The Mooney Flyer

The Official Online Magazine for the Mooney Community

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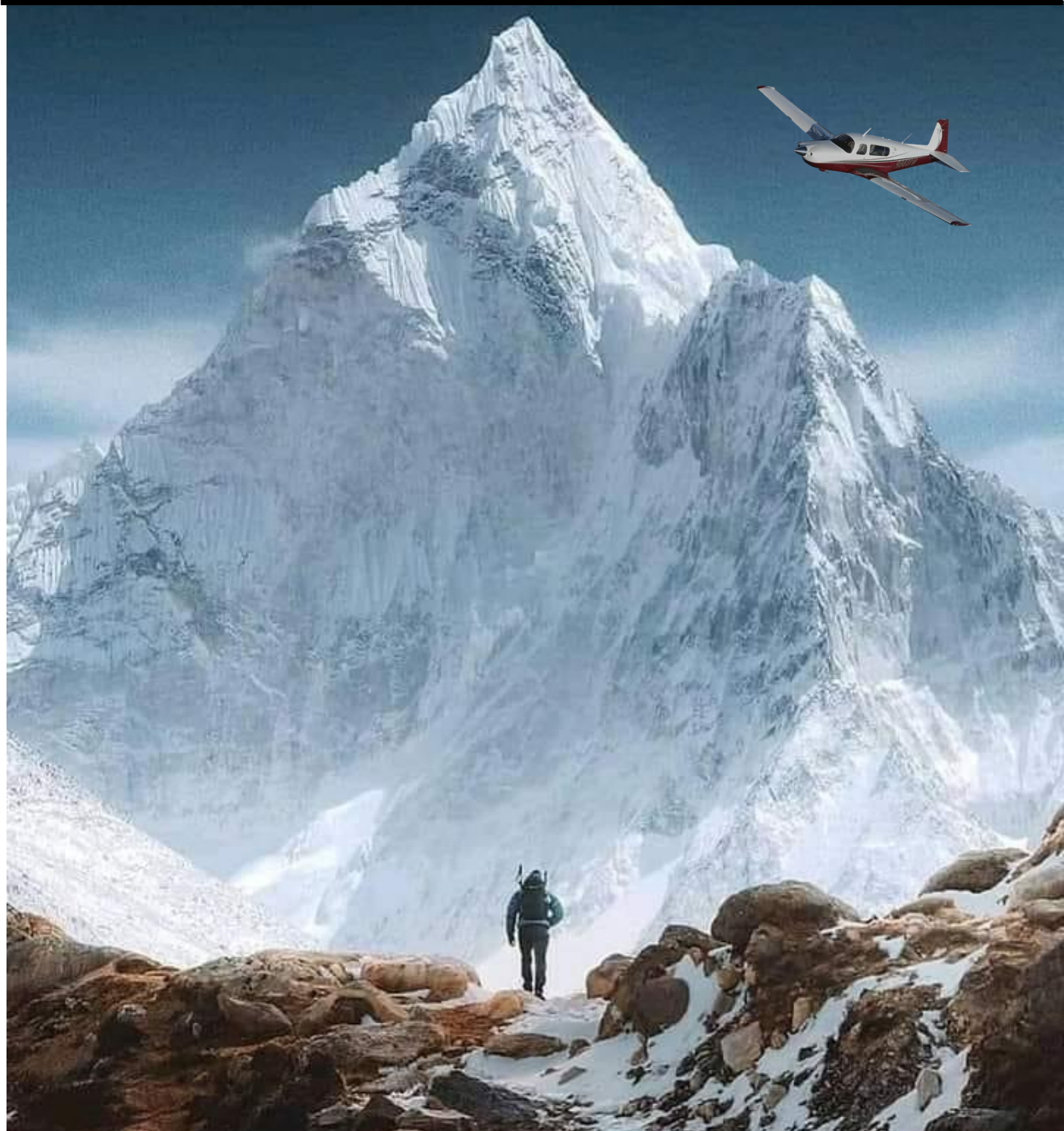
December 2021



Editors

Phil Corman | Jim Price

Contributors

Bruce Jaeger | Tom Rouch | Ron Blum | Richard Brown | Linda Cormar

Departments

Features

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

From the Editor

Phil Corman FTE

BatteryMINDer Tip

I just purchased a new BatteryMINDer for my Eagle's Concorde Battery. The BatteryMINDer tech person gave me the following tip: To reset the BatteryMINDer, simply unplug it for 20 seconds. This ensures that the unit will reboot. This is useful if you are charging two batteries, one at a time.
If you want to charge two batteries, one at a time, unplug both the battery and BatteryMINDer. Then, plug in the second battery. After 20 seconds, plug the BatteryMINDer back in. This ensures that the BatteryMINDer will start anew with the second battery. I try to connect the BatteryMINDer to a different battery every 10 days. This way, I can keep them both in top condition. Using this philosophy, my Concorde batteries seem to last for ~10 years.

Additionally, I wired both batteries through a hole in the hat rack so that I can connect one of my batteries to the BatteryMINDer easily every time I put her into the hangar. This keeps them desulfated and fully charged.

Here's a Silly Mooney Video Ad

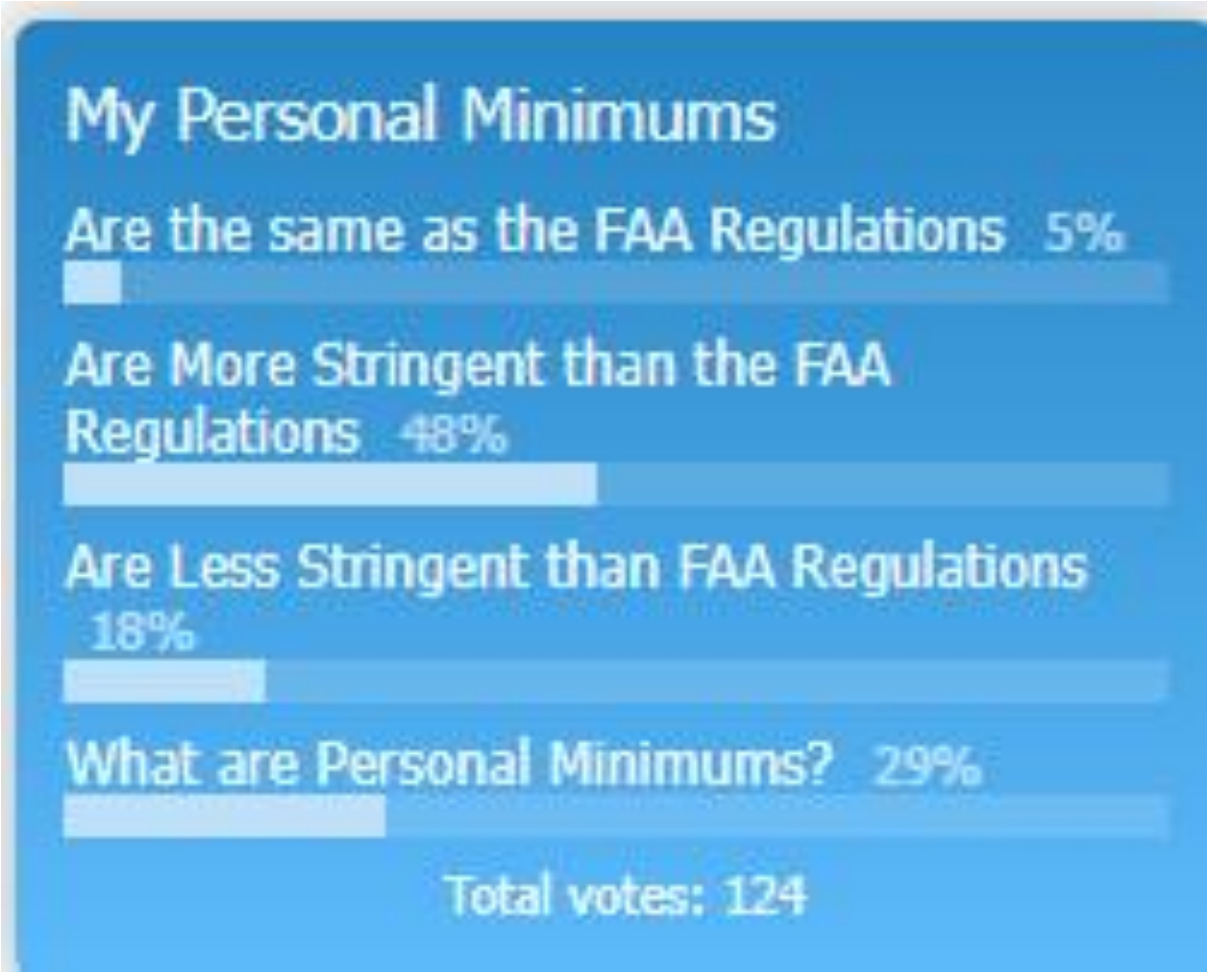
CLICK HERE

The Mooney Flyer is very THANKFUL

As Jim and I reflect on the past year, we are very thankful. We are in our 10th year of publication and if The Mooney Flyer is any good, it's because of our contributors and donators. Every month, it seems like people continue to write first class articles that contribute to safety and our enjoyment of our Mooneys.

We are grateful this month to **Richard Brown** who loves to write about his experiences flying his Mooney and we find his endeavors to be enlightening and enjoyable to read. Then we have **Ron Blum** who shares his knowledge and expertise each month on the aerodynamics of our flying machines. I learn something new with each of his articles. **Kevin Knight** does so much research for each of his articles and debunks beliefs with facts and science. His articles sure help us make informed decisions. **Bruce Jaegar** can share a seemingly unlimited number of personal firsthand experiences and he is very willing to share them with us. And we cannot forget Jerry Proctor of The Mooney Safety Foundation who shared his long and deep experiences flying. We are so lucky. And how can we not love **Tom Rouch** who shares his deep and extensive experience supporting our Mooneys. Thank you each and every month, Mr. Top Gun!

And there have been many more over the years… too many to mention. Thank you all. I love the Mooniac community.



Next month's poll: "What Environment(s) do you fly most?"

CLICK HERE to vote.

Letters to the EDITOR

TheMooneyFlyer@gmail.com

Another great issue! We're on the same page. I'm new to the Ovation. Had my Mechanic put in CamGuard. I put in a QT of oil and forgot (new guy) the additional CamGuard. How do you put in the 1.6 OZ. of CamGuard when you add the quart?

FYI, I bought my airplane in July from Mooney. It was a trade-in on an Ultra. Got a tour of the Factory and met everyone including Jonny. Incredible for me! Glad you spoke with them for your article.

$15M seems pretty cheap if nothing else than for the land and equipment. I fear it would take too much additional funding though to get them modernized and back in the game.

I'd hate to see Amazon or similar just buy it for the space. Your thoughts? No one in Mooney Community putting together a Fund to try and buy it? Not sure what else I can do. I had their Service Center do some work. I know a lot of VC's and Private Equity folks.

Thanks, as always.
John S

Editor Note: *Use the markings on the CamGuard bottle which denote 1-ounce measures. $15M is a good asking price but the real capital needed is to develop a strong Sales/Marketing/Customer Service plan and to design a pressurized turbine with good margins and a new M20 model that is affordable and appealing, with features that surpass those found in the current competition.*

The article by Bruce Jaeger is doubly important here in the far Northwest. By now I'm sure you are aware of the Bravo crash that occurred last Thursday. It was headed to Twin Falls, Idaho from Arlington, Washington. It didn't get very far as it went down South of Seattle near north Bend, Washington. The weather was nasty that day, but of course the Bravo with the turbo charging and all that HP, could handle it - NOT. My guess is that the pilot, (still as of this writing, we don't know who it was, as the plane is registered to an LLC), ran into ice that even the Bravo could not handle.

Keep up the great work and hope to see you two again one of these days.
Dave B

Although I look forward to and learn from all the issues. The November issue is a big winner! I learned about the current Mooney International status. I never knew who Joseph T. Nall was, (though I have read the reports for decades). And Phil's article on flaps was great. I especially like the newly drawn camber line with the flap down.

Related to your opinion polls, have you done a poll on the environment that pilots fly? Day, Night, IFR, IFR to VFR, Marginal VFR or VFR. If you've done one in the past, I would enjoy a copy of the results.

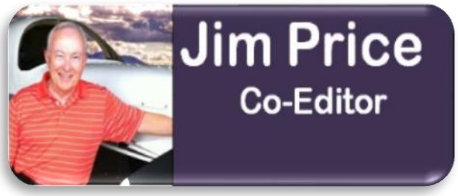
Thanks! And keep up the great work!
Blue on Top, **Ron B**

Do you know where to procure the landing gear no-back clutch spring? One appears to be for a unit that is no longer able to be service. What makes this no back spring so hard to find? Is the current situation with factory part of the problem? Any other alternatives?

Kelvin M

Editor's Note: *No-Back Clutch Springs are available for Eaton actuators. They are no longer available for the Plessey actuator. If you have Plessey with a broken no-back clutch spring, you have no other alternative than to replace the actuator. If you have a broken spring, it is best to send the actuator to a repair shop for overhaul/inspection. Mooney Service Centers like LASAR can do this. One Mooney expert told me that the 1,000-hour replacement of the no-back clutch spring is not an AD, but a Mooney Service Bulletin. Therefore, his shop does not replace the spring every 1,000 hours. They do check it annually and if it has problems, THEN they replace the spring or overhaul the actuator.*

Mixture During the Descent



Some, if not all M20 Pilot Operating Handbooks (POHs) address what you should do with the Mixture on descent. Here are some Examples:

The Turbo Charged M20K 252 POH recommends that pilots reduce the Manifold Pressure to "above 20 inches". Additional guidance suggests that you should "Avoid descents below 20" as the engine can cool excessively. Leaning the mixture to peak TIT can save fuel and eliminate any engine roughness associated with an overly rich setting. During descent, the MP will increase, so occasionally, reduced power to maintain the original descent MP setting."

The normally aspirated M20J POH recommends leaning the mixture "to 14° C (25° F) rich of peak EGT as required for smooth engine operation" and "POWER as required." Additionally, you should monitor CHT and Oil Temps throughout the descent to avoid over cooling.

The normally aspirated M20C POH recommends reducing "power below cruise, while maintaining cruise airspeed throughout the descent." You should monitor CHT and Oil Temps throughout the descent to avoid over cooling.

Generally, there are two types of Pilots

- Pilots who reduce power in the descent, which maintains the cruise airspeed.
- Pilots who leave the throttle where it was at cruise to get a faster airspeed, possibly reducing the Estimated Time Enroute (ETE) by one or two minutes.

If you are a "reduce throttle for descent pilot"

The reduced MP setting is less than 60 percent of the engine's rated output. Below 60%, there is no mixture setting that can cause harm to your engine. At this power setting, you could leave the mixture control alone, because the air-fuel ratio will get leaner as you descend. If the engine begins to "run rough," you should enrichen the mixture as necessary to keep the engine running smoothly. Approaching the airport, when you

level off at pattern altitude, you should set the mixture for the approach and landing and possible go-around. This may not be full rich at high altitude airports.

If you have a normally aspirated engine, and you are a “descend at cruise power pilot” – it all depends – Lean or Rich of Peak?

Lean of Peak Pilots

The mixture becomes leaner as you descend. You should enrichen enough to keep the engine running smoothly. Then, when preparing for landing, increase the mixture all the way to full rich, or if you are at a high-altitude airport, enrichen to a setting that will provide maximum power.

Rich of Peak Pilots

In the descent, you could create a power-mixture combination that’s harmful to the engine. Therefore, you should enrichen as you descend. Just to err on the safe side, you might consider enrichening on the rich side.

Keep in mind that the need for fuel increases exponentially as you descend, while mixture controls are usually linear.

If you are not sure about mixture, early in the descent, just go full rich (or as needed for the high-altitude destination) and be done with it. You will burn more gas, but you’ll have a high enough power setting and plug fouling shouldn’t be an issue.

Whatever you do

Ensure the mixture is set for landing no later than downwind and check it again on final. A Go-around is a busy time and when you apply full throttle, you don’t want to discover that the mixture setting is still lean.

If We Were Asked How to Rejuvenate Mooney International

Here's Our $.02

Everyone has seen or heard that Mooney International is up for sale for the asking price of $15M. To us that sounds like a very reasonable asking price. On the internet, there has been a fair amount of discussion with the feeling that owners should unite and raise the $15M. Our concern with that thinking is that $15M is only the beginning of what we believe to be a massive amount of capital that will/would be required to bring Mooney back to its greatness.

It is quite similar to buying a Mooney. The purchase capital seems like a lot of money, but after a few years of flying her, maintaining her, insuring her, fueling her and modifying/improving her, that initial purchase seems a lot smaller.

We have talked with several past and current Mooney staff and here is a conglomerate view of "One way" Mooney could be great again. Our approach is to "Crawl, then Walk, then Run." Join us for our flight of fancy. And please send us your ideas on what we imagine makes sense, or some better ideas.

The first phase should include two areas:
1) Parts & Service Business
2) A ten-year Sales & Marketing Plan

All the legacy Mooneys need parts and service. The MSCs are an amazing source for Service, but Mooney could become the pre-eminent Service Center in the US. This could be a reasonable profit center and keep the amazingly skilled employees working. A service initiative during this phase could be to package new speed modifications offered by the factory. We know of about a dozen that exist today that nobody is selling. This could be a nice addition to the factory.

Part of this first step should be to earnestly restart a Parts business. This coupled with the Service business could produce some profit during the crawl stage.

Couple the above with a concerted Customer Service initiative where Customer Service Agents answer the phone and provide solutions for both prospective and existing customers. This could help build Mooney's trust with the GA community. More communication would help drive trust and eventually sales.

But this is not enough. Mooney International has not had a cogent Sales or Marketing strategy for years. The M10s seemed to be driven by the hope that China would become a huge GA market. We are still waiting. Current owners think Mooney should build models that cost less than Acclaims. People say, start building J's and K's again at an affordable price. The trouble with that is, it would be a difficult and lower margin business. For instance, Piper sells a lot of Cherokees at a lower price and makes a small margin on them. However, Piper sells fewer Malibu/Meridian aircraft at a higher price and higher margin. Those margins provide significant cashflow.

Mooney needs a longer-term strategy that leverages the brand the performance of our amazing M20 models. But must also produce a high-end pressurized turbine aircraft that surpasses the competition with "speed and efficiency," which is the Mooney brand. So, during this crawl phase, Mooney needs to redefine the future, not copy the current competition. Composite designs, ballistic parachutes, and the like are yesterday's competitive features.

During this phase, we propose a "Refurbishment" Business. For instance, take old M20J and M20Ks into the factory and perform the following:

- Repaint the exterior
- Re-do the interior
- Provide a modest glass panel
- Overhaul the engine or provide a zero-time engine
- Repair the airframe components that need it

Then, sell these refurbished Js and Ks at a profit. I saw a business model a few years ago that showed a profitable business at 55-60 refurbished models per year. Remember, this only in the walk phase.

Use cashflow, and perhaps additional investment, to start designing a high-end model such as a pressurized turbine, or a high-performance electric Mooney.

Concurrent with envisioning new, higher end future models, Mooney should also focus on how to best manufacture these models. The more efficient the labor costs, the more future profit.

Build one to two innovative aircraft that leapfrog current designs in the same fashion that Cirrus has done for the past 1-2 decades. These one to two designs could include:

- High-performance pressurized turbines that exceed the performance and efficiency of the current class
- High-performance electric M models that provide top speeds and endurance. It draws on the Mooney name of speed, efficiency, and endurance. These could define the top end of this emerging market.
- Provide leapfrog avionics for the electric market

Summary

Mooney needs to redefine itself while clinging onto its reputation. Building M20s is NOT the future. Defining new GA airplane models will leverage Mooney's reputation while on the path to success.

To get there, Mooney needs executives with vision, but "pragmatic" vision. They need people who can rebuild Mooney with Parts, Service and Customer Service, thereby rebuilding trust in the marketplace. Mooney needs a CEO with excellent experience in GA manufacturing along with pragmatic parts and service leadership. Mooney needs a few people that want to define the future, starting with Mooney's strengths.

Your thoughts?

MOONEY

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Oil Additives: B.S. or AOK?

by Kevin Knight

Last month I was preparing to change the oil in my 1967 F model's IO-360 Lycoming. I'd been using Phillips 20W-50 for the past decade but saw that my FBO was carrying a new "Victory" version that is "… pre-blended with the proper concentration of antiscuff/antiwear additive (LW-16702), mandated by Lycoming Service Bulletins 446E and 471B and Service Instruction 1409C."

"Antiscuff/antiwear" sounded like cheap insurance, and the eye-catching VICTORY label looked cool. I thus bought a case for $80, poured seven quarts into my drained engine, then started wondering, "What's an antiscuff/antiwear additive, and do I need it?"

As someone who has spent the past 35 years in cutting edge medical technology, I have a strong bias for hard data. That prompted me to start Googling. Top of the list was **Aviation Consumer**, which I highly recommend that everyone subscribe to. Like **Consumer Reports**, it has no advertisers and shoots straight.

I found some articles online by Paul Millner, a retired Chevron chemical engineer. His conclusion, as he wrote on a **BeechTalk** thread, was, "Victory is 'great' if and ONLY if the AD (airworthiness directive) applies to your engine... but unless you have a (Cessna) 172 with the O320H2AD engine, it's very unlikely that using Victory or other TCP/TPP containing oils is a good deal." (TPP is an anti-wear additive designed to address an acute scuffing wear issue in the cam and lifters of a small number of engines. Unfortunately, depending on whose version you buy, it can release phosphoric acid in the engine which goes after copper and seals). See the following for details:

https://www.aviationconsumer.com/maintenance/phillips-66-new-oil-lycoming-additive/

https://www.aviationconsumer.com/maintenance/which-oil-blend-engine-temp-intervals/

After reading Paul's comments and articles, I became paranoid that my engine would suffer from an acid-creating oil additive. That led me to contact retired Exxon chemist Ed Kollin, who created CamGuard. I've used it at each oil change because it's widely considered the gold standard of additives.

Ed assured me my engine wouldn't fail due to using "Victory," but we agreed it offered no advantages over the standard Phillips XC 20/50. The only additive I needed was CamGuard, which is backed by lots of hard data and research. Even engine guru Mike Busch touts its use. (I'm a big fan of his book ***Engines***, and his monthly **AOPA Pilot** column.)

https://www.aviationconsumer.com/maintenance/idle-engine-rust-control-protection-at-a-price/

https://www.aviationconsumer.com/uncategorized/14-day-oil-shootout/

Since oil is the lifeblood of our engines – reducing wear, dissipating heat, and capturing combustion byproducts so sludge doesn't build up – I wanted to learn more. Every aviation oil manufacturer adds chemical additive "packages." They are designed to do things like changing it from a straight weight to a multi-weight, improving performance, and inhibiting rust and corrosion.

I thus sent Ed a list of questions to help separate oil from water. Part of my inspiration was a **Road Rider** magazine article titled **"**Snake Oil! Is that Additive Really a Negative?" See https://www.math.uwaterloo.ca/~rblander/snake_oil.txt

I was also inspired by the "Microlon Engine Treatment Kit," which Sporty's sells for $209.95. Among other things, it clams to create "… a permanent dry lubricant film on all metal surfaces." Really? I went to Microlon.com looking for hard data. Clicking on two story links to the American Bonanza Society and Confederate Air Force, they read, "404. We Are Sorry! The page you are looking for might have been removed, had its name changed, or is temporarily unavailable." Hmmmm.

They also included a link to a 1979 FAA "acceptance" letter. The second paragraph read, "This acceptance is based on the test results showing no detrimental effects on the test engine, turbosupercharger, etc. No other effects of the 'Microlon' were evaluated."

Just because something does no harm, it doesn't mean it does any good. For $209.95, I can buy gas, oil, a new filter, a pint of CamGuard and lunch.

Decide for yourself. Ed Kollin owns and flies a Cessna 210 and was Director of Engine Research in the Advanced Fuels and Lubes Group at Exxon Research and Engineering's Corporate Research facility in New Jersey. Here are my questions and Ed Kollin's answers:

1. What is the history and purpose of oil additives?

Motor oils are 80 to 99.5% base oil, plus performance-enhancing additives. The base oil can be derived from refined crude oil; created from other chemicals, synthetic oil; or be a semi-synthetic mixture. Mineral oils are cheapest while costlier synthetics are higher performance and often specialized.

Motor oil additives have been used for over 100 years to increase various aspects of performance. Aviation oils are simpler formulations, since they don't have to meet ever increasingly demanding performance requirements placed on car and truck oils by the engine manufacturers.

Aviation oils must meet only a **"Do No Harm"** standard created by the Navy when they were using radial engines. The FAA and SAE (Society of Automotive Engineers) oversee essentially the same approval process created in the 1930s.

For example, Aeroshell W100 contains only base oil, 3% dispersant and 0.5% antioxidant. Phillips XC contains base oil, viscosity modifier, 3% dispersant, and 0.5% antioxidant. Neither does any harm, but they don't prevent rust or deposits.

2. What aviation engines can most benefit from additives? For instance, Lycoming's are known for cam lobe wear, whereas Continentals are known for exhaust valve problems. Are additives relevant to either?

All engines benefit from the right additives. Additives that provide rust and deposit-free surfaces will prolong engine life with less unscheduled maintenance.

3. Is it better to buy an oil with additives built-in, or to add additives separately?

It is more cost effective to purchase an oil with the desired additives, but this has never been possible with our simplistic aviation oils.

4. Marvel Mystery Oil has been used as an additive. What is it, and does it offer any benefits or risks?

Marvel Mystery Oil (MMO), created in the 1920s, is a mixture of 70% 30-weight base oil, 29% mineral spirits, red dye, and wintergreen fragrance. It was designed to keep Marvel-Schebler Carburetors free of low temperature varnish deposits. If added to airplane oil, the mineral spirits evaporate as the engine warms up. Plus, its solvent will reduce the oil's viscosity.

5. AVBLEND says it's "FAA Approved" and claims "it soaks into metal." Does FAA Approved mean it's gone through rigorous testing? Also, can a liquid actually "soak" into metal cylinder walls and pistons? Similar claims have been made by companies like Microlon, which Sporty's sells for "as low as $209.95." It's also "FAA Approved." The Sporty's website states it is a "…. permanent engine treatment that cleans any contaminants from the metal and then bonds to the interior of your engine to lower friction, leading to less wear, lower temperatures, increased fuel efficiency, increased engine life, smoother idle, and more available power. "I can't find any rigorous, conclusive scientific studies supporting such claims.

AVBLEND was created in the mid-1950s. The AVBLEND material data safety sheet (MSDS) says it's 99% thin mineral oil (Mobil). Its approval was based on an engine test in a low power helicopter engine field test. While it does no harm, when I tested it at Exxon Research according to the company's instructions, it showed no benefits for wear, deposits, or corrosion in laboratory bench tests or engine testing. It also evaporates within hours.

I tested Teflon additives, Microlon and Slick 50, several times at Exxon Research over 20 years, and they showed no benefits for wear or friction in the laboratory and no reduction in wear or fuel economy gains in engine testing.

6. What is CamGuard, and what's its history?

CamGuard is an additive package made up of 11 high performance additives. It is specifically designed for the air-cooled aircraft engine. CamGuard was designed to prevent corrosion and deposit formation; reduce wear an average of 35% and recondition seals. It keeps engines free of rust that can kill cams and lifters and prevent deposits that can stick valves and rings, necessitating the need for unscheduled maintenance. CamGuard is the additive package that should be in the oil. (https://aslcamguard.com/wp-content/uploads/2019/08/Camguard-Parts-1-to-3.pdf)

Conceptually, it is the additive package I designed for Exxon Elite oil. I was tasked to design the world's greatest piston aviation oil when I was the Director of Engine Research in the Advanced Fuels and Lubes Group at Exxon Research and Engineering's Corporate Research facility in New Jersey.

The powers that be thought my formulation was too exotic and expensive. They decided to copy the Aeroshell 15W-50, with some minor tweaks for marketing purposes.

7. Given all the additive myths and hype, why should anyone believe the benefits that are claimed by CamGuard?

On its face, you should not. However, if you read our information and technical data, you will learn about the testing we did, what was the basis for the testing and how our competitors fared in those tests. There are also videos on our website explaining our various additive technologies. (https://aslcamguard.com/technical-videos/) The results, product comparisons, and my background are quite clear. See "Technical Data at https://aslcamguard.com/aviation/

8. If I fly my plane at least 100 hours annually, do I even need CamGuard since its main benefit appears to be rust mitigation? I've read that flight school planes can go well beyond TBO since their engines don't have corrosion issues from underuse.

CamGuard protects engines whether they are flying or not. It protects them from deposits and the premature wear they cause. When sitting, it protects them from rust and the catastrophic problems it causes. Many people using CamGuard far exceed TBO because compressions remain good and oil analysis show low wear. IF you fly a lot, more than 250-300 hours per year, you can extend oil change intervals to 40 or 50 hours, and CamGuard will help. I do not recommend the semi-synthetic Aeroshell 15W-50 or Phillips Victory oils.

9. While we're discussing lubrication, are there significant differences between oil brands, and oil weights?

There are no significant differences in the two basic oils, Aeroshell W100 and Phillips 20W-50. Because of the New Jersey temperatures, I use 20W-50 in the fall, winter, and spring. In the summer it makes no difference. Both oils are simple and good platforms for CamGuard.

10. What are the best intervals for changing oil and filters, assuming a plane has one? And if it doesn't, does that really matter?

I recommend 25-35-hour oil changes for the majority of planes. We see chemical changes in the oil at about 25 hours due to blow-by fuel contamination. The head of Lycoming engineering told me the worst mistake Lycoming ever made, with respect to oil changes, was going to 50-hours changes with the addition of a full flow oil filter. The filters cannot remove water or fuel and only remove particles above 60-microns. 10-micron particles cause the wear problems. All this said, there are those that can go 40-50-hours before an oil change without problems.

11. Is it worth the money to have an oil analysis at every oil change? If so, why, and who do you recommend?

If you fly 100-hours or more per year, I like to see two analyses per year to observe the trends in the engine. Less than 100 hours a year, try to have an analysis at all oil changes. But hey, I'm a data guy. NOTE: I've used Blackstone Laboratories and I have never been disappointed. https://www.blackstone-labs.com/

Why I Got My IFR Rating

by Richard Brown

The following statement may ruffle some feathers and fly in the face of what many people post online, but "getting my instrument rating did not make me a safer pilot."

Yes, I know that having an instrument rating will give you lower insurance rates. However, the underwriters are not stupid. Keep in mind that when you turned 25 or got married you likely saw a reduction in your auto rates. You did not magically become safer after saying "I Do" or making it to 24 years and 365 days on the earth.

Stay with me and I will explain myself.

The first question is, what makes a safe pilot? In my opinion, a safe pilot is one who knows both their limits and the limits of their airplane and does not exceed (or even approach) those limits. If someone pushes (or ignores) those limits as a VFR pilot, they are likely going to do the same thing as an IFR pilot. Flying in instrument conditions only provides more opportunities to get in trouble.

Going back to another driving metaphor, I have never been stuck in a two-wheel drive vehicle the way I have been stuck in a four-wheel drive vehicle. Over the years, I have been stuck in some spectacular ways while in a four-wheel drive. Why is that? Because invariably the invincible thought pops into my head, that "I can get through/over that, I have four-wheel drive.

So, getting back to my earlier statement that the IFR rating did not make me a safer pilot. I was a safe VFR pilot. I flew often, I always strove to do better than I did in my previous flight. Additionally, I constantly tried to learn and expand my knowledge and skills. I was also hypervigilant about weather conditions so I could stay out of trouble. I take the same approach with my IFR pilot journeys. In fact, my first opportunity to make use of the rating was a flight from Southern California to Salt Lake. However, I decided to fly VFR because if we flew IFR, we would have had to fly at 11,000' and the forecast showed that we would be in the clouds the last half of the flight with the 11,000' temperatures forecast between 0 and -6° C. We flew VFR and stayed below the cloud layer while going around snow and rain showers.

While I may not be a safer pilot, obtaining my IFR rating did make me a better pilot with an additional set of skills. However, I believe that anyone who goes through a training regimen will become a better, more skilled pilot.

Now that I have sufficiently stirred the pot, if any of you are still reading, I'll get to the title matter of the article. Not having the rating hadn't slowed me down. I was flying over 100 hours a year, most of it, cross country around the Southwest, with a trip to the East Coast and Oshkosh thrown in for good measure.

I got my IFR rating for two reasons. One, it was an opportunity to learn more and expand my knowledge and skills. Second, flying out of the LA Basin, there is often a marine layer which will ground VFR pilots or delay their flights until the layer has dissipated. That marine layer typically sits at 1,000' or higher, is anywhere from 500' – 2,500' thick, and there is good visibility below it. With the

IFR rating it would be simple to climb up through it when departing or descend through it on approach.

What about making an entire flight “in the soup?” No thank you. That is not a reason I wanted the rating. Again, going back to a previous statement about knowing the limitations of the plane; the idea of flying a small plane with one engine on an extended flight in the clouds, does not appeal to me. I fly for fun and because it is faster than driving. So, if the forecast is for a long flight in the clouds, I will make some adjustments to my plans.

I was fortunate to pass my check-ride on my first attempt, with just over the minimum 40 hours of IMC time in my logbook. My check ride wasn’t perfect, and I know others have done much better, but it was above standard. It felt great to complete the rating.

How did I prepare and what helped?

This first item is something that didn’t click in my head until after my check ride. It is easy to equate the IFR rating with flying in the clouds, because, well you spend a whole lot of time flying around wearing a view limiting device, while referencing the instruments. After obtaining the rating, if you want to stay current, you must continue to either fly approaches and holds in the clouds or with a view limiting device. But it is the IFR (Instrument Flight Rules) rating and not the IMC (Instrument Meteorological Conditions) rating. That means that while you are indeed learning skills that enable you to fly in IMC, the rating is showing that you have the knowledge and skills necessary to fly under the rules governing instrument flight, and there are a lot of them.

Because of the immense number of rules that govern instrument flight, please study and immerse yourself in the IFR world. There are many different online study helpers, YouTube videos, websites, forums, podcasts, etc. They cover the different aspects of IFR flying and each one brings a different perspective. The more well-rounded you are, the better prepared you will be. You don’t want to just memorize the rules, you want to understand the “why” behind those rules. The ultimate goal is to learn about different scenarios and how the rules apply to them. It is the difference between knowledge and wisdom.

A passing grade on the written exam is 70%, but you want to do much better than that. As you probably recall from your PPL days, the DPE (Designated Pilot Examiner) is going to review whatever you got wrong on the test. Theoretically, the fewer incorrect answers you have, the easier your check-ride oral portion will be.

When flying VFR, try to fly with the same precision that you need in the IFR world. Plan your cross-country flights using fixes instead of just flying a “general direction” and try to navigate to those fixes while maintaining your altitude. I would review my VFR flights on Flight Aware, looking for straight lines between points and then review the track log to see how often I deviated from my altitude. It always felt good when I would see a list of points over 10 – 15 minutes with no variation in altitude, especially in my pre-autopilot days.

It will help if you make precision flying a habit before you start on the IFR rating. That is because once you start, there will be plenty of things that will overwhelm you. On many occasions, my brain hit full capacity. While I wanted to do something with the plane or say something on the radio, I had no brain power left to accomplish those tasks.

When you start working on the flying portion of your rating, don't shortchange yourself on time with a CFII. Of the 40 hours of actual or simulated instrument time needed, only fifteen of those hours must be with a CFII. To save money, you may be tempted to spend less time with a CFII and more with a friend as a safety pilot. The problem is you may develop some bad habits. I had about 30 hours with a CFII before flying with a safety pilot. That is because I wanted to be at a point where I could solidly fly under simulated IMC conditions. I can assure you that at 15 hours, I still had a long way to go.

Oh, why did I wait so long before starting on the IFR rating? Because when flying, I like to have as much stacked in my favor as possible. Before starting, I wanted GPS in the panel and no vacuum instruments. A few years ago, I was flying in VFR conditions and noticed my vacuum gage at zero. I watched with curiosity to see how the Attitude Indicator (AI)would react and how long it would take to flop. The AI very slowly, ever so slightly, began to drift. If you don't have a good cross check going, you would not even make it to the point where it began to tumble before you were in very serious trouble.

I love flying! The feeling of leaving the ground and seeing the world from a perspective that many never get to see is a blessing. Let's be honest, the view while flying General Aviation (GA) is completely different than looking out of that little oval window on an airliner. If you are considering working on your IFR rating, or perhaps you started it and quit, let me add two more things that the rating gives you. The feeling and view while taking off into the gloom, then climbing through the clouds as they get lighter and lighter until you break out on top into the sunny blue sky is incredible.

Similarly, "cloud surfing" (skimming along the tops of the clouds) is an incredible rush. About a month ago, we were returning from Colorado and flying back into SoCal. We had flown VFR from Pagosa Springs (KPSO) to Lake Havasu (KHII) for a fuel stop. I filed IFR from KHII back to Fullerton (KFUL) because the forecast had called for an overcast at about 4,000'. From about fifty miles away, I could see the cloud layer on the west side of Banning Pass, west of Palm Springs. As we passed Palm Springs, with the sun setting and lighting up the clouds above and below us, I could not believe the beauty laid out in front of us. Then, ATC called, "Mooney 78878 descend and maintain 6,000." This was the icing on the cake. As we leveled off at 6,000', we just skimmed the pink and orange clouds. Then, we made a short descent through them. I felt like I was in Heaven.

As always, thanks for reading, and if there are things you would like me to write about (or not write about) drop me an email at richard@intothesky.com.

Icing and Mooneys

Not a Good Thing

Phil Corman
Co-Editor

Winter is approaching, and with it comes the increased chance of an icing encounter. Icing is not a good thing for any wings, but even more so on our thin laminar flow wings. Clearly you never want to fly into known icing conditions. If you should unexpectedly encounter icing, you should turn around or change to a known safe and available altitude.

Icing Risk

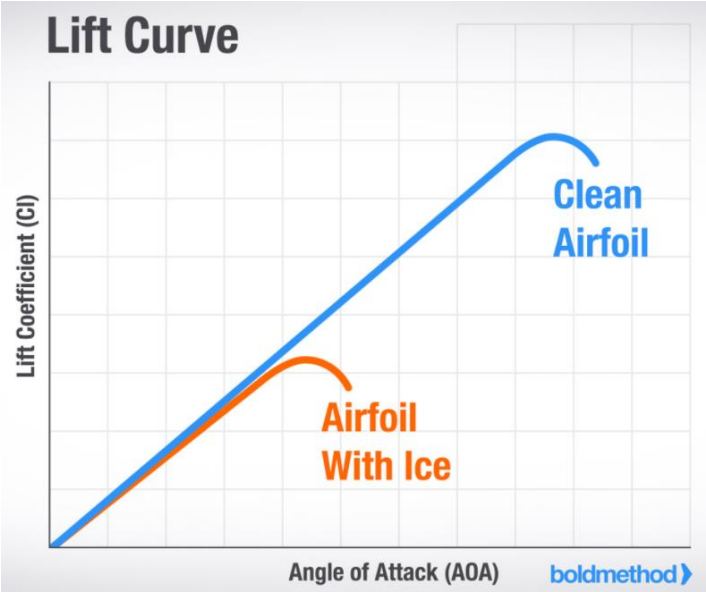
Cumulus Clouds		Stratiform Clouds		Rain and Drizzle
0° to -20°C 32° to -4°F	High	0° to -15°C 32° to 5°F	High	0°C and below 32°F and below
-20° to -40°C -4° to -40°F	Med.	-15° to -30°C 5° to -22°F	Med.	
< than -40°C <than -40°F	Low	< than -30°C <than -22°F	Low	

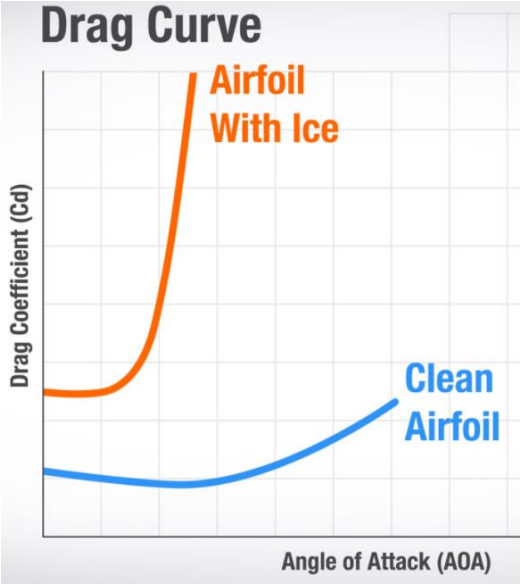
Icing increases drag and decreases lift. These can wreak havoc on your Mooney and are particularly more dangerous in the pattern or on final when you are already low and slow with a higher angle of attack.

In the Winter, Freezing Rain is common ahead of warm fronts. Serious icing occurs when the aircraft is flying near the top of the cold air mass, beneath a deep layer of warm air. Raindrops are much larger than cloud droplets and therefore give a very high rate of catch. In freezing temperatures, they form clear ice.

How quickly a surface collects ice depends in part on its shape. Thin, modern wings will be more critical with ice on them than thick, older wing sections. The tail surfaces of an airplane will normally ice up much faster than the wing. If the tail stalls due to ice, along with the airflow disruption it causes, recovery is unlikely at low altitudes. Several air carrier aircraft have been lost due to tail stalls. It also happens to light aircraft, but usually, it isn't well documented.

Airframe icing is the buildup of ice on the airframe surface. Airframe icing can also build up on the propeller, windscreen, antennas and air intakes. However, it can be especially dangerous when formed on the leading edges of the wing, tailplanes or over the air intakes.





Wing Stalls

When contaminated with ice, the wing will ordinarily stall at a lower angle of attack, and thus a higher airspeed. Even small amounts of ice will have an effect, and if the ice is rough, it can have a large effect. Thus, an increase in approach speed is advisable if ice remains on the wings. How much of an increase depends on both the aircraft type and the amount of ice. Consult your AFM or POH. Stall characteristics of an aircraft with ice-contaminated wings will be degraded, and serious roll control problems are not unusual. The ice accretion may be asymmetric between the two wings. Also, the outer part of a wing, which is ordinarily thinner and thus a better collector of ice, may stall first rather than last.

Tail Stalls

The horizontal stabilizer balances the tendency of the nose to pitch down by generating downward lift on the tail of the aircraft. When the tail stalls, this downward force is lessened or removed, and the nose of the airplane can severely pitch down. Because the tail has a smaller leading-edge radius and chord length than the wings, it can collect proportionately two to three times more ice than the wings and, often, the pilot cannot see the ice accumulation. (Perkins and Reike, In-Flight Icing).

You are likely experiencing a tail stall if:

- The pitch control forces become abnormal or erratic when flaps are extended to any setting.
- There is buffet in the control column (not the airframe).

The Recovery procedure for a tail stall is exactly the opposite of the traditionally taught wing stall recovery. Remember, in a tail stall recovery, air flow must be restored to the tail's lower airfoil surface, and in a wing stall recovery, air flow must be restored to the wing's upper airfoil surface.

Here is how to recover from a tail stall:

- Immediately raise flaps to the previous setting.
- Pull aft on the yoke.
- Reduce power if altitude permits; otherwise maintain power.
- Do not increase airspeed unless it is necessary to avoid a wing stall.

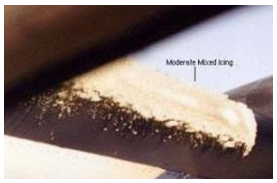
Roll Control

Ice on your wings forward of the ailerons can dramatically affect roll control as well.
Why? Our wing tips are thinner than the root of the wing, making them more efficient at collecting ice. This can lead to a partial stall at the wingtips, which affects roll control. As airflow is separated around the wing, control surfaces lose effectiveness because they're no longer flying in undisturbed airflow.

Know the Types of Icing

Clear Ice - Ice, sometimes clear and smooth, but usually containing some air pockets, which results in a lumpy translucent appearance. Glaze ice results from supercooled drops/droplets striking a surface but not freezing rapidly on contact. Glaze ice is denser, harder, and sometimes more transparent than rime ice. Factors which favor glaze formation are those that favor slow dissipation of the heat of fusion, (i.e., slight supercooling and rapid accretion). With larger accretions, the ice shape typically includes "horns" protruding from unprotected leading-edge surfaces. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit. The terms "clear" and "glaze" have been used for essentially the same type of ice accretion, although some reserve "clear" for thinner accretions which lack horns and conform to the airfoil.

Rime Ice - A rough, milky, opaque ice formed by the rapid freezing of supercooled drops/droplets after they strike the aircraft. The rapid freezing results in air being trapped, giving the ice its opaque appearance and making it porous and brittle. Rime ice typically accretes along the stagnation line of an airfoil and is more regular in shape and conformal to the airfoil than glaze ice. It is the ice shape, rather than the clarity or color of the ice, which is most likely to be accurately assessed from the cockpit



Mixed Ice – Occurs at -8 to -15°C and is a mixture of both. There is a combination of rime and glaze ice characteristics. Since the clarity, color, and shape of the ice will be a mixture of rime and glaze characteristics, accurate identification of mixed ice from the cockpit may be difficult.

Frost - Thin layer of crystalline ice. Normally occurs on clear, calm wind nights when air temperature and dew point are below freezing.

Icing Prediction Products:

- Freezing Level Charts
- Forecast Icing Potential (FIP)
- Current Icing AIRMETs/SIGMETs
- Current Icing PIREPs
- Winds and Temperatures Aloft

These can all be referenced on most EFBs such as ForeFlight or Garmin Pilot.

Be aware of ice before and during your flight. Make safe decisions. Live to fly another day.

Wisconsin Aviation Expands Aircraft Interiors Service with the Acquisition of Jaeger Aviation & Its Spatial Interior

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

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

For more details, visit:

www.WisconsinAviation.com or www.JaegerAviation.com

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

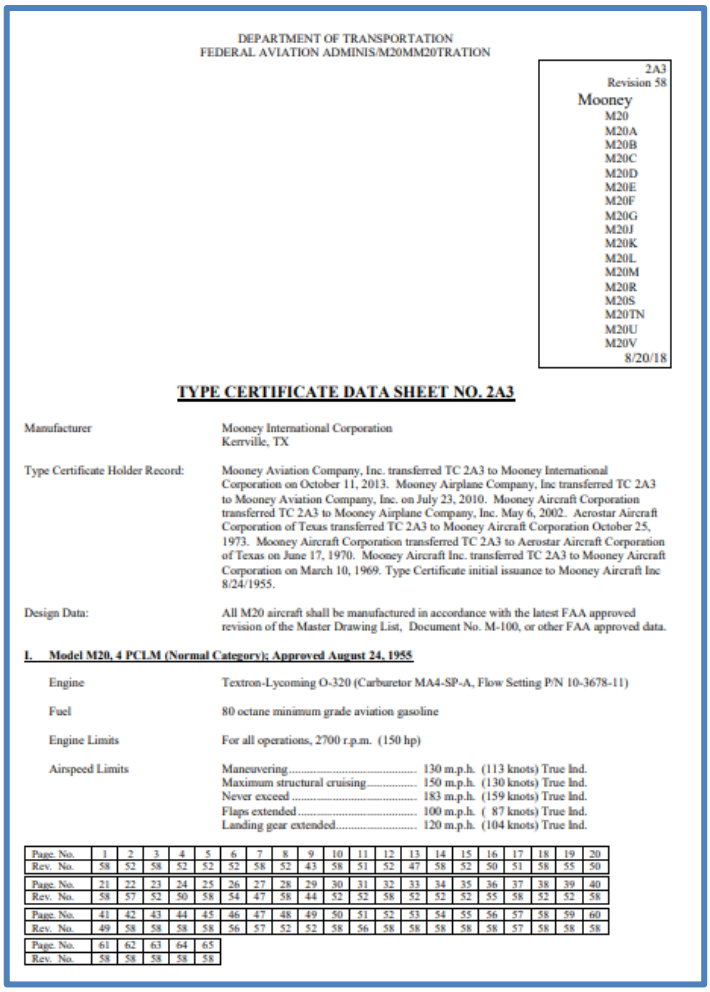
Wisconsin Aviation offers a complete line of general aviation services including air charter, aircraft maintenance, avionics repair and installation, flight training and aircraft rental, aircraft management, aircraft brokerage, and fueling services. The corporation has locations in Madison, Watertown,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

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

TCDS – Another FAA Four-Letter Abbreviation?

Eighteenth in the series
by Ron Blum

TCDS is an abbreviation for an FAA **T**ype **C**ertification **D**ata **S**heet. However, that doesn't tell us a whole lot. The TCDS is the highest-level engineering document between the FAA and the Manufacturer (Mooney in this case). The document describes either the airplane, engine or propeller. It discusses the limitations and where to find all the type design data, such as engineering drawings and documents. The TCDS takes precedence over all other documents



DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINIS/M20MM20TRATION

2A3
Revision 58
Mooney
M20
M20A
M20B
M20C
M20D
M20E
M20F
M20G
M20J
M20K
M20L
M20M
M20R
M20S
M20TN
M20U
M20V
8/20/18

TYPE CERTIFICATE DATA SHEET NO. 2A3

Manufacturer: Mooney International Corporation
Kerrville, TX

Type Certificate Holder Record: Mooney Aviation Company, Inc. transferred TC 2A3 to Mooney International Corporation on October 11, 2013. Mooney Airplane Company, Inc transferred TC 2A3 to Mooney Aviation Company, Inc. on July 23, 2010. Mooney Aircraft Corporation transferred TC 2A3 to Mooney Airplane Company, Inc. May 6, 2002. Aerostar Aircraft Corporation of Texas transferred TC 2A3 to Mooney Aircraft Corporation October 25, 1973. Mooney Aircraft Corporation transferred TC 2A3 to Aerostar Aircraft Corporation of Texas on June 17, 1970. Mooney Aircraft Inc. transferred TC 2A3 to Mooney Aircraft Corporation on March 10, 1969. Type Certificate initial issuance to Mooney Aircraft Inc 8/24/1955.

Design Data: All M20 aircraft shall be manufactured in accordance with the latest FAA approved revision of the Master Drawing List, Document No. M-100, or other FAA approved data.

I. Model M20, 4 PCLM (Normal Category); Approved August 24, 1955

Engine: Textron-Lycoming O-320 (Carburetor MA4-SP-A, Flow Setting P/N 10-3678-11)

Fuel: 80 octane minimum grade aviation gasoline

Engine Limits: For all operations, 2700 r.p.m. (150 hp)

Airspeed Limits:
Maneuvering..... 130 m.p.h. (113 knots) True Ind.
Maximum structural cruising..... 150 m.p.h. (130 knots) True Ind.
Never exceed..... 183 m.p.h. (159 knots) True Ind.
Flaps extended..... 100 m.p.h. (87 knots) True Ind.
Landing gear extended..... 120 m.p.h. (104 knots) True Ind.

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Mooney, and I use that word collectively for all the different companies throughout the decades, has owned 6 different TCDSs. Five are for airplanes, and one is for an engine. Interestingly, the engine TCDS came first. TCDS E-255 was issued in Wichita, Kansas for the aircraft conversion of the Crosley automobile engine. The Crosley engine was first installed in the M-18 "Mite" (Wichita TCDS A-803). TCDS 2A3 covers ALL M20s. The M22 "Mustang" is TCDS A6SW. The M10 "Cadet" has two, A-787 and A-718, (it's a long story). The FAA does not know marketing names like "Super 21", "201", "Ovation Ultra", etc. They know airplanes by model numbers, such as M20E, M20J, and M20U, and serial numbers. Let's take a closer look at TCDS 2A3, the M20s.

All M20s were built in Kerrville, Texas. For some reason, FAA and Mooney elected to put all M20s on the same TCDS. There are pros and cons with doing this, but 2A3 currently has 65 pages and 58 revisions, (illustrated on left).

TCDS 2A3 starts with all the affected model numbers, the revision level of the document and the date of the last revision. This is shown in the upper right corner. Next is the general information of the manufacture, who owns the TCDS, its history, and where the Engineering data can be found.

The bulk of the TCDS uses Roman-numeral sections. These contain each model data and its limitations. The current revision has 17 different sections or models of the M20. Throughout the years, the amount and type of data has changed in these sections, so some data found in later models may not be documented on earlier models. Let's start by looking at Section I, the original, no-letter, M20.

The first line of each section is the model designation, how many occupants the airplane is designed to carry, the category the airplane was certificated, (all M20 are normal category), and the date the model was first certificated. Next, we'll find the approved engine, fuel and engine limitations. Since Textron didn't exist when

this model was originally certificated, this section has been updated to indicate "Textron-Lycoming". The fuel grade is also the minimum. The FAA put out general memorandums (approval) for the use of 91/96 and later 100/100LL. Auto fuel is not currently approved for any M20 model but could be with a Supplemental Type Certificate (STC).

Next are weights and center of gravity (CG) ranges. Note the baggage weight limit. This value is a V_A/maximum G-load consideration. More on that in another article. 😊 Then there's fuel and oil capacities, control surface travels and serial numbers that are applicable in this section. Note that through the years, Mooney has had some "unique" serial numbering schemes. Some included the model number designation (good), the year of manufacture, (not so good), and serial numbers that started at 0001 on January 1, (not so good, either). For a while, four different models were coming off the line with the same serial numbers. Confusing, yes. One had to know the model first! Worse yet, the Cs and Ds could have the same serial number! An M20D that was converted back to an M20C will have the same serial number as another M20C that came off the line that same year! Owners and the FAA have made up multiple ways to try to deal with this issue.

The general section ends with leveling means, required equipment, defining the datum (for weight and balance), the certification basis, (regulations that apply to this model), and the production basis. A type certificate allows a company to make an airplane – and test each one. A production certificate allows a company to make multiples of the same airplane without as much production testing when completed.

Finally, there is a list of equipment. This is broken down into numbered sections, such as Propeller and Propeller Accessories, Engines and Engine Accessories, Landing Gear, Electrical Equipment, Interior Equipment and Miscellaneous. At the very end of the TCDS is an extensive list of Notes. The Notes are there to cover conditions where the note affects more than one model or even all the models.

United States of America
Department of Transportation Federal Aviation Administration

Supplemental Type Certificate

Number **SA00243SE**

This certificate, issued to **STC LIMITED**
E. 6427 Rutter Road, Felts Field
Spokane, WA 99212
certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 3 of the Civil Air Regulations.

Original Product—Type Certificate Number: 2A3
Make: Mooney Aircraft Corporation
Model: M20K

Description of the Type Design Change: Gross weight increase of the Mooney M20K as modified per STC SA5691NM

NOTE: This STC requires the installation of the Continental TSIO-520-NB engine in accordance with STC SA5691NM.

Limitations and Conditions: Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, and FAA Approved Airplane Flight Manual Supplement (AFMS) dated May 22, 2001, or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft. **(See "Continuation Sheet", Page 3)**

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: July 29, 1994 *Date retired:* September 20, 1999
Date of issuance: October 23, 1995 *Date amended:* June 13, 2001

By direction of the Administrator

(Signature)
Manager, Seattle Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.
This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2(10-68)

If you're interested in learning more about your model, it's an easy Google search – "FAA TCDS database". This will take you to the regulatory guidance library (RGL). On the upper left side of the page, you can select what you want to search for and how you want to search for it.

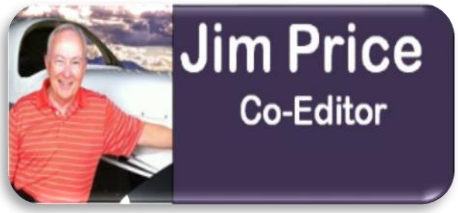
But the story doesn't end here. What about STCs? These are Supplemental Type Certificates, like the STC for the Mooney "Rocket" (pictured at right). An STC will "supplement" or "add to" the original Type Certificate (TC). Most STCs will not have a separate TCDS, but if the modification is large enough, it could.

The bottom line is that "TCDS" is not just another FAA four-letter abbreviation, but it is great, useful data! Next month I think we'll take a closer look at limiting airspeeds, (typically due to structural limitations), or we'll look into NORSEE items. Are you familiar with NORSEE? Ping me if you have a preference on either topic at solutions@blueontop.com. Until next time keep the blue on top.

Blue on Top

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

Once Again, it's a Happy Wing



A few years ago, I asked a mechanic friend to install an engine monitor in my M20K 252. Some mechanics will place an old quilt on the wing to protect it from scratches caused by a wayward shoe. Alas, my friend did not, and I had scratches on my otherwise beautiful right wing.
I bought some Rubbing Compound paste and went to work. Sadly, the paint only looked worse.

Recently, I went to Auto Zone to see if I could find another product that would restore my wing luster.

In my search, I discovered Meguiar's Ultimate Compound. It seemed to be calling my name. I was impressed by the label, which included a before and after photo. I noticed that the instructions recommend that the compound should be applied with an applicator pad, and then the excess should be wiped with a microfiber cloth. I decided that I would follow up with Meguiar's Ultimate Polish.

Off I went to the hangar with guarded faith in Meguiar's ability to remove the dullness and scratches on my wing.

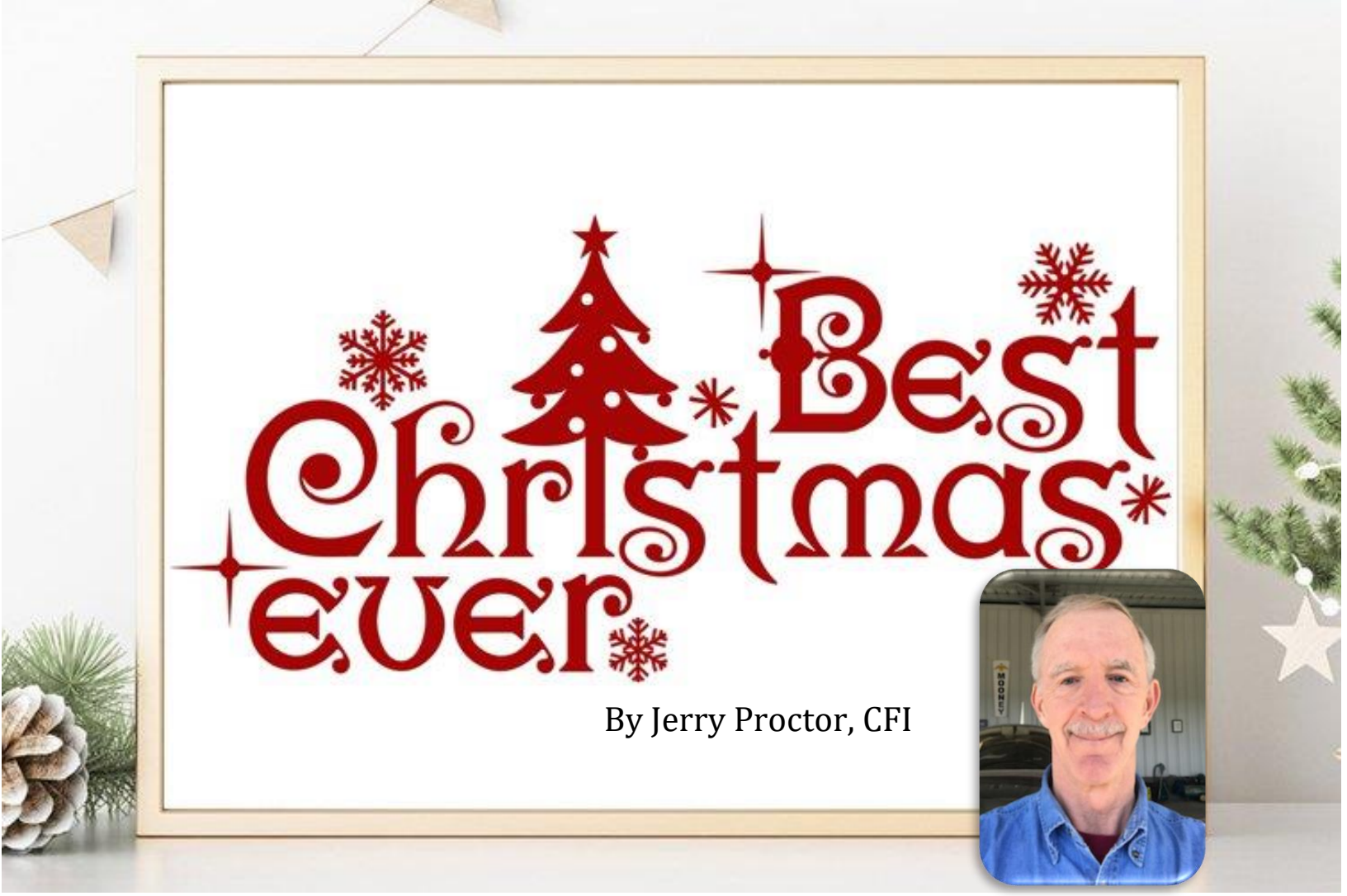
After using the “Ultimate Compound,” the wing looked great. I then applied the “Ultimate Polish,” and I was amazed.

See for yourself. The Meguiar’s products removed the dullness that I had cause when using the rubbing compound paste. Also, I could no longer see any sign of a wandering mechanic’s shoe. Happiness filled the hangar, and I am sure that I heard angles sing.

I no longer trusted the paste, so, in the words of my British ancestors, I tossed it in the rubbish bin.

Hereafter, I shall be a loyal and grateful Meguiar’s fan.

If your aircraft has scratches, or dull, oxidized paint, try Meguiar’s Ultimate Compound and Ultimate Polish. Your plane will ever be grateful and as always, you can thank me later.



By Jerry Proctor, CFI

First, may I wish you all a very Merry Christmas and a Blessed and Healthy New Year.

This article won't have a lot of flying information, but it will be long on the topic area. If it is OK with everyone, let's get the flying part done first. I spent 40 years playing Army and in my uniform days, I served as an Aviation Intelligence officer, flying two surveillance and intelligence platforms, the OV-1 Mohawk and the RC 12 Guardrail.

OV-1 Mohawk

RC-12 Guardrail

In 1986, I volunteered for what would be my second of three tours in the Republic of Korea. I was a brand-new Major and had been married to my dear wife about eight years. One of the reasons I volunteered to serve in South Korea is because it had critically important missions. I was based at Camp Humphreys in Anjung Ri and from there, we flew Mohawks at night, across the peninsula, using Side Looking Airborne Radar to detect movement. This mission meant that I would fly single pilot, with an enlisted System Operator. We flew these missions 24x7, 365 between 14,000' – 16,000' and sometimes, in terrible weather. We were tasked with two, and often three missions each night. I don't have TKS on my Mooney because in the Army, I flew many hours in the snow and ice, and I absolutely do not want to do that again!

Family

The most important reason for going to Korea is family. My wife Jana and I were unable to have children and she read that there were many Amerasian orphans in Korea. We were hopeful that we could adopt in Korea.

From a flying and real-world perspective, the South Korea assignment was great. However, in the eighties, the living conditions were not very good. We lived off base in a small apartment that overlooked the runway and runup area. When I was assigned a night mission, I would flash my landing light towards our apartment. The apartment was primitive. Sure, it had running water, but it was far from potable. We filled up the little bathtub once, but never again. Every night, before leaving the post, I would get two five-gallon jugs of water so we could have descent water for drinking, cooking and baths. We had what you would call a two burner Coleman stove and a very underpowered microwave. Our apartment heating was far from dependable. Otherwise, everything was just great!

The Adoption Process

Jana and I accomplished all the adoption processing, meetings, home surveys, and interviews. We thought by March 1987, we might receive a child. Low and behold, in mid-December of 1986, we received a telephone call, and learned that the agency had a baby for us. WHOA!!!! That call was wonderful, but surprising to say the least! The agency said Jana could come to the hospital to look at the baby, as she was getting some medical attention and was not ready to take home. Jana took the 60-mile bus ride to Seoul and went to the hospital. She was taken in to look at our Amerasian daughter and Jana, who is from Thailand said, "Ms. Yoo, this baby is not an Amerasian, she is all Korean."

Ms. Yoo replied, "Oh, just come back in a few weeks and maybe I will have one."

My Wife turned and took two steps towards the exit. She stopped and whispered to herself, "What am I doing? That is a little six-week-old baby, and she has no mother or father. She is an orphan."

Jana turned around and said, "Ms. Yoo, that is my daughter!"

The Amazing Blur

Within 30 minutes, Jana received our daughter Nina. You may remember, that medically, she wasn't supposed to be ready to go to a home. So, Jana took Nina to Yongsan Army Base hospital in Seoul to make sure she was healthy. She was!

Jana called me before she left to tell me that she would be coming home with the baby! Holy smoke! An hour later, they were on the bus, headed for home. We were now parents! The hospital/orphanage didn't have any baby bottles; only a blanket. Most of the trip, our baby cried because she was so hungry.

This was an immense challenge because I was on an unaccompanied tour. That means the Army intended that I be based in South Korea without my family. So, we were not authorized things like diapers and baby formula. While my wife was nervously ridding home on the bus, I was getting the authorization to get baby stuff. I went to Camp Humphreys' Mini Shopette and bought everything in the infant section. As the bus rolled into the bus stop, just below our apartment, Jana stepped out and said, "Here is your daughter!"

Most parents have months to prepare for a new arrival. For us, it was a few hours. But within days, we had settled down into a routine.

Merry Christmas!

Soon, it was Christmas Morning, and Jana and I looked and smiled at the best Christmas present we will ever receive.

Nina grew up to be a wonderful Daughter and great student. In High School, she joined Junior ROTC and there, she received an Army ROTC Scholarship to Northern Arizona University in Flagstaff. Upon graduation, she was commissioned a 2nd Lieutenant and spent six years in the Army. There, she served as an Artillery officer and Military Intelligence officer. She also served two years in the Hawaii National Guard.

Nina is now an intelligence analyst for a three-letter agency, and Mom to our Grandson Wyatt who is about to have a baby brother.

Papa Jerry and Wyatt

Hands down, she is still the best Christmas present ever.

May you all have a wonderful Christmas and cherished memories.

Fly safe

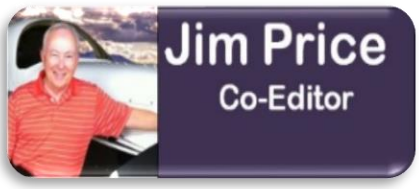
I don't think Santa is required to use ADS-B, "So you better watch out."

Mom and Dad Proctor

Drugs and Flying

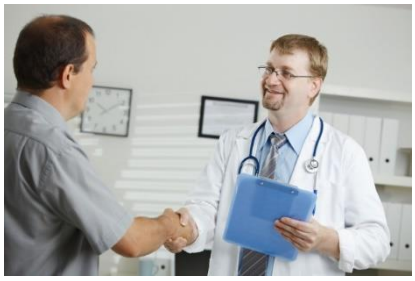
Drugs and Flying

Several studies published by the FAA Toxicology Laboratory on toxicology samples of deceased pilots indicated the presence of illicit drugs, and prescription or over-the counter medications in 42% of subjects tested. While the NTSB and FAA have not necessarily cited drug or medication use as a causal factor in these accidents; the magnitude of these findings poses two questions.



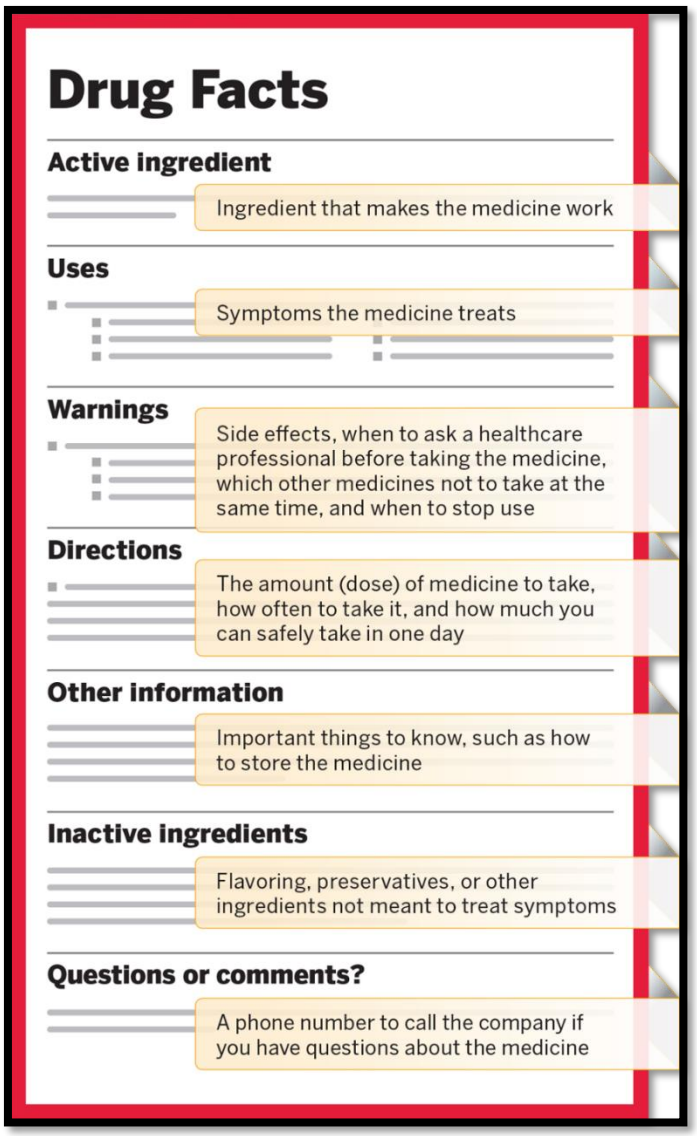
1. Have the drugs found in recent investigations, diminished the pilot's ability to safely conduct flight operations?
2. Have the medical conditions requiring the use of those drugs compromised the pilot's ability to fly safely?

It may be impossible to say, after the fact, to what extent a drug compromised a pilot's capability. Before flying while using any drug, it is a good idea to consult with your Aviation Medical Examiner (AME).



Teaching Points:

- 42% of pilots in fatal crashes had some sort of drug/ medication in their systems during the flight.
- Some of these medications carry specific warnings against operating machinery or motor vehicles or performing tasks requiring alertness. That includes flying an aircraft. Yes, that also means gliders and hot-air balloons.
- Illicit drugs always impair human performance.
- Healthcare providers may prescribe drugs that could compromise pilots' abilities – especially if the doctor is not aware that the patient is a pilot.
- Combinations of prescription and OTC medications can be particularly dangerous. Pilots should consult their AME before taking a combination of medications.
- AMEs are trained to advise pilots on the negative and positive effects of drugs.
- Pilots must truthfully report all medical conditions and drug use on their medical application forms and should consult their AME with respect to all medical conditions and drug use before flight.

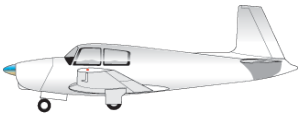


You can search for FAA approved medications at Left Seat or AOPA

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

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

Mooney Maintenance



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

Click here

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

Click here

LASAR
Fanatically Mooney. Exceptionally Fast.

Ask the Top Gun

Tom Rouch
Founder of Top Gun Aviation, Stockton, California

Send your questions for Tom to TheMooneyFlyer@gmail.com

Mr. Rouch, how often should I replace my brake fluid? Also, how do I purge the system before adding new brake fluid? I ask because a friend had not changed it for a long time, and it was very pasty and gel-like.

Tom's Answer

Changing aircraft brake fluid is not a common task and it is rarely done. It is not the same fluid used in automobiles. Most manuals do not even address it, but when repairing, I recommend doing this. When changing seals or hoses, where you are losing fluid, you can just let the fluid drain out and then add new fluid. I also would observe the color. If it is dark, I would suggest draining all the fluid and refilling. I know of no procedure to "purge" the system, but I am sure someone will prove me wrong. However, in my 60 years working on aircraft, I have never heard of it, and that includes my experience with B-52s. Brake systems are a closed system, so usually the fluid doesn't get dirty. However, if you have a fluid leak, then it is possible. This would be a good time to change the fluid.

I recently got my 2003 Ovation back from annual and it now has a rudder trim rigging issue that it didn't have when it went in for annual. The mechanic found corrosion on a cable end that is used in rudder trim. (I don't know which cable). He removed the cable end to remove the corrosion. He then put it all back together and performed the rudder trim rigging procedure, which is something like 3 degrees left for left stop and 23 degrees right for right stop. Now, I must be at the full left rigging stop to get the ball almost centered in cruise flight. There is no excess left trim to move the ball even partially right of center. I returned the plane and they rerigged it with the same result. Before the annual, I could get the ball on either side of center using the rudder trim.

I am at a loss as to what to do next. Running rudder trim to a stop for normal cruise does not seem normal to me.

Tom's Answer

This is a complicated procedure and must be followed exactly. First the plane must be on jacks when rigging. There are two little required "tools." Spring clips are required. Then, follow the procedures and with the rudder centered. After rigging, the indicator will be almost full left. You rig the trim first, then adjust the indicator to match.

That is basically it, but it is easy for me to criticize. The bottom line is that something was not done correctly. If you were close to my shop, Top Gun, we could fix it. Wherever you are, you need to get to someone with experience.

WHY PAY MORE?

. . . get performance AND economy

Why pay more when the Mark 20A gives safety, performance, and comfort equal to much more expensive aircraft and at the same time gives you much greater economy.

Mooney's Mark 20A is a modern, low wing, retractable geared, 4-place executive type plane with speeds up to 190 m.p.h. In production since 1955, Mooney sales for the world's most efficient airplane have zoomed each year. In '59 sales were up 55%; in '58 they were up 46%.

Again for '60 Mooney sets the pace with aviation firsts.

FRINGE BENEFITS EXCLUSIVE WITH MOONEY!

- Maintenance Warranty.
- Wing Warranty.
- A. D. Warranty.
- Lowest Insurance Rate.

Add these money-saving features to Mooney's unmatchable economy, and you, too, will say, "why pay more"? Compare and you'll see that your airplane dollar has never bought so much speed, safety, economy and comfort as in the '60 Mooney Mark 20A.

COMPARE!

	MOONEY MARK 20 A	BEECH 35	CESSNA 210	PIPER COMANCHE
PERFORMANCE				
Horsepower	4 cyls., 180 h.p.	6 cyls., 225 h.p.	6 cyls., 260 h.p.	6 cyls., 250 h.p.
Top Speed	190 mph	195 mph	198 mph	190 mph
Cruise (75% Power)	180 mph	185 mph	195 mph	181 mph
Rate of Climb	1150 fpm	1050 fpm	1200 fpm	1490 fpm
Service Ceiling	20,000 ft.	19,800 ft.	20,300 ft.	20,000 ft.
Range (Max. inc. 45 min. Reserve)	1110 mi.	1170 mi.	1100 mi.	1160 mi.
Take Off Distance	680 ft.	900 ft.	740 ft.	750 ft.
Landing Distance	550 ft.	570 ft.	520 ft.	650 ft.
ECONOMY				
Initial Cost (Standard Equipment)	$15,450	$19,995	$22,450	$18,990
Factory Exp. Exchange Price	$ 1,535	$ 2,434.55	$ 3,056	$ 2,362
Hourly Gas Consumption (75% Power)	10.8 gph	13.4 gph	15.8 gph	15.6 gph
Total Hourly Operating Cost (300 hrs./yr.)	$17.71	$22.42	$22.31	$25.90
First Year's Operation (300 Hours)				
a Mooney Saves You	——→	$1,413.00	$1,380.00	$2,457.00
Initial Cost—Mooney Saves You	——→	$4,545.00	$7,000.00	$3,445.00
First Year Total Savings As Mooney Mark 20 A Operator	——→	$5,958.00	$8,380.00	$5,902.00
COMFORT AND SAFETY				
Landing Gear	Manual	Electric	Hydraulic	Electric
Riding Comfort (air cushioned)	Flexible Wing	Rigid Wing	Rigid Wing	Flexible Wing
Control Systems	Steel Push Pull	Cables—Pulleys	Cables—Pulleys	Cables—Pulleys
Astro-type Ventilation	Yes	No	Yes	Yes
Low-wing Visibility	Yes	Yes	No	Yes
Stalling Speed	57	57	59	64
Tubular Steel Cabin Frame	Yes	No	No	No
Retractable Entrance Step	Yes	No	No	No
Tinted Glass Windows and Windshield	Yes	No	Yes	No
Laminar Flow Wing	Yes	No	No	Yes

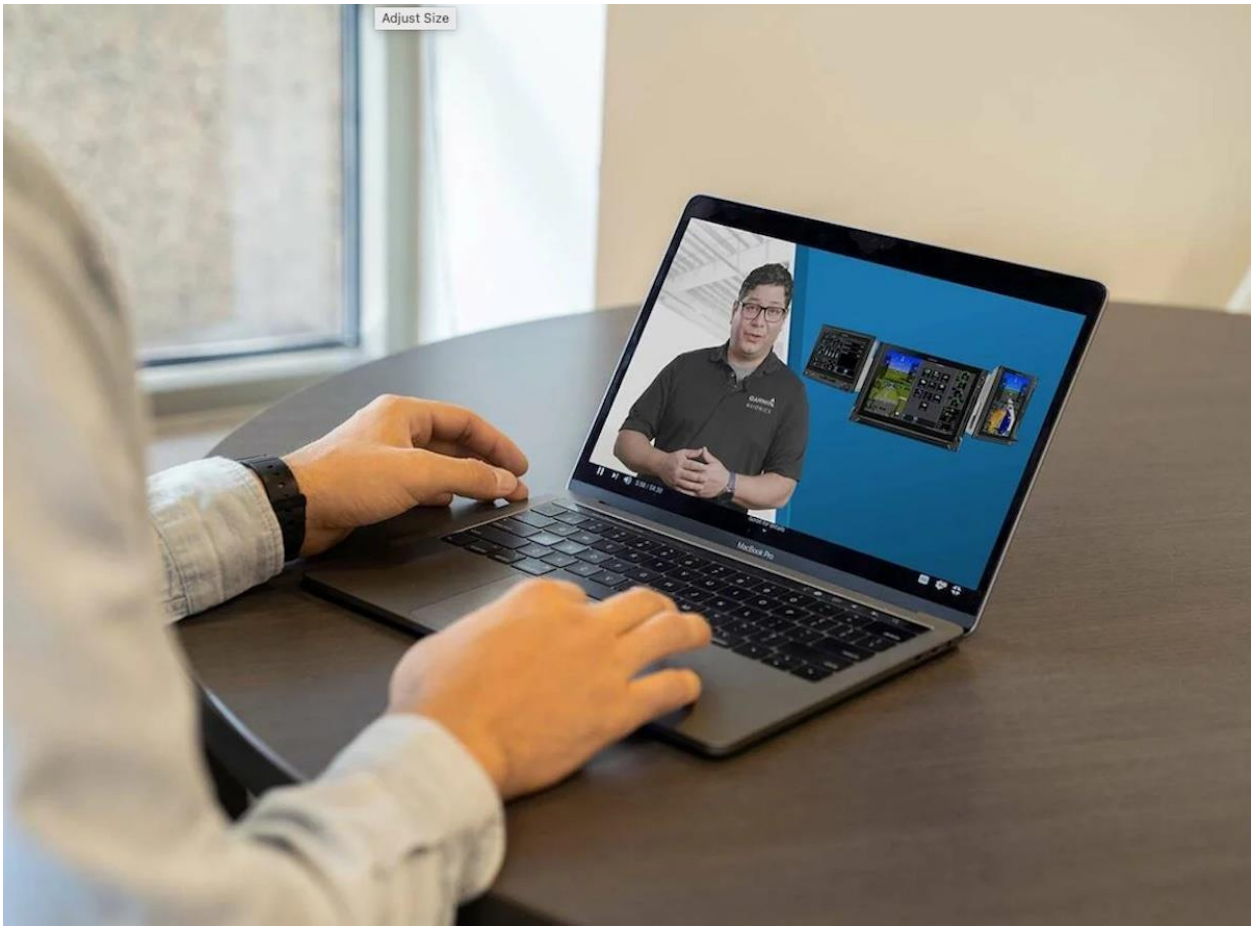
*Above figures are taken from manufacturer's advertised specifications.

Call your Mooney dealer now or write:

Mooney AIRCRAFT, INC.

Kerrville, Texas

Garmin Expands Pilot Training Courses



Garmin has introduced several new virtual pilot training courses. A new eLearning course provides instruction on the Garmin G3000, and a free video series offers lessons in risk management and SiriusXM weather products.

G3000 Essentials 2.0 eLearning course

This course offers best practices for operational use, including instruction on features included in recent software updates.

Pilots will learn about fundamentals such as system components, database management, PFD and MFD operation, automatic flight control system operation, abnormal operations, and more.

Advanced features including Garmin Autoland, emergency descent mode, and flight data logging, will also be covered. Additionally, two flight scenarios will demonstrate how the features can be used from start up through final landing.

Using a computer, tablet or smartphone connected to the internet, pilots can access the courseware immediately through the eLearning platform. Pilots can learn at their own pace and pause lessons as needed, retake specific lessons – or even the entire course – at any time during the two-year subscription period. **Price: $334.95.**

Aviation Risk Management series

Through multiple free videos on Garmin's YouTube channel, pilots can review common safety hazards and traditional risk mitigation strategies in the Aviation Risk Management series.
Pilots will also learn how the features and capabilities on Garmin avionics, such as Garmin Autoland, SafeTaxi, SurfaceWatch, traffic displays and other hazard awareness features can contribute to managing risk, Garmin officials said.

SiriusXM Weather Video series

Developed in conjunction with SiriusXM Aviation, this free 15-video series offers an overview of the SiriusXM setup on Garmin units and highlights common uses of SiriusXM weather products.
Featuring several operational scenarios, the SiriusXM Weather Video series covers challenges and hazards pilots might experience during flight and highlights the value of onboard weather products to help increase situational awareness and aid in decision making. Access the SiriusXM Weather Video series here.

5G Launch Delayed

AT&T and Verizon have agreed to delay the launch of 5G because of concerns it might interfere with airplane safety systems. Originally planned to launch Dec. 5, 2021, the companies are delaying their 5G rollouts for about a month.
During that time, the wireless companies will "further assess any impact on aviation safety technologies," the Federal Communications Commission and FAA said in a joint statement.

The delay comes after the FAA issued a Special Airworthiness Information Bulletin (SAIB) warning pilots of the risk of "potential adverse effects" on **radio altimeters** once 5G wireless broadband networks are deployed.

According to reports in national news outlets, including the Washington Post, aviation advocacy groups have been warning regulators for months that the 5G rollout could interfere with radio altimeters, which allow pilots to measure how far a plane is from the ground.

New Aviation Survival Gear Kit

Lightspeed Aviation has introduced its Aviation Survival Gear Kit, a pilot-designed emergency kit.

This kit includes items that cover the basics of shelter, fire, water, first aid, and rescue.

- Shelter: 5 yards of all-purpose, pocket-sized Duct tape and a 5×7-foot reflective blanket that can double as a tarp
- Water and Fire: Storm proof matches, water purifying AquaTabs, and a collapsible plastic cup
- First Aid: Chapstick, sunscreen, Tecnu skin cleanser for poison ivy and oak oils and Cala-Gel anti-itch lotion, bug repellant band, and nitrile gloves
- Rescue: Glow sticks, a signaling mirror, and a paracord bracelet with compass, whistle, and flint striker

- Survival: A multi-tool shovel that attaches to the bag in its own sheath. It has sharp and serrated blade sides, a ruler, wrench and nail puller, a can/bottle opener, and additional cording.
- Survival: An Aviation Survival Checklist Deck. This is a reference guide made up of 22 informational 4 x 6 cards with simple-to-follow checklists on topics ranging from first aid, fire, water, shelter, basic knots, and mental toughness tips.

The items come in a military-style bag that is small enough to fit in a flight bag.
The kit includes

Price: $129.

First Remote Tower Proves a Success

THE REMOTE TOWER AT LEESBURG EXECUTIVE AIRPORT IN VIRGINIA.

The FAA's Air Traffic Services organization has authorized continued operations for the remote air traffic control tower at Leesburg Executive Airport (KJYO) in Virginia.

What started in 2014 as a public-private partnership among Saab, Virginia SATSLab, and the town of Leesburg, led to the launch of Saab's remote tower system at KJYO. Leesburg Exec's remote tower became the first under the FAA's Remote Tower Pilot Program.

Before the remote tower was installed, KJYO, the second busiest general aviation airport in Virginia, had no ATC services.

More than five years of FAA formal evaluations and safety panels led to an initial operational phase, during which controllers safely managed more than 75,000 operations at Leesburg.

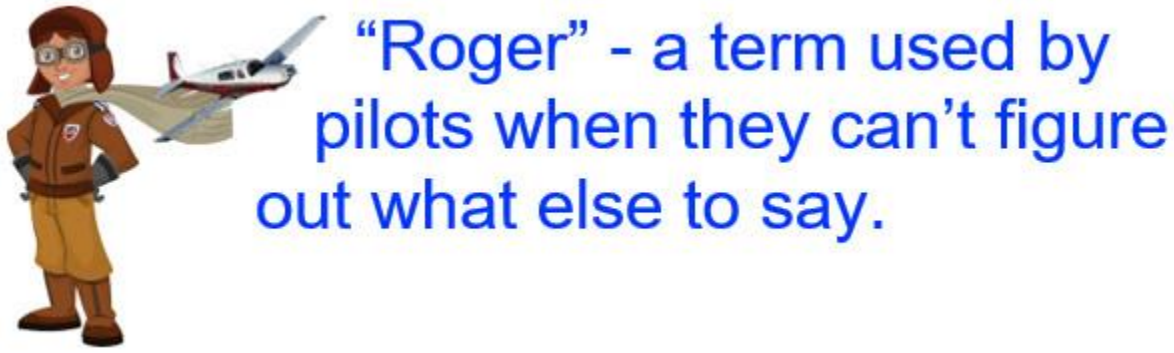
The remote tower at Leesburg includes fixed High-Definition (HD) cameras and controller displays, maneuverable optical and infrared cameras, microphones, and a signal light gun. In addition to live video, controllers have a full suite of tools required to operate the airport in a similar manner as they would in any other ATC tower.

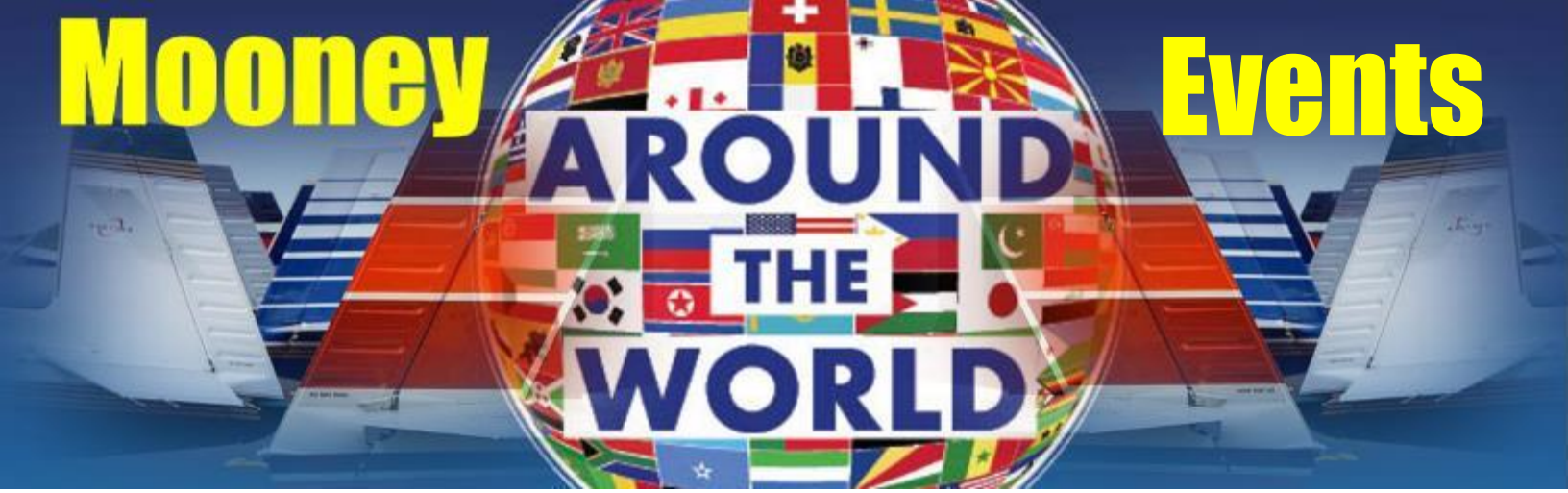
THE CONTROL ROOM FOR KJOY. (PHOTOS BY SAAB)

While in the future, controllers will be at another location other than the airport, KJOY's control room is set up in an airport conference room, officials noted.

The FAA's authorization to continue operations brings KJOY "one step closer to permanent ATC services, while avoiding the ever-increasing expense of constructing and maintaining a conventional, multi-story ATC tower," company officials said.

"Today's announcement brings us even closer to an FAA-certified, lower-cost alternative for U.S. general aviation airports needing to replace their aging towers or for busy airports similar to Leesburg seeking to add ATC services," said Erik Smith, president and CEO of Saab.





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* December 11: Winter Haven (GIF) January 8: Leesburg (LEE)
MOONEY SAFETY.COM	**2022 Events** Jan 28-30: Lakeland, FL Apr 22-24: Santa Maria, CA Jun 3-5: Denver, CO Sep 16-18: Oshkosh, WI Oct 21-23: Redding, PA Sign Up at https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	**Learn more at** https://www.mooneysummit.com/
Australian Mooney Pilots Association	March 17-21, 2022: Annual Gathering of Mooneys - You will be able to visit the Coonawarra wine region (where life is a cabernet), Princess Margaret Rose caves, Dingley Dell (former home of Adam Lindsay Gordon), Piccaninnie Ponds, the Nelson Aeroplane Company and lots more. September 9-12: Spring Fly-In to Merimbula – More details later **Learn more at** https://www.mooney.org.au/
EMPOA	**Learn more at** https://www.empoa.eu/index.php/en/
Other Mooney Events	January 27-30: Yuma formation clinic June 3-5: Walla Walla Fly-In by Henry Hochberg. Wine, Food and Fun. Hotel room block at Whitman, 866-826-9422. Contact Henry if you need any additional info at aeroncadoc@comcast.net.

TMF PRODUCT REVIEW

Sentry from ForeFlight

For $449, you get ADS-B IN and a Carbon Monoxide detector.

ForeFlight's Sentry ADS-B Receiver supports four GNSS systems:

- **GPS and WAAS GPS** (US Space Force – 31 satellites)
- **Galileo** (European Union – 24 satellites)
- **GLONASS** (Russia – 24 satellites)
- **BeiDu** (Chinese – 35 satellites)

Sentry can track three constellations concurrently for redundant location tracking. View a variety of inflight data, including ground speed, altitude, ETE, distance to destination, and more.

This is key to GPS backup when the US Military is jamming our satellites.

Appareo's Stratus does not support GLONASS, Galileo, or BeiDu.

CLICK HERE to learn more.

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)

Items for Sale

Call Tom 303-332-9822

New Hartzell Propeller Hub HC-C2Y (K, R)-1 Serial CH41782B

This hub will comply with AD2006-18-15 and superseded by AD2009-22-03
This AD affects many IO-360 aircraft.
Current Hartzell price is $4,275.

Price $3,999

Brand new, never used, two-person portable oxygen system

Bottle, carry case, two masks, two nasal cannulas, and all associated tubing, flow indicators, and regulators

Price is $400

New never used aircraft wheel stand

Used when tire and rim assembly is removed. This stand slides onto the bare axle to hold up the aircraft for safety and to avoid damage to bare axle. This stand is adjustable for different heights.

Price $75

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 GDL 52R
- Newly Overhauled BFG WX 1000+ Stormscope, display and processor ($1,890)
- 28-volt electrical system
- Astrotech LC-2 clock
- Electric trim with CWS
- Yoke mounted AP disconnect and ident.
- Electric Back-up vacuum
- New STC'd gear and stall audio alarm ($1,100)
- Built-in CO2 detector
- Speed brakes completely overhauled January 2020 ($2,800)
- Four place intercom
- 2900 GW STC
- Two built-in David Clark 20-10X ANR headset jacks with headsets
- CYA 100 AOA with custom housing, (not yet wired) ($1,690)
- Useful load 992 lbs.
- Air/Oil Separator
- Reiff Preheater, 2 sides
- Removable back seats
- Articulating seats
- Inflatable lumbar support
- Indirect interior lighting
- Kool scoop
- Wing mounted fuel gauges
- Two place Sky Ox oxygen tank with custom rack
- Sidewinder electric power tug
- B-Cool ice cooler with remote switch
- Annual completed February 2020 by Top Gun Stockton MSC.
- Tan leather interior redone 2012, good condition, front sheepskins coming soon
- Custom black front floor mats, custom cover, cowl plugs
- Original paint. Pleasing colors. Looks very good at 8'.
- The plane starts right up hot or cold, good compressions, does not use much oil, good oil analysis, runs very smoothly, flies great.
- Recent avionics fan, fuel pump, starter, battery, airstop tubes on mains
- New shock discs 2 1/2 years
- No back clutch spring was installed 2 1/2 years ago

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


Rusty Pilot or Old Pro
INSTRUMENT PROFICIENCY CHECK
Study Guide
J D Price, CFII, MEI, ATP
FLIGHT REVIEW
Study Guide
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