vehicles and is not recommended for those uses. Many items used by pilots can be harmed by ethanol, including tablets, portable GPSs and touch screens. Avionics manufacturers recommend using disinfectants that use isopropyl alcohol and don't contain any ammonia.

Placard integrity is generally subject to exposure of the sun, can become fragile due to age, and may be destroyed by the lightest touch, let alone being cleaned with disinfecting chemicals. Use care when disinfecting your aircraft with alcohol or similar based cleaning products. Be advised that any loss of placard data, no matter how small, may require the attention of an authorized mechanic to correct.

Appareo's TSOed High-Power Charger



The Stratus fills a need for quick power in the cockpit.

The update to the Stratus Power provides 20 percent more power to recharge smartphones and other devices while in use during flight.

Appareo announced on September 9 the update to its Stratus Power in-cockpit charging system, the Stratus Power Pro. The new TSOed unit aims to address the need for a quick-charging solution while in flight.


USB-A


USB-C

FAA-certified to TSO-71, the dual 3.0-amp unit has USB-A and USB-C connectors that allow for the charging of both new and legacy portable devices. The charging ports are backlit with blue-tinted LED lighting for easy location in dark flight decks. The update to the Stratus Power provides 20 percent more power to recharge smartphones and other devices while in use during flight. The connectors on the Power Pro are backwards-compatible with the Stratus Power units, making for a convenient swap for owners who want to upgrade. The unit is US-built, and it comes with a five-year warranty. Retail price is **$399**.

Charging Cables made for the cockpit

Inferior charging cables can tangle, break, and even cause interference with avionics. To solve these problems Sporty's developed the Flight Gear USB to Lightning braided cable and the USB to USB-C braided cable."

Any time you add an electronic device to the cockpit, you run the risk of interference with the radios.

Each cable has a braided nylon sleeve to help resist tangles, kinks, and knots. The plugs are cased in aluminum to ensure that the cables will stand up to the most demanding environments; airborne and on land.

The USB to Lightning Cable is MFi certified and will work with all lightning plug devices. Each cable measures just over **3 feet** in length. **$14.95.**

AOPA app adds Airport and Destinations Directory

Whether you're messing around on your smartphone or tablet looking for cool restaurants and outdoor activities to fly to, or if you're on a cross-country and want to divert for a bite or stretch your legs, you can get all of that information on the AOPA app.

The AOPA app is free to download and is available for **iOS** and **Android** devices. CLICK HERE for more information

AFV Partners Group buys Seattle Avionics

Seattle Avionics, a player in the aviation data and apps market with the FlyQ EFB app, has been bought by AFV partners. The sale was announced this week and co-founder Steve Podradchik told ***AVweb*** the acquisition should give the company an injection of capital to ramp up marketing and expand the company's reach into the aviation data market.

In addition to Seattle Avionics, AFV also includes Rocket Route, a flight planning app focused on European GA flight operations, and the Denver-based Aircraft Performance Group, whose iPreflight app is used by business operators to calculate runway performance data on the fly. If AFV follows the Solera model, additional aviation acquisitions are likely.

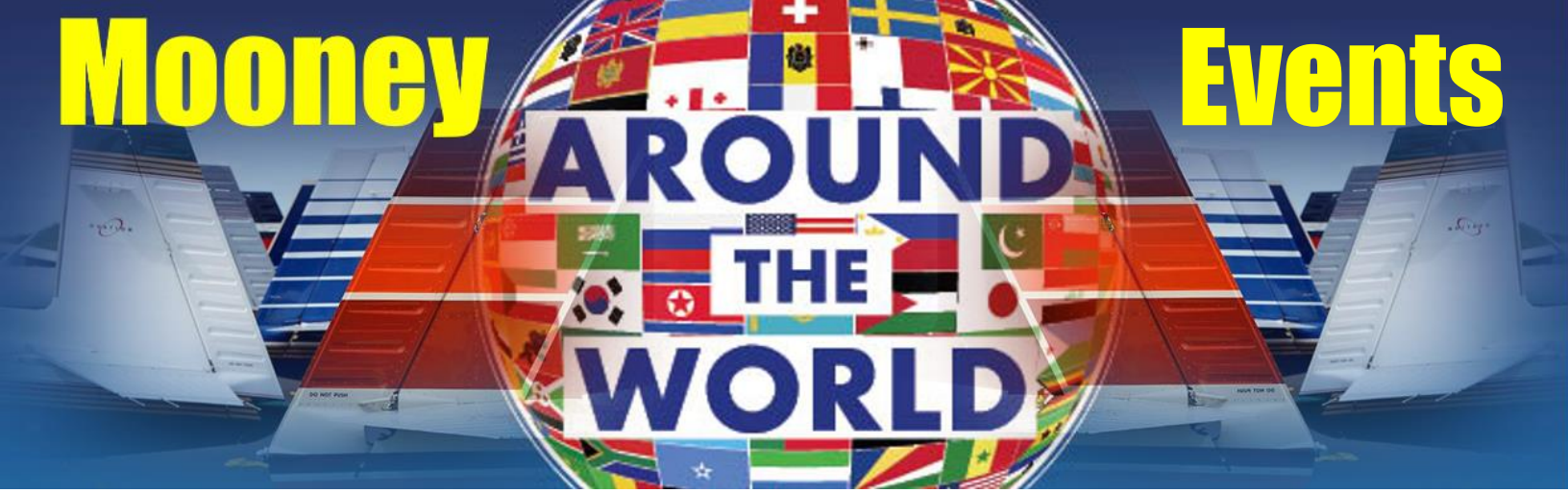
According to a recent report in our sister publication, Aviation Consumer, Seattle's FlyQ EFB places fourth in market share, behind ForeFlight, Garmin's Pilot and FltPlan Go, which Garmin also owns. According to the survey, FlyQ is well liked by users, finishing second in ease of use, cockpit integration and cost/value, according to the magazine's survey. CLICK HERE to read more

Wisconsin Aviation Expands Aircraft Interiors Service with the Acquisition of Jaeger Aviation

Bruce Jaeger, was the second- generation owner of the Willmar Air Service Company, founded in 1945. With sixty-four years of specializing in Mooney Aircraft sales and service, Bruce creating a new interior design for the vintage Mooney came just naturally. The website is for new interiors is https://www.jaegeraviation.com/

Wisconsin Aviation, Watertown, WI 53094

Ph. 920-261-4567
E-mail Interiors@WisAv.com



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	
MooneySafety.com MAPA Safety Foundation Pilot Proficiency Program	**2021** Jan 28-31: Lakeland, FL April 22-25: Santa Fe, NM June 17-20: Fort Worth, TX **Sign Up at** https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	CLICK HERE for details
Australian Mooney Pilots Association	
EMPOA	CLICK HERE for details
Other Mooney Events	May 21-23: *The Mooney Flyer* is planning a Fly-In to Paso Robles, CA (KPRB). Dinner on Friday.. Saturday Ramp Arrivals, Wine Tasting, Seminars for Pilots and Passengers at Estrella Warbird Museum (Tours available) Sport competitions, Horseback Rides and SPA Treatments, Wine & Food Party on Saturday night

TMF PRODUCT REVIEW

ResQ 400 PLB

We recently went on a Mooney Flycation from Paso Robles, CA to Boise, Idaho, then on to Missoula, Montana, Sunriver, Oregon, and home again.

The first leg from Paso Robles to Boise took us over the Sierra Nevada and then for a long period over remote desert. The leg from Boise to Missoula was over mountainous terrain with few emergency landing options. The flight from Missoula to Sunriver was over a fair number of mountains and valleys. Before departing, we thought a PLB (Personal Locator Beacon) was long overdue, especially for this flight. My publishing partner, Jim, had invested in the ResQLink View. I bought the RewQLink 400 since it was a little cheaper.

Small but resilient, the ResQLink 400 has been professionally engineered and tested to ensure it can withstand even the harshest elements. This buoyant Personal Locator Beacon can be utilized to enhance your safety in a wide variety of environments. Whether on land, sea, or in the air, trust that your ResQLink's satellite precision and military durability, will put "rescue" in the palm of your hands.

I like the fact that there is NO SUBSCRIPTION required, like many other PLBs. I also like that the battery is warranted for five years, and that it costs about $39 to replace. If you have an emergency, ACR will actually replace your unit.

The ResQLink View adds an LED screen that displays status.

Features and Benefits:

- No Subscription Required
- GPS and Galileo GNSS
- Built-In Buoyancy
- Strobe and Infrared Strobe
- Global Coverage
- MEOSAR Compatible
- Small and lightweight
- 5-year battery life
- 24+ hours Operational Life**
- Multi-function Clip System Included

FOR SALE Mooney Stuff

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

N78996 is a Classic 1962 Mooney M20C based at Montgomery Regional Airport in Montgomery, Alabama.

The aircraft has been idle for several years (since 2011), but professionally stored in an FBO hangar and supported with a tail stand and perimeter barriers to avoid hangar rash.

The aircraft arrived at the Montgomery FBO in November 2011 when the owner experienced an engine failure in flight and made an emergency landing. The FBO's maintenance staff deinstalled the engine for the owner (who was also an AP), and the owner transported the engine back with him.

Ultimately, the owner decided not to repair the aircraft (install a new engine), and the aircraft sat idle in the hangar prepped for engine installation (the Hartzell 3-blade prop is in good condition and also professionally stored).

We were able to track down the owner to transfer FAA registration to the FBO and obtain the full set of logs, which have been digitized. You can view the aircraft photos here. PDF logs are available.

The sale price is **$12,000**, and the FBO will give the new owner rent-free time to coordinate required inspections and engine installation towards renewed flight status.

Contact Jay Taffet, (504) 460-1072 or jay@gracenjules.com

gracenjules

Buying or Selling an Aircraft?

Most people are honest, but when you encounter a con artist, he or she won't be wearing a sign that says, "I'm a Sleaze Ball, here to take your assets". **Don't take unnecessary risks!** The Mooney Flyer recommends that you utilize the services of an Aircraft Title Service. Below are a few for your consideration. You can thank us later.

AIC TITLE SERVICE

aero-space REPORTS
Aircraft Title & Escrow Services

1979 M20K For Sale, $149,000
Call Kevin at 909-790-9359

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 ft^3 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 with a factory new wing by Crown Air in San Diego.


Whether you're a Rusty pilot, dreaming of becoming active again . . .
. . . or you're a proficient, veteran
Master of
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