The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

December 2022

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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

Technology – When is Enough, Enough?

I love all of the technology that I have added to my Eagle. But sometimes I think enough, is enough. Two systems prompt me to ask this question. The first is an Angle of Attack Indicator and the second is a Landing Height System indicator. Let me start by saying they are both great and may help increase safety of flight. My concerns include "too much reliance on technology" and "possible distractions" during critical phases of flight.

Angle of Attack (AOA) Indicators

These have been around aviation for decades. I believe the Navy aviators had them as far back as the Vietnam War. An AOA shows you your "current" angle of attack. Some show green/yellow/red to indicate how close you are to stalling.

As you know, Airspeed is a proxy for stalling. And the stall airspeed changes based on current aircraft weight, bank angle, flaps, and gear.

An AOA is a more direct measurement for your current angle of attack and how close you are to stalling. To have this useful piece of technology seems like a no brainer.

My concern is that as you are lower and slower, such as base to final or short final, I think 100% of your focus should be outside your Mooney. Looking at an indicator inside the cockpit when you are low and slow seems like a distraction. If you can have a heads-up display for your AOA, this would alleviate some of the distraction.

When I read about the number of inadvertent stalls, I am amazed. I am just an average pilot and I have never inadvertently stalled. The warnings are numerous, including the stall warning horn, sloppy control responses, etc. During the incipient stall, I correct well before an actual stall. I realize that distractions to the PIC can divert his or her attention and an incipient stall might not be recognized.

An AOA indicator could be an amazing safety device, but only when used wisely.

Landing Height System (LHS)

These systems include a built-in eye-safe Class 1 Laser (Light Detection and Ranging) along with an audio interface system.

The Landing Height System offers an aid to situational awareness, added safety, and great advantages when:

- A Pilot is accustomed to a 50 ft. wide runway and needs to land on a 100 ft. or a 150 ft. wide runway.
- Landing at night, especially when not current.
- Transitioning from a slower/trainer airplane to a higher-performance airplane.

It is an audio system that reads your altitude via "laser" right down to 1'AGL. My concern is that pilots could become overly reliant on this device. There is still no substitute for starting your flare "when the runway visual makes it wide" and "looking down the runway during the flare".

However, this is an especially useful and redundant backup tool for better flare management.

CLICK HERE to read about Microkit Solutions products

Fly-Ins

If there is sufficient interest, Jim and I are toying with the possibility of 1-3 fly-ins during 2023. In the past 10-15 years, we have sponsored almost 70 fly-ins.

We are contemplating the following:

- Hacienda de los Santos in Alamos, Mexico. Two or three times each year, the owners sponsor a 4 day event which is amazing. CLICK HERE to read about a typical agenda. You will find that it is wonderful for both the PIC and spouse. Scroll down to see a typical agenda. If interested, read our article in this issue and let us know. If there is sufficient interest, we would like to do it.
- Paso Robles (KPRB) on May 19-20. Our last impromptu fly-in hosted 54 Mooneys and more than 100 attendees. This would include wine tasting and a free BBQ lunch.
- South Lake Tahoe (KTVL) on September 29-30. This would include dinner together on Friday, a Mooney Flyer sponsored Soiree with food & drink on Saturday and a few presentations with cool speakers.

CLICK HERE to let us know if you are interested in one or more of our fly-in(s) interest you.

Shock Disk Saver

When your Mooney is sitting in the hangar or on the ramp, it's just compressing and wearing out your expensive shock disks. An ingenious person in the Australian Mooney Pilots Association (AMPA) has come up with a great solution. It takes the load off your gear while on the ground. **CLICK HERE** to learn more and to purchase a set.

The Loss of an Amazing Guy and Cherished Mooniac

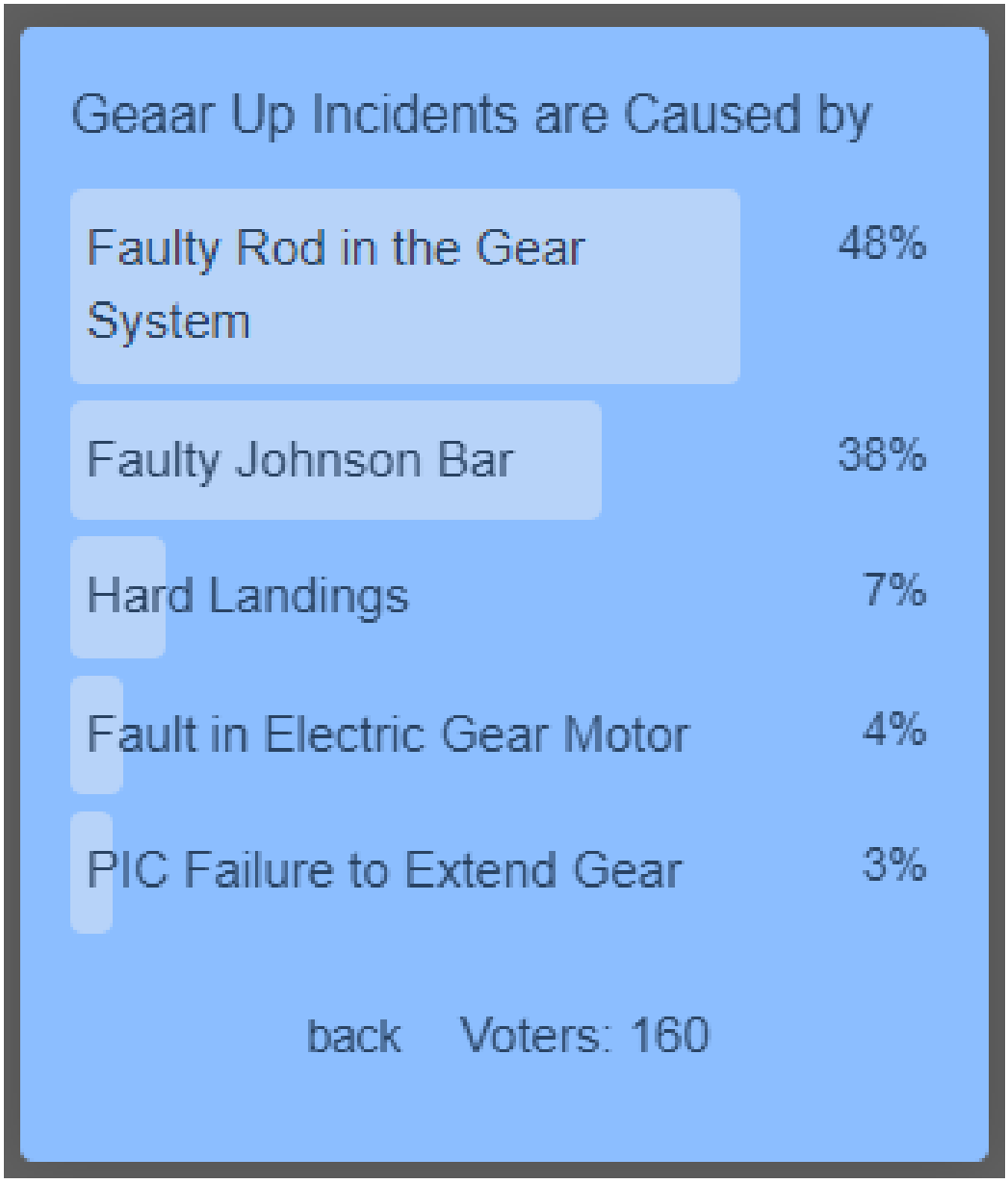
On November 22nd, we lost an amazing person and fellow Mooniac, Ron Blum.

Many of you probably knew Ron as a writer/contributor to The Mooney Flyer. We often referred to Ron as Professor Ron as he was one of the most knowledgeable Mooniacs we knew. I felt like he had forgotten more about Mooneys, than most of us will ever know.

But that was only a part of who Ron was to the Mooney community. He was always giving of his knowledge and time. He would simply drop what he was doing to help others.

We at The Mooney Flyer, will miss Ron. I will miss Ron.

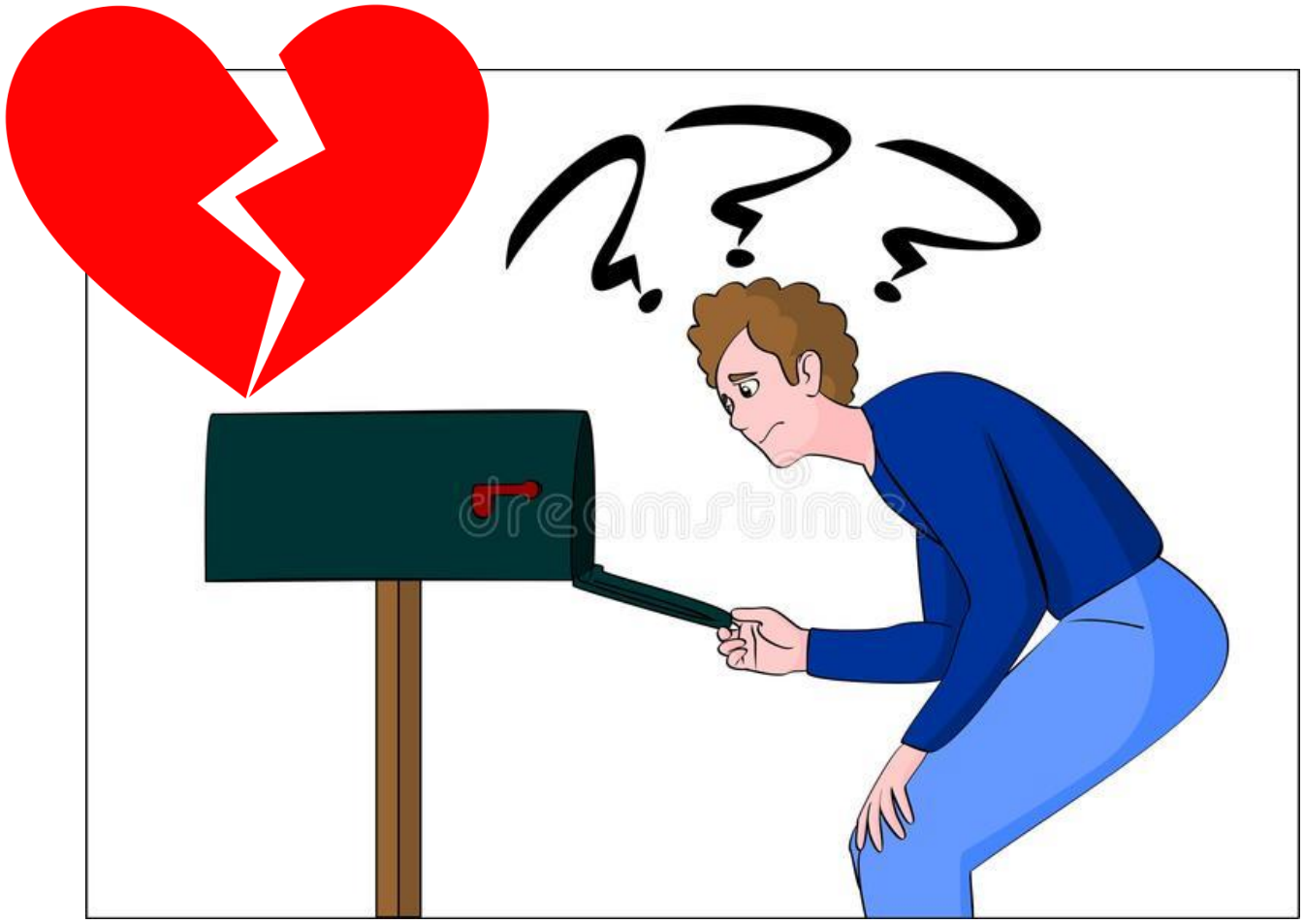
CLICK HERE to read Ron's full Obituary.



Next month's poll: "With MAPA mostly gone, The Mooney Flyer" **CLICK HERE** to vote.

Letters to the EDITOR

TheMooneyFlyer@gmail.com



SECOND RETIREMENT COMING UP!

Loewen's Mooney Salvage NEEDS A NEW OWNER!

Paul Loewen has enjoyed over 50 years in the Mooney family……first in the Los Angeles area as a Mooney Service Center at Whiteman Airport in Pacoima. He moved to Lakeport in 1973 and began Lake Aero Styling & Repair (LASAR) in 1975. The rest is history, as they say!

Paul sold LASAR in 2017, and he would love to see a "Mooney person" acquire the remaining salvage business that provides Mooney parts from a collection of more than the past 50 years. Paul has enjoyed selling parts from his collection that are no longer available new from the Factory to Mooney owners world-wide.

If interested, contact Paul by home phone 707-263-0462, text 707-489-6423 or email PaulL@sonic.net.

LOEWEN'S MOONEY SALVAGE (www.loewensmooneysalvage.com)

The Magneto Check and Prop Cycle

Jim Price
Co-Editor

The Mags

The engine is set to the proper rpm, and you perform the normal runup routine. Right mag, back to both. Left mag, back to both. After a while, this procedure of checking the magnetos becomes so automatic that sometimes I wonder if I know why I am doing it or what I am looking for.

Do you know what the magneto check is actually proving? Each magneto has its own distributor, wires, and spark plugs.

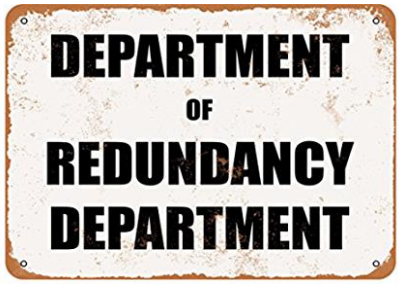
Checking the mags is really an expansive check of the entire ignition system, which causes the fuel to burn. In this system, there must be a source of electricity, a distributor to tell the electricity where to go, wires to carry the electricity, and spark plugs to ignite the fuel.

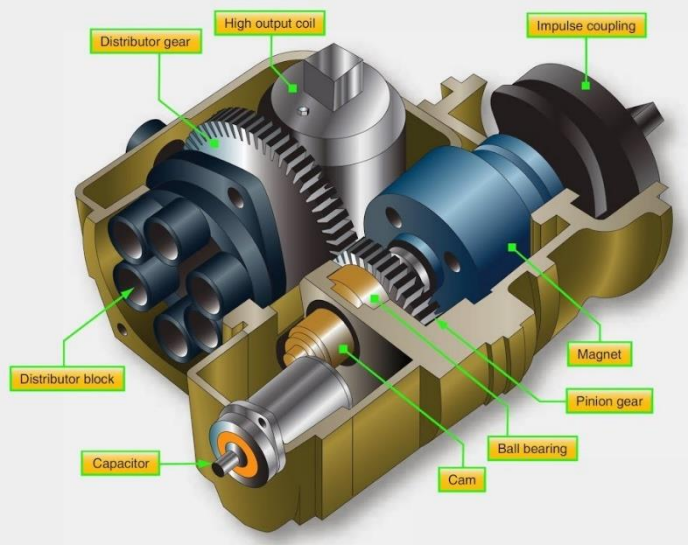
While your automobile and airplane ignition systems both accomplish the same task, the way they do it is vastly different.

The heart of any ignition system is the electricity, and this is where we see the difference between cars and airplanes. Your auto ignition shares the same battery/generator electrical system with the lights, radio, starter, and every other electrical item. If the battery/generator system on your car fails, the ignition becomes dead.

Your airplane also has a battery/generator system, but it has nothing to do with the engine ignition system. The FAA requires that the engine ignition on airplanes be separate from the battery/generator system. This is accomplished on most airplane engines by the use of magnetos which create the ignition electricity. Not only must the ignition be independent of the battery/generator system, but your plane must also have two ignition systems that are independent of each other. The battery and generator can be removed from the airplane and the engine will still run, just like the Aeronca Champ that that my dad flew in the 1940s.

The airplane's double ignition system provides better performance because of more efficient combustion and a higher level of safety through redundancy. Each magneto is actually a spinning magnet surrounded by a coil of wire which produces electrical power for the spark plugs.





The mags on your plane are gear-driven by the engine. The same gear drive that spins the magnet also spins a distributor which sends the electricity to the correct spark plug at the right time.

The wires for the plugs come out of each mag and go to their respective plugs. This gives you two independent ignition systems that are also independent of the battery/generator system.

The Mag Switch

The OFF position of the magneto switch is different from a radio OFF switch, which simply removes the electricity from the radio.

The OFF position of the mag switch does not actually remove electricity from the magneto because the magneto is what makes the electricity, and anytime the magnet in a magneto spins, we get electricity.
Turning the mag switch OFF actually causes a short circuit in each magneto coil – called grounding. This prevents both mags from working. The wire that does the grounding is called a *P-lead.*

Although the mag switch in your plane only shows one OFF position, there are really three Off positions. "OFF" means that both mags are grounded and if the P-lead is connected properly, the Mags are not able to power their ignition systems. Should the prop be moved ever so slightly, a broken P-lead could cause an engine start. The other two OFF positions are labeled "L" and "R". When you switch to the left mag (L) you are actually grounding the right mag.

The same is true for the right mag (R) position. By selecting the right magneto (R), you shut off the left magneto.

A run-up check proves that each ignition system operates without help from the other one. The ***Both*** position removes the ground from both magnetos, allowing the engine to use the full dual system. The P-leads are key to the operation of the magnetos. A disconnected P-lead on either magneto is dangerous because the ignition cannot be shut off in flight or on the ground.

Timing

Timing is adjusted separately on each magneto so that it fires its spark plugs at exactly the right time. If the plug fires too early or too late, engine power and engine life can be adversely affected. As the pilot, you do not have any way to know exactly how the mags on your plane are timed but, if your engine malfunctions, there are symptoms that can give you clues if the timing is not right.
Let us review each step of an engine runup magneto check. Let us assume that for your magneto check, your POH specifies that you set the RPM to 1,700 RPM and during the L and R check, the mag is allowed a maximum drop of 150 RPM and the difference between the Left and Right mag drops is limited to 50 RPM.

While at 1,700 RPM, switch the mags from ***Both*** to ***R***, back to ***Both.*** Then switch to ***L*** and back to ***Both***. You must see a drop in power, but it must not exceed the maximum allowable – in this case 150 RPM. **Note:** Some M20s allow a 175 RPM drop.

Too great a drop in RPM can be an indication of problems like a fouled plug, a bad ignition wire, improper timing, or a bad magneto. Have a mechanic check **it out.**

No drop in RPM could be an indication of a broken P-lead. You can check this by:

- Bringing the engine to idle RPM *and*
- Placing the ignition switch to Off.

If the P-lead is broken, the engine will continue to run. If the P-leads are good, the engine will begin to quit. In this case, switch to **BOTH** before the prop stops turning, allowing the engine to restart.

Another cause for little or no RPM drop could be improper magneto timing. When in doubt, **have it checked out.**

Look for the difference in RPM drop between the left and right magnetos. In our case, the allowed difference is 50 RPM. It is possible for the RPM drop on each mag to be within limits but the difference between the mags to be excessive. If that happens, it is probably because of improper timing of one or both magnetos. **Get it checked out.**

In-Flight Problems

A rough-running engine could mean a number of things, so be sure to follow the published procedures. Just because you are running on both magnetos does not mean that the remaining mag will automatically compensate for a failure of its partner. If one magneto develops a timing problem, it could seriously affect the engine's ability to run.

It is important to switch to the ***L*** and ***R*** positions to see if the engine will run better on one mag than on ***Both***. Remember, the ***L*** and ***R*** positions of the mag switch shut off one magneto. If the problem is a bad mag, the engine will run terribly when switched to one position and will run well in the other switch position. It is certainly all right to continue your flight on one magneto to an airport where repairs can be made. The remaining magneto is not working any harder than usual and does not even know that its partner has been switched off.

Inflight Mag Check

Mike Busch advocates for in-flight magneto checks because doing so can reveal problems earlier than the less demanding ground test. The process is the same but requires an Engine Monitor.

1. Perform the test at a normal cruise power setting and after properly leaning the mixture.
2. Like you did on the ground, turn off one magneto by switching the ignition to Left or Right.
3. Engine roughness is not the best indicator. Instead, check for rising exhaust gas temperatures. You will be able to see each cylinder individually. If all are rising and are stable, you are good. If one is dropping or unsteady you know where to direct your mechanic's wrench.
4. After switching back to Both, repeat the process on the other magneto.

Diagnosing the Inflight Mag Check

- **All EGTs rise and the rpm drop is within limits**—The ignition system is working properly.
- **One cylinder falls and the rest rise**—Most likely you have some sparkplug deposits that affect only one cylinder.
- **All cylinders rise but there's roughness**—Check for retarded ignition timing.
- **EGTs are low but cylinder head temperatures are high**—Check for advanced ignition timing.

Cycling the Prop

The pitch on your constant speed propeller is controlled by the ***propeller governor*** which uses engine oil to do the work. When you start your engine for the first flight of that day, the engine oil is cold and viscous. Viscous means it flows like molasses. Viscous oil is too thick to control the propeller pitch, but when taxiing, the propeller stays in low pitch, so viscous oil is not a big deal.
While taxiing, the engine oil warms up slowly, but because the propeller stays in low pitch, the warmer oil does not necessarily circulate to the prop area.

During the runup, cycling the propeller 3 times trades the colder oil in the propeller with the warmer oil in the crankcase. That is good, because when you add full power for takeoff, the propeller governor will need warm oil to control the pitch.

The 3 Cycle Ritual

The M20C and M20K Pilot Operating Handbooks (POH) state, "Cycle the Prop at 1,700 RPM." The M20J POH states, "CYCLE/return to high RPM 3 times." Some people say that cycling the prop three times during the runup is a holdover from the days of the big radial DC-3s and B-17s. I recommend that you always follow the guidance in your POH.

Flights after a Fly and Dine or a Refueling Stop

The engine oil usually stays warm for a long time after a flight, so cycling the propeller only once on subsequent flights is enough to confirm that everything is working properly. In very cold climates, you might need to recycle multiple times.

Here is a Mythical Ritual that Requires 3 Prop Cycles to Check 3 Things:

- First prop cycle, look for an RPM drop,
- Second prop cycle, look for an oil pressure change
- Third prop cycle, look for a manifold pressure increase.

To my knowledge, there are no such requirements or recommendations in a M20 POH. But if you insist, at the risk of offending my Pixie friends, you could sprinkle Pixie Dust on the prop and engine. It will yield the same effect.

Flying to Mexico

Including a Reason to Do So

Do you want to fly to Mexico? This article will show you how to fly into and out of Mexico. It involves several steps, all of which are straightforward and easy. I will say two things upfront. It is easier than what most pilots say it is. There are many OWTs (Old Wives Tales) about Mexico and clearly some bad things happen occasionally, however these incidents are rare. In general, Mexican authorities are happy to have us visit.

I will cover everything you need in order to enter and exit Mexico from the USA.

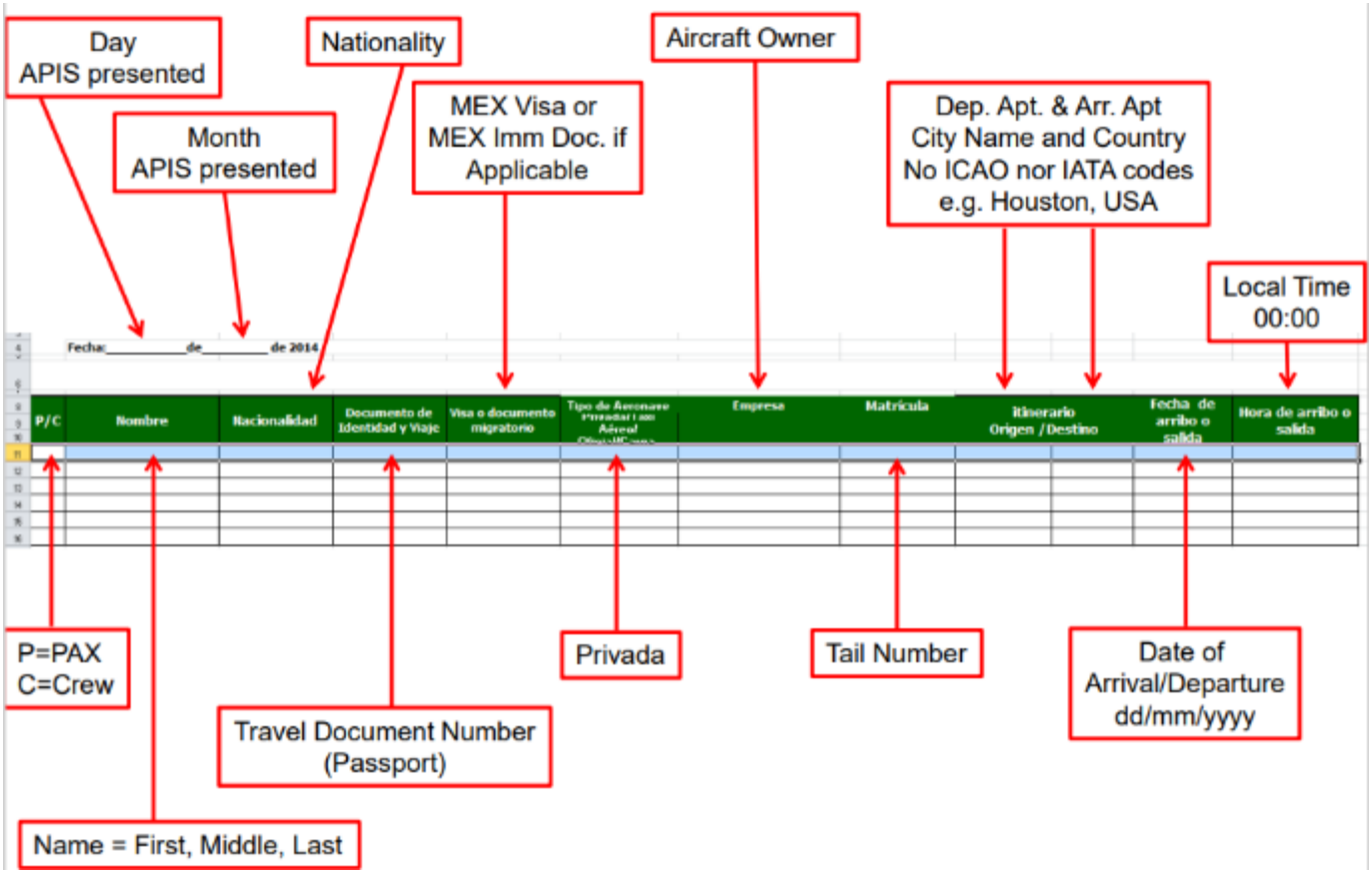
Step 1: Ensure that you have a 406Mhz ELT. This is required in Mexico for all aircraft with a gross weight less than 12,566 lbs. If you need a 406Mhz ELT, here is a unit from ACK Technologies that is inexpensive and simple to install. It can utilize your existing wiring which minimizes installation labor. **CLICK HERE** for details on the ACK E04 unit.

Step 2: Ensure you have the following documentation:

- Valid Pilot's License.
- Valid Medical Certificate.
- Airworthiness Certificate.
- Valid Registration Certificate.

- Current Insurance Policy. **Part 91** - Indicating coverage in Mexico, **Part 135** - MUST have Worldwide Insurance AND a Mexican Insurance policy issued in Mexico.
- Logbook. We recommend that you bring photocopies of the last pages of the aircraft's maintenance logbook, which show that the aircraft is airworthy and IFR current.
- Radio Station License.
- Weight and balance documentation.
- Aircraft Flight Manual (AFM/POH).
- Minimum Equipment List (MEL).
- Adequate and up-to-date charts covering the route to be followed during the intended flight, as well as any other route by which the flight could be diverted.
- Flight Plan.
- **PIC** needs a Passport and Medical Certificate (Basic Med is OK in Mexico)
- **All passengers** need a Passport

Step 3: File a Mexican APIS form. This is a simple Microsoft Excel spreadsheet that you can download by **CLICKING HERE**. The headings are in Spanish, so here is the translation for each column.



In this form, you will:

1) Provide your flight into Mexico to an AOE (Airport of Entry)
2) File your Return flight to the US from a Mexican AOE to an international airport in the US.
3) You must send the manifest (Excel file) to apis_cna@inami.gob.mx within 24 hours of departure.

4) You must re-send the manifest to confirm flight apis_cna@inami.gob.mx 30 minutes prior to takeoff.
5) You will receive a reply from Mexican Immigration that the manifest has been received

Step 4: Aircraft Requirements

- A **radio station license**. For more information on **FCC requirements, click here**.
- Operating limitations information
- Weight and balance information
- Transponder with Mode C
- Two-way radio equipment
- If the aircraft is registered in another person's or corporation's name, AOPA recommends that you have a notarized letter authorizing use of the aircraft for flights in Mexico.
- An ID data plate
- 12-inch registration marks are required for crossing the ADIZ into Mexico.
- Aircraft with fuel tanks installed in the baggage or passenger compartments must have Form 337 on board.
- **Regarding experimental aircraft:** Due to a recent policy change, the operation of U.S. registered amateur built aircraft is currently prohibited in Mexico. AOPA has asked the civil aviation authorities in Mexico to reverse this recent policy change. AOPA will update this notice and notify the membership when this change occurs.
- Aircraft used exclusively for private flights must be equipped with a 406-MHz ELT.

Step 5: Insurance Requirements

- Verify that Mexico is included in your policy's territory.
- Check that your policy has liability limits of at least $300,000.
- Carry your aircraft insurance policy in the aircraft.
- Present your insurance policy for validation upon arrival in Mexico.

Step 6: US Customs & Border Protection

You will need to do three (3) things before you leave for Mexico. First you will need to get an annual Customs decal. CLICK HERE to buy it. It costs about $29.96 and is good for the current calendar year. The second requirement is to file eAPIS. **eAPIS**, CBP's Electronic Advance Passenger Information System. All pilots flying across the U.S. border are required to use eAPIS. eApis requires the pilot to send a manifest to CBP at least 60 minutes prior to departure. Mexico has also implemented APIS procedures. FlashPass is an app that streamlines submitting eAPIS manifests to both the U.S. and to Mexico. **Click here for more information**. For your return trip back to the U.S., plan to land at the first airport of entry after crossing the U.S. border to clear customs.

The final US requirement is to file an ICAO flight plan, which can be easily done by calling FSS, or using Foreflight or another EFB that will enable ICAO flight plans.

An Excuse to fly to Mexico

The Hacienda de los Santos is an amazing escape to Alamos, Mexico. It is a top end resort in the Mexican village of Alamos in the foothills of the Sierra Madre. They have a Club Pilotos for any/all pilots that go there at least once. Two or three times per year, they have a "Reunion" which is truly amazing. Here is an example of the itinerary.

Club Pilotos Reunion Example of an Itinerary

HERE'S A BRIEF OVERVIEW OF A CLUB PILOTO'S ITINERARY TO GIVE YOU AN IDEA OF THE DAILY ACTIVITIES WHICH WILL VARY FROM REUNION TO REUNION……..

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THIS IS NOT 'THE' ITINERARY…ONLY AN EXAMPLE OF THE TYPE DAYS THAT USUALLY ARE PLANNED….

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Sunday (Early Bird Arrivals) *in your 'Early Bird' rate, lunch and dinner are included. Plus, in the evening we will have a Cocktail Hour at the 'Treetop Grill' with the meal all drinks gratis this evening.*

Monday (Day 1) *Usually about half of the group will be arriving between about 10:30 and 1:00 today and we will have a hangar party during those hours. Pilotos, and spouses, who arrived on Saturday and Sunday can get rides to the airport between those hours also. Just ask a driver whenever you are ready to return to the Hacienda from the Hangar Party.*

7:30 ***Morning Walk*** *to the Alameda (Business District)*
7:30 – 10:30 ***Breakfast*** *Café Agave*
10:30-1:00 ***Hacienda Hangar*** *Party for Free Margaritas, Beer, Soft Drinks & Totopos*
12:30-2:30 ***Lunch*** *Café Agave*
2:30-6:00 ***R&R****, Spa Time, Aviation film to be announced, or Explore the Village. Just settle in and enjoy the ambiance of your home away from home.*
6:00 -7:00 ***Cocktail Hour*** *at Zapata's Cantina*
7:00-9:30 ***Dinner*** *at Santiago's Restaurante, plus Special Live Entertainment*
9:00-11:00 ***Hacienda Theater*** *(Movie)*

Tuesday (Day 2)
7:30 ***Morning Walk*** *to the Panteon on the first of two of the 'Day of the Dead' events.*
7:30-10:30 ***Breakfast*** *Café Agave*
10:00-12:00 ***Cooking Class*** *(different dishes each event)*
10:00-12:00 ***Art Class*** *(different teachers for each event)*
12:30-2:30 ***Lunch*** *Café Agave*
2:30-3:30 ***Guided Village Tour for the newcomers,*** *leaving from the front door promptly at 2:30. If there's extra room in the 15 passenger van, others are welcome to tag along too.*
2:30-5:00 ***To be determined***
6:00 ***Cocktail Hour*** *at Zapata's Cantina*
7:00-9:30 ***Dinner*** *at Santiago's Restaurante Special Live Entertainment*
9:00 p.m. ***Hacienda Theater*** *(Movie)*

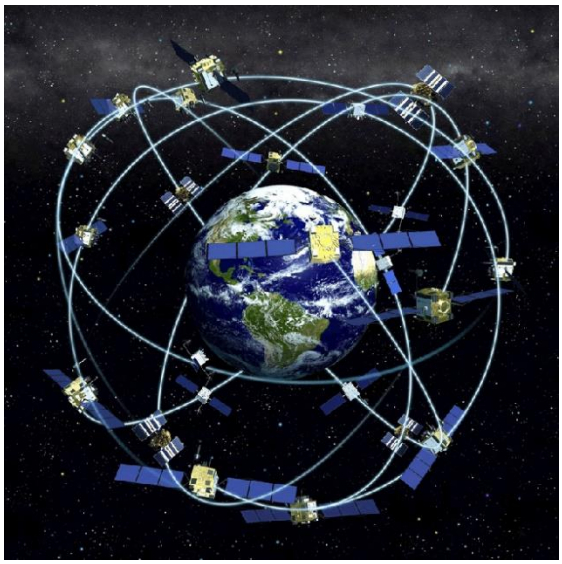
Wednesday (Day 3)
7:30 ***Morning Walk*** *to the base of Mt. Alamos for a magnificent view of Alamos and the higher Sierra Madre (bring a camera)*
7:30-10:30 ***Breakfast*** *Café Agave*

*10:00-12:00 **Cooking Class** (location is the original kitchen next to Reception)*
*10:00-12:00 **Art Class** (location to be announced)*
*12:30-2:00 **Lunch** Café Agave*
2:15-4:30, Special Event.
*6:00 **Cocktail Hour** at Zapata's Cantina*
*7:00-9:00 **Dinner** at Santiago's Restaurante*
Special Entertainment
*9:00 **Hacienda Theater** (Movie)*
Thursday (Day 4)
*7:30 **Morning Walk** on your own today.*
*7:30-10:30 **Breakfast** Café Agave*
8:15-12:00, Excursion to be announced
*12:30-2:30 **Lunch** Café Agave*
*2:30-3:45 **Hacienda Theater***
4:00 TEQUILA 101…….$20.00 with 3 Premium Tequila
*6:00 **Cocktail Hour** at Zapata's Cantina*
*6:30-8:00 **Special Music***
*7:45-9:15 **Dinner** at Santiago's Restaurante*
*9:15 **Hacienda Theater** (Movie)*
Friday (Day 5…when possible, tonight can be added to package)
Departures this morning, except for those taking a 'late Early Bird night' (when lodging is available, $259.00 plus tax & all meals included for one or two guests) and the event ends at noon on Friday…..

Go to Hacienda de los Santos® – Hacienda de los Santos® to checkout this amazing place.

April 3-7, 2023, we are considering a Mooney Flyer fly-in here. If you think you might attend, please email us at TheMooneyFlyer@gmail.com. If there is enough interest, we will do all the planning and walk everyone through the procedure and meet at the Mexican airport of entry and do entry as a group.

ADS-B Receivers can Protect against GPS Outages, Spoofing and Jamming



The US developed and now operates 31 Global Positioning System (GPS) satellites. Those satellites were originally called Navstar GPS, but collectively they are simply called Global Positioning System. Three other constellations also provide similar services.

- GLONASS, (Russian Federation)
- Galileo (European Union)
- BeiDou, (China)

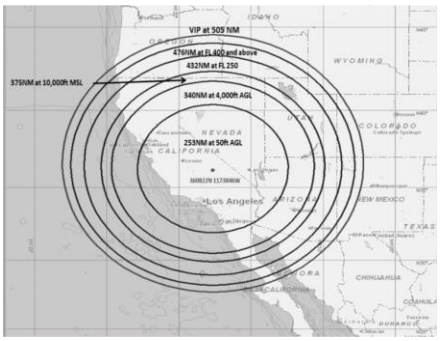
All providers offer free use of their respective systems to the international community. All providers have developed International Civil Aviation Organization (ICAO) Standards and Recommended Practices to support use of these constellations for aviation.

What if You have a Serious Electrical Problem?

Portable ADS-B receivers like Stratus and Sentry are must-have devices for many pilots, because they deliver subscription-free weather, helping pilots make better in-flight decisions. Many pilots have also discovered the value of having a portable ADS-B receiver as a backup. For instance, in case there is a serious electrical system problem, an iPad and an ADS-B receiver can provide you with situational awareness, with a GPS moving map, backup attitude, traffic alerts, and weather.

Sometimes, GPS Outages Cover Large Areas

Because receivers are built into everything from Smartphones to GoPros, you can see that the GPS constellation of satellites really does drive modern life. However, our constellation of satellites is not immune to failure or intentional jamming. So, when a GPS outage / failure occurs, it is nice to have another level of redundancy. GPS outages appear from time to time in NOTAMs, and you should take these NOTAMs seriously. Even the most sophisticated glass cockpit isn't worth much without GPS.



Sentry uses a variety of hardware and software features to protect against GPS outages, jamming, and spoofing. It can receive signals from both the US's GPS satellites and also the Russian GLONASS constellation; whereas most panel-mounted systems only use the US GPS signals. The US and Russian systems operate on different frequencies, which makes this a robust backup. Yes, there are two other satellite navigation systems in use around the world, but ForeFlight states, "Although the hardware can potentially receive the European Union Galileo network and China's BeiDou system, that capability is not presently programmed into the firmware."

Using the US and Russian constellations, Sentry can compare the position calculated by both sources and detect any anomalies. So, if one constellation has an outage or is being jammed, it can throw that constellation out and fall back to the secondary system.

Spoofing

GPS systems were first designed for military use, and militaries were also the first to spoof it. A 2019 study found that Russia frequently spoofs GPS data to mask military activity in Syria, Crimea, and elsewhere. Over 7,900 ships have experienced GPS outages connected with Russian GPS spoofing activity since 2016 – a significant hazard for maritime activity that relies heavily on GPS receivers for positioning and navigation. The study also found that Putin's movements are frequently masked by GPS spoofing activity.

Sentry has an algorithm to detect spoofing attempts and will ignore the bad data. Spoofing is relatively rare, but recently, it has been an area of growing concern.

WAAS

Stratus and most other portable receivers, can receive WAAS correction signals, which help to provide a much more accurate position. However, no matter how accurate the position, this does not allow pilots to fly a WAAS approach with a portable receiver. Nope, this requires a certified, panel-mounted GPS. However, WAAS offers the level of precision needed for valuable terrain alerts and runway length calculations. Most ADS-B receivers like Stratus and Sentry deliver better than 1 meter accuracy.

There have been situations that might emphasize the need for an ADS-B receiver. For instance, after a GPS outage in the Southwest US, the Garmin glass panel on a TBM 900 reverted to dead reckoning mode. The pilot's Sentry, on the other hand, kept on navigating.

With an aviation app, such as ForeFlight, plus a simple, inexpensive device like Sentry or Stratus, you can feel secure, knowing you are ready if your electrical system fails or in the event of a GPS outage, jam or spoof.

ASTM International … A Trip Report

Twenty-seventh in the series, by Ron Blum

What is ASTM? Is ASTM just one more, government-originated, 4-letter acronym? Although government authorities around the world are a part of ASTM International, it is actually not a government organization. ASTM stands for the American Society for Testing and Materials. Ironically, it has outgrown its "American" boundary to become ASTM International. ASTM International is not a government entity, but it is a group that governs many of the products that are produced worldwide. What does this organization have to do with airplanes we fly?

ASTM International is similar to the Society of Automotive Engineers (SAE). They both produce minimum safety standards for a multitude of products such as furniture, toys, petroleum products, automobiles, child seats, food, etc. Again, what does this have to do with airplanes? Well …

About 5 years ago, Federal Aviation Administration (FAA) totally rewrote 14 CFR 23, commonly referred to as "Part 23". Part 23 is the regulation that governs the certification of general aviation airplanes. The regulation went from a 1.5" thick book to 16 pages. Sounds great! Right? Not so fast. All the specific details were removed, and the regulation became very high-level and generic. This was done to allow another organization, in this case ASTM International, to change how to show compliance to the regulation more quickly through "industry consensus standards". In addition, it would allow standards to be added more quickly as technologies evolved, such as electric airplanes, autonomous airplanes, etc. The insert below is the paragraph of the regulation that I am chairperson.

§ 23.2150 Stall characteristics, stall warning, and spins.

(a) The airplane must have controllable stall characteristics in straight flight, turning flight, and accelerated turning flight with a clear and distinctive stall warning that provides sufficient margin to prevent inadvertent stalling.

(b) Single-engine airplanes, not certified for aerobatics, must not have a tendency to inadvertently depart controlled flight.

(c) Levels 1 and 2 multiengine airplanes, not certified for aerobatics, must not have a tendency to inadvertently depart controlled flight from thrust asymmetry after a critical loss of thrust.

(d) Airplanes certified for aerobatics that include spins must have controllable stall characteristics and the ability to recover within one and one-half additional turns after initiation of the first control action from any point in a spin, not exceeding six turns or any greater number of turns for which certification is requested, while remaining within the operating limitations of the airplane.

(e) Spin characteristics in airplanes certified for aerobatics that includes spins must recover without exceeding limitations and may not result in unrecoverable spins -

(1) With any typical use of the flight or engine power controls; or

(2) Due to pilot disorientation or incapacitation.

Here is where ASTM and industry consensus standards get involved. Our committee is made up of a certain percentage of government regulators, such as FAA, EASA, DGAC, TCCA, etc.; Original Equipment Manufacturers, like Cessna, Mooney, Cirrus, Garmin, Diamond, etc.; and Users, meaning everyone else.

Weekly, we meet (virtually) to discuss what needs to be accomplished by the manufacturer to show compliance to these regulations.

Let us look at 23.2150(a) above as a quick example … and we'll only look at the tip of the iceberg as one will quickly see how this gets becomes extremely complicated. What does "The airplane must have controllable stall characteristics in straight flight, …" mean? In this case, the committee has determined that in all configurations of the airplane, flaps, gear, power, etc., when slowed at 1 knot per second and with average pilot skill, the airplane must maintain roll within 15^{o} of level flight throughout the stall and recovery.

At the end of that subparagraph, what does "… a clear and distinctive stall warning that provides sufficient margin to prevent inadvertent stalling." mean? The past regulation required the warning to occur at least 5 knots or 5% before the stall, whichever is greater, and continue through the stall. There is now discussion within the group to make the requirement to include continuing through the stall and until the airplane is no longer in a stalled condition. Why? Confusion has happened in the cockpit when warnings have become intermittent. The pilot may conclude that the system is malfunctioning … and ignore the warning.

Stall accidents are responsible for almost 50% of fatalities each year. 90% are on takeoff and go-around, (high power and low altitude with configuration changes). Of the stall fatalities, 97% start at pattern altitude and below.

Our committees also meet face-to-face twice a year. The Spring meeting is typically in Europe and the Fall meeting in the United States. I recently returned from the October 17-21 week in New Orleans. I have not attended the European in person meetings. If this interests you at all, please get involved. One does not need to be an ASTM member, but it is only $75/year, and with membership, all the standards are included.

With Part 23, the Aviation Authorities like the FAA, approve the standards and certificates the airplane with an official type certificate, after it is shown the airplane complies with all the applicable standards and regulations.

ASTM is also responsible for the self-validation standards of Special-category Light Sport Aircraft (SLSA). These are LSA aircraft that are completely built by a manufacturer. In this case, the process is a validation and not a certification. The validation is accomplished by the manufacturer (not the FAA). ASTM also writes the standards for systems and equipment. Angle of Attack (AOA) systems that are not required for certification have an ASTM standard.

If this interests you at all, I encourage you to get involved! All are welcome!

Got a future topic? Email me at solutions@blueontop.com or (316) 295-7812. Until next time keep the blue on top.

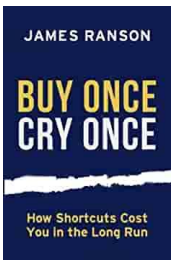
Ron Blum is an aeronautical/astronautical engineer with a 35+ year career managing general aviation Flight Test and Aerodynamics departments from shore to shore and border to border. He was Chief Engineer of the Mooney M10 in Chino, CA. He founded Blue on Top LLC, providing engineering and management consulting, Flight Analyst DER services and keynote speaking.

ArtCraft Paint Review

by Richard Brown

I took our Mooney to ArtCraft to be painted. After seven weeks of not flying, I really started feeling the withdrawal. From the time I took my first flight six and a half years ago, I think the longest I had been without flying was 3-4 weeks and this felt like an eternity. The total downtime was roughly three weeks longer than originally anticipated, but if I had to make the decision again, I would still take the plane to ArtCraft. You may be asking, "Why go back, if it took so much longer than anticipated?" Keep reading and stick with me to the end. It will all make sense.

After reading reviews and looking at paint jobs by different shops, I narrowed my choice down to two semi-local shops. I sent an email to one asking for a quote and waited. Two days later, with no response, I sent a follow-up email, to which I received a one-page outline of work to be performed and a base price. The price was fair, but they were scheduling six months out and said they would need the plane for a minimum of 6-8 weeks. A follow-up email received no response. When a company can't find the time to respond to prospective customers, it does not bode well.



You typically get what you pay for, and the work I had seen from ArtCraft was much higher quality than the other paint shop. So, I expected a higher quote from ArtCraft. Following the philosophy of an old friend, to "Buy the best and cry once", I sent an email to ArtCraft. That same day I received a very detailed 26-page quote outlining the entire process and what to expect. It was indicative of the professional manner in which they conduct business.

Their base quote was higher than the other shop, but there were things included in it that weren't in the other quote. With higher quality work, it wasn't really an apples-to-apples comparison. Their anticipated downtime of one month was much shorter. This was another plus. Finally, they would also be able to get me in the following month, and that sealed the deal. I added some additional items to the

job, such as installing flap gap seals, removing some old antennas and installing flush panels to fill the holes, plus a few other things which added an anticipated 2-2 ½ weeks to the typical one month job.

If you have a paint scheme, they can make it happen

It doesn't have to be perfectly drawn out with a graphics program. They can work with a general idea. When I dropped the plane off, Brenda showed me a Mooney they had just completed. It was beautiful! Then she showed me the hand-drawn scheme they had used. The owner didn't take an outline of a Mooney and draw his ideas on it. He had hand-drawn the entire plane and colored in the lines he wanted. It was anything but a professional-looking scheme. If the owner of that plane is reading this, please don't take that the wrong way, because it was better than what I could have drawn. I mention it because they can literally work with any idea you come up with.

I had a general idea of the paint scheme I was looking for but needed some help getting what was in my mind transferred to paper. So, Brenda put me in touch with Robert from Flight Lines Aircraft Paint Design. Like Brenda and her crew, Robert was such a pleasure to work with. I sent him some pictures of some paint schemes I liked along with bullet points of what I like and don't like.

Robert made the process easy and enjoyable. He initially sent me three different schemes. For each one, I let him know which parts I liked, and those I didn't like. He refined the schemes and sent them back again. We traded emails back and forth as I slowly found what I was looking for. That's not an easy thing because I wasn't exactly sure what I was looking for. I felt bad because I thought we had the final design, but then I saw a couple of other pictures and wanted to see another change. He gladly made the change and sent it back. Now we had perfection.

When I flew the plane to Santa Maria, I was met by Brenda and Tony her painter. We went over the plane, then she gave me a tour of their facility. A couple days later I received the initial inspection report. To say it was "detailed" would be an understatement. It was 29 pages long and included 150 photos. That was followed up about a week later by the 12 page post stripping report, which included 47 photos. The reports left no questions about the condition of the plane, which repairs needed to be done, and which repairs fell in the "optional" category. This will likely be the only time the plane is painted in my lifetime, so I opted to fix everything, even the tiny blemishes. If you're going to do it, do it right.

Paint Stripper


Looking like a junk-yard plane

I'll add a little side note about the repair times that are in the original quote and those that were added after inspections. The quote included up to 10 hours of bodywork as part of the refurbishing process. Do not expect that time to be available for repairing hail damage, hangar rash, etc. Before applying the paint stripper, they tape all the seams. After the chemical stripping, they remove the tape from the seams and must remove the paint along the seams by hand. That process will eat up the allotted 10 hours and I'm sure that is the reason they include it in the quote. The times they quoted for the repairs on my plane were well within reason.

Writing a realistic review must include any negatives, so I'll share the one negative from the experience. Perhaps this is just my expectation and not reality in the aircraft painting industry, but here you go. Communication at the beginning of the process, from initial contact, up through drop off, and the first couple weeks was amazing. Unsolicited updates were provided, and I felt well informed. After that, the communication slowed, and I had to reach out for updates.

Later, in a phone conversation with Brenda, she mentioned that she hadn't sent out updates because they were just doing the body work and there wasn't much to update. She likes to send photos and while pictures of the stripping process and the painting are exciting, I guess pictures of the body work process are not thrilling.

If I was to make a recommendation to Paint Shops

Send your clients an email at the end of each week with a "this is where your plane is at right now" message, even if it is to say "we're still working on repairing the body defects. My 'day job' which pays for this amazing hobby of flight is CFO of three auto dealerships. Combined, we service about 1,800 vehicles a month, and one of the metrics upon which we measure our Service Advisors is "Status Checks." A status check is anytime a customer contacts them to find out the status of their vehicle. The goal is for the Service Advisor to call/email/text the customer a status update ***before*** the customer picks up the phone to call them.

"Hold on Richard, remember you said that it took about 3 weeks longer than it should have taken? What's this 'glowing review' stuff you're talking about?" Ok, back to your regularly scheduled glowing review. I know, I said stick with me to the end and all would be explained. There was an initial (subject to change) delivery date that came and went. I inquired of Brenda for the reason for the delay. She explained that they had several employees that had called out sick in the previous weeks which put them behind. With almost 60 mechanics working in our shops, I can understand ArtCraft's predicament. There was a point earlier this year that one of our shops had a period of almost two weeks that all of our heavy-line techs were sick, and we couldn't get any transmission or engine work done.

I am not going to hold those delays against them. Some things are out of your control, and you just do the best you can. That is exactly what ArtCraft did, and it is why I would recommend them to everyone. The week before Thanksgiving I called Brenda for an update. She said the plane was just about to go into paint. Then she outlined day by day what would be done and gave me the terrible news that it would be ready the day after Thanksgiving. I say terrible news because we were supposed to fly to St George, UT for Thanksgiving. St George is a two-hour flight or a six hour drive, but around the holidays, that can easily turn into a ten hour drive.

The conversation went something like this:

Me: “We’re supposed to fly to Utah on Thanksgiving Day. That’s the difference between four hours in the plane or 20 hours in the car.”
Brenda: “That sounds horrible.”
Me: “I agree, do you want to drive with us?” (I Said that with a smile)
Brenda: “Let me talk with Teresa and see what we can do, I’ll get back to you later today.”

I hung up the phone, hopeful that something could be worked out. Later that afternoon I was back on the phone with Brenda and Teresa. They had talked with their crews and come up with a plan where they would come in on their days off to work on my plane and finish it up for delivery on the November 23rd, the day before Thanksgiving.

“How confident are you in the plan?” I asked.

Teresa replied, “99.9% sure, but we can’t control acts of God.”

I thanked them for their willingness to go above and beyond to get it completed, knowing that the delays had been out of their control.

Monday morning Brenda sent me an email that they were still on track for a Wednesday delivery along with pictures of it primed, then the base white coat, and the stripes and graphics laid out. They were getting ready to lay the first color. More emails followed with more pictures, and it looked amazing! I felt like a kid waiting for Christmas to arrive.

Finally, it was Wednesday and time to go pick up the plane. My friend Ken who had ferried me home when I dropped it off, was nice enough to fly me to Santa Maria. The plane was beautiful. The blue looked even better than I envisioned, and when they pulled it out of the hangar and the sun hit the silver and blue, it was amazing. I couldn’t believe it was the same plane that I had dropped off. I walked around the plane, inspecting the paint and especially all the control surfaces and linkages which had been removed during the process. Once all of that was done, it was time for a photo shoot in front of the hangar. There was no rush, it was a “take all the time you want and let us know if something doesn’t meet your standards” situation. And if I missed something, they have a one year warranty. Just bring it back and they will fix it.

Finally, with an extremely thorough pre-flight completed and the plane fueled up it was time to fly. Lifting off the runway again after 9 ½ weeks felt wonderful. It was a smooth sunset flight back along the coast – some of the most beautiful flying you can do.

I wrote earlier that after my ArtCraft experience, I would refer everyone to them. The quality of work was incredible. The job came in on budget. It did take three weeks longer than it should have, but that was due to things outside of their control. Putting together a plan with their crews who came in on days off to complete my plane, making sure we were flying instead of driving on Thanksgiving, meant everything to me. They could have just said, "We're really sorry." Instead, they found a solution. Please don't think they accommodated me because they knew I would be writing a review, because I had never mentioned that to them. They did it because they are a great company and that's what great companies do.

I don't have any video of the process, but my friend Illya did a great job documenting his M20E getting painted by ArtCraft. You can check out his videos here: https://youtube.com/playlist?list=PLT6CTlsO43126J-HBcb9gDpjxeWDc6XhM

As always, thank you for taking the time to read. If there are things you would like me to write about (or not write about), or if you just want to say hello, drop me an email at richard@intothesky.com. If you're ever in Southern California and want to meet up let me know.

It Takes All Three

by Robert Elliott

1) Fuel, 2) Air and 3) Ignition are all required to keep our Mooney props spinning. Take one away, and "your results may vary"!

We often focus on fuel and ignition problems when it comes to engine failures, yet in the past, Mooneys have had multiple incidents and accidents due to loss of induction air. In 1996, due to multiple failures of the Mooney's Induction Air Bypass system, the FAA issued AD 95-26-16R1. The AD referenced Mooney SB M20-250B which provided instructions for upgrading the induction air bypass hardware. Once complied with, the AD is terminated with no specific on-going requirement for further inspection or maintenance. Our M20J's logbook shows that that the AD was complied with on January 1, 1996.

Fast forward 26 years, the hardware holding that bypass in place failed and the bypass vane was sucked into the air intake, resulting in a total loss of engine power during climb out after a practice RNAV/GPS approach at San Marcos, Texas (KHYI). The plane made a successful off field landing. This resulted in a minor, if there is such a thing, prop strike and damage to the gear doors. The pilot and CFII exited the airplane without so much as a scratch. The plane had no structural damage. The CFII more than earned his money that day.

When the FAA inspector examined the plane the next day, the first thing he looked at were the fuel tanks. He found approximately 20 gal each side. He next removed the top cowling, and everything looked normal. Lastly, he asked if we could attempt to start the plane. The engine fired and ran at idle on the first swing of the prop. After reviewing the engine, airframe and propeller logs for the preceding year, the inspector classified the off-field landing as an "Incident" and released the plane so we could deal with the insurance claim. Prior to departing, he asked that if we determined a root cause of the failure, to please let him know.

After the insurance adjuster had inspected the plane, our A&P from San Marcos Regional (KHYI) came to further inspect the plane prior to deciding next steps. Upon removal of the lower engine cowling, he discovered a spring, a couple of bushings and a broken cotter pin laying on the cowling below the induction bypass valve. The castle nut was gone, and the bypass vane had been sucked into the air intake duct, thereby causing total loss of power. Once the plane had landed, the vacuum holding the vane in place was gone and allowed sufficient air to flow for the subsequent engine start and run at idle power.

A few days after the incident, Lone Star Retrieval of Red Oak Texas, had secured wide load permits to transport the fully assembled Mooney from the landing site to the San Marcos airport for repairs. Air Power Inc. of Arlington Texas just happened to have a new, ready to ship Factory Overhauled IO360-A3B6 sitting on the Lycoming dock. The Mooney factory was able to quickly produce four new gear doors, (the only damaged sheet metal in need of replacement). Our A&P at San Marcos had worked at the Mooney factory and had previously upgraded our plane's avionics. The stars aligned.

Four months later, our Mooney is now back in the air with a new Lycoming Factory Overhaul Engine, a new propeller, new gear doors, and a little bit of paint, plus a new annual inspection.

Even though there does not seem to be a new AD on the horizon, at each oil change or whenever the lower cowling is removed, we will be certain to inspect the induction air bypass hardware for any wear. When is the last time you checked yours?

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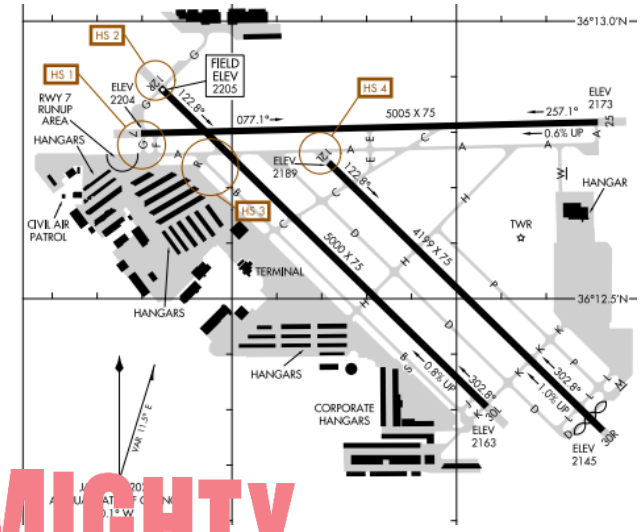
"It Certainly Didn't Help"

By Jerry Proctor

ith Quotes by AOPA's Richard McSpadden,

AOPA Pilot, November 2022**By Jerry Proctor**

There has been many articles and videos discussing the 17 Jan 2022 terrible and tragic mid-air collision at the North Las Vegas airport (KVGT). I have read several articles concerning the accident and I have listened to the ATC audio. A preliminary NTSB report indicates a "wrong surface event."



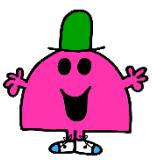
To summarize very briefly, this airport has two parallel, and offset runways, 30L and 30R. A Cessna 172 with a student and instructor were doing right traffic touch and goes on the north runway, 30R. At the same time, a Piper Malibu Meridian with a husband and wife pilot team, came in from the north. The Piper overflew midfield and then proceeded to do a "fast, swooping left 240-degree descending turn to final". The tower controller cleared the Meridian for an approach to RWY 30L and three times, the pilot acknowledged this clearance. Somehow the Meridian lined up on RWY 30R and 4 souls were lost. I am not going to pretend to analyze this terrible accident.

MIGHTY MOUTH

As the Meridian entered the airport area, some dude proceeded to try to engage the couple in a conversation. McSpadden wrote, "The Meridian couple was hailed by an acquaintance on tower frequency as they entered local operations. This pilot didn't just transmit a quick hello, but he attempted to engage in the Meridian pilots in dialogue, asking about their trip."

REALLY?? THIS IS A CLASS D airport with a highly active traffic pattern and this guy wanted to open a conversation?

Richard McSpadden wrote, "Did the breach in communications protocol distract the team in the Meridian just enough to cause a loss of focus or a drop in situational awareness? Maybe. It certainly didn't help."

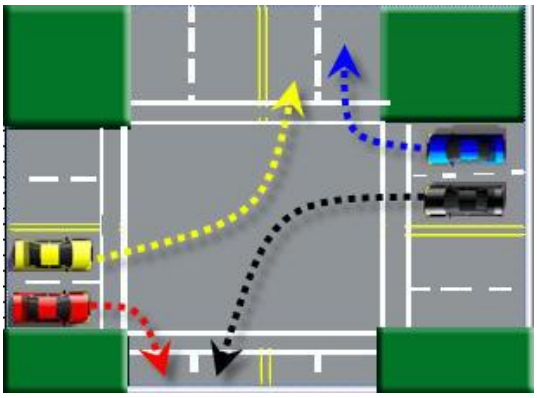


Here comes an airplane about to enter the traffic pattern, the area where most midair accidents happen, and a Chatterbox breaks not only communications guidance, but busts right through the necessary sterile cockpit communications guidance.

Where was this guy's discipline? The Meridian pilots were a well-known philanthropic couple. Was the "dude" trying to boost his ego by engaging them? Casual conversation is inappropriate in the hinterland, at non-towered airports, even when no one else is in the air. It just isn't right.

Discipline is a powerful yet elusive animal. In the aviation business, it can lead to a life-or-death situation. Discipline can slip away like greased lightening. At midnight, we all start a new day, and it also is another day that unless we are careful, at any moment discipline can drop. For example, the alarm goes off, but you hit the snooze button, thus setting up a chain of lateness the rest of the day. You're in a hurry, so you decide that you'll only brush the top row of teeth today. Lost discipline.

Clothes choices, food choices. How about a Moon Pie and an RC Cola, instead of real nourishment for your body. We are challenged, every hour of the day, with doing the disciplined right choice or a lesser choice.



Sliding Over to the Left Lane

In one of my articles, I chastised myself for taking a right turn onto a two-lane road, but instead of turning into the right lane, I made what policemen call a "wide turn" and slid over to the left lane. I compared this to our lack of discipline in aircraft operations. Was I beginning to slide left?

Think of the times you have prepared your aircraft for a flight and found yourself being lazy and letting your discipline "slide to the left lane." Did you conduct a proper review of your flight plan for tomorrow's flight? Did you slide through the preflight because you were running behind? Did you skip two or more items on the check list? Do you even have a check list?

Lack of discipline, or slack discipline is a terrible disease. Skipping a proper step eventually becomes the new habit. Those new habits can lead to inflight issues or even worse.

Not to belabor this any further, I implore you to focus on catching that potentially elusive discipline issue, particularly in aviation operations. Don't, be THAT guy, in North Las Vegas. I hope he has read the AOPA article, and he and others will forever follow communications protocol, so that we can avoid being the cause of distraction and potentially putting others at risk.

Fly safe, fly disciplined,

Jerry Proctor

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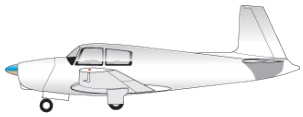

Search Mooney's new website for Service Bulletins (SBs) and Service Instructions applicable to your Mooney

Click here

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

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LASAR

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CLICK HERE for the complete Service Bulletin

Ask the Top Gun

Tom Rouch

Founder of Top Gun Aviation, Stockton, California

Send your questions for Tom to TheMooneyFlyer@gmail.com

Dear Mr. Rouch,
I am inquiring about the JACKSCREW. How often should it be checked? If it has a problem, how will I know? What happens to my Mooney if it fails?

Thanks for all you are doing here for us Mooniacs!

I have done a lot of bench work on jackscrews, and it is a part that is really particular to Mooney aircraft. A Mooney is one of the few aircraft in which the entire tail assembly is movable as a way to streamline the aircraft. It is a very well designed part that requires little upkeep and is only an inspection item on the Annual Inspection. Just put your hand on the bottom of the rudder and lift the tail assembly up and down to check for looseness in the actuator assembly and the bolts and bushings that attach it to the tail and fuselage. It is mostly a judgement call on the amount of wear or looseness that is considered excessive. As you would expect, we found that the most wear is present in older and higher time aircraft. There have been very few reports of a failure that caused an accident. At the same time, we check for movement of the entire tail assembly where it attaches to the fuselage, by moving the tip of the horizontal tail to see if it will move on the mount bolts. Sometimes we take the entire empennage off and replace the mount bolts and bushings to tighten everything up.

On the actuator itself, to tighten the assembly to reduce looseness, I would replace shims, bushings, and occasionally a jackscrew. In many older aircraft, I have found that I could lift the tail by the rudder up and down with more than an inch of free play.

There are some limits involved, but they differ between models and years of manufacture. There is not a great deal of info in the maintenance manuals which accounts for why we find a lot of wear in the older models. Few aircraft have this type of tail trim, but the Lockheed Jetstar comes to mind. Many planes have a trimmable horizontal stabilizer, including the B-52. They all use some type of jackscrew. I do not know the answer to a jackscrew failure, but the flight controls are mechanically operated. However, if an actuator broke, it would result in the aircraft going nose up, since only the actuator is the lower attachment to the fuselage.

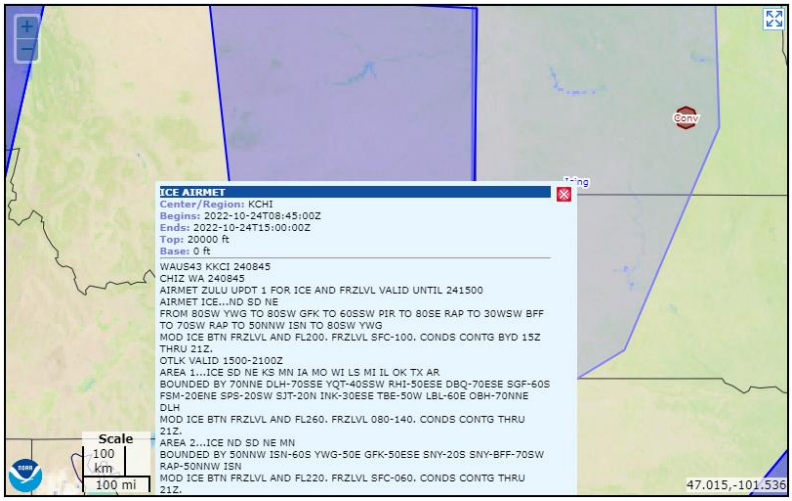
The jackscrew is a very solid part, so a complete failure is very unlikely. However, with extreme wear it could jam and not be trimmable.

How often to check? This is not in the checklist, but I got in the habit of lifting the tail on my preflight walk around. There should be no free play in the assembly.


N9222V
N9173V
N9505V
N3522X
N9223V
N9231V


CAN BEING A PILOT MAKE YOU A MILLIONAIRE
YES BUT ONLY IF YOU'RE A BILLIONAIRE

Say Goodbye to the Traditional AIRMET



The legacy AIRMET Zulu as shown on the Aviation Weather Center (AWC) website.

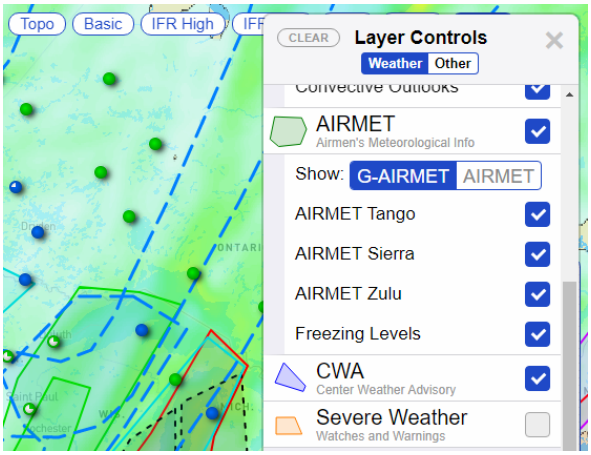
It has been well over a decade since the FAA decided to abandon the traditional alphanumeric code (TAC) airmen's meteorological information (AIRMET) when forecasters at the Aviation Weather Center (AWC) began to generate the graphical AIRMET (G-AIRMET) on an operational basis on October 1, 2008. At that time, it was determined that the time-smeared TAC AIRMET, or more simply the "legacy AIRMET," and its outlook was sorely outdated and needed a facelift with a new and improved advisory system that provides better spaciotemporal resolution of the weather hazards for aviation. The G-AIRMET was officially born on March 16, 2010, when it was announced that it could be used operationally by pilots with the legacy AIRMET being automatically generated.

On November 28, 2006, the National Weather Service (NWS) began the process of moving away from a text-based system by standardizing the text that was used in the legacy AIRMETs. This standardization step was necessary to pave the way for the AIRMET to be automatically generated from the operational G-AIRMETs that were being proposed at that time. This was also wrapped up in the plan to retire the aviation area forecast (FA) and officially replace it with the graphical forecasts for aviation (GFA). The retirement of the FA occurred on October 10, 2017. The NWS removed specific things from the legacy AIRMET that included, in part:

1. The frequency of the hazard occurrence such as /OCNL/ AND /FRQ/
2. Trend remarks
3. The reason for amending, correcting or canceling an AIRMET
4. SIGMET reference statements such as /FOR AREAS OF POSS SEV TURB/ and /FOR AREAS OF POSS SEV ICE

5. The cause of the turbulence, low-level wind shear, and strong surface winds
6. The icing types such as /RIME/, /MXD/, and /CLR
7. The location of icing with respect to clouds and precipitation such as /ICGICIP, /ICGIC/, and /ICGIP

Although some pilots actually noticed the difference after the standardization occurred and were disappointed that the extra details were removed, most did not. In fact, it's more likely than not that a majority of pilots still don't know they are looking at a G-AIRMET versus the legacy AIRMET when the AIRMET is depicted graphically. In fact, this is likely one of the reasons it's taken this long to retire the legacy AIRMET. It's still used by many of the various aviation applications, including many of the heavyweight apps. However, the folks at Flight Service (Leidos) have been using G-AIRMETs for quite a while, but still allow a pilot to choose between the G-AIRMET and legacy AIRMET on their website, namely, 1800wxbrief.com.



Layer controls on the 1800wxbrief.com website provide the ability to choose between the G-AIRMET or legacy AIRMET. [Screenshot from 1800wxbrief.com website]

Before the plug could be officially pulled, the FAA convened a Safety Risk Management Panel (SRMP) this year to evaluate any pitfalls associated with the retirement of the legacy AIRMET. Based on the working group's recommendation and the SRMP results, the FAA has requested the NWS retire the legacy AIRMET and transition to only the G-AIRMET for the conterminous U.S. The legacy AIRMETs for Alaska and Hawaii will not be affected at this time and this change will not affect significant meteorological information (SIGMET) advisories in any way.

The NWS recently released a Public Notification Statement (PNS) that is asking for public comments before it officially retires this product in February. Based on the comments received, the FAA/NWS could push the AIRMET retirement to later in the year. However, the wheels are in motion to stop automatically producing the legacy AIRMET over the six forecast regions of the conterminous U.S. When the legacy AIRMET is officially retired, only G-AIRMETs will remain. Keep in mind that G-AIRMETs are completely graphical and have no textual component, only metadata.

Rechargeable Headlamp Introduced

Streamlight has introduced the 2,000-lumen **ProTac 2.0 Headlamp**, a rechargeable headlamp powered by the new Streamlight SL-B50 battery pack that charges directly via an integrated USB-C port.
The new light features LED technology and provides three operating modes: High, medium, and low. On high, it delivers 2,000 lumens and 14,500 candela, on the medium setting, it provides 650 lumens and 4,200 candela, and on low, it offers 110 lumens and 750 candela. Run times range from 25 hours on low to 2.25 hours on high, according to company officials.
The headlamp uses the SL-B50 Streamlight proprietary 4,900mAh protected Lithium-Ion USB rechargeable battery, accessed by the light's sliding sleeve. The battery features LED status lights to indicate charging status, including red for charging and green for fully charged. An integrated safety circuit protects the battery from accidental overcharge or discharge, company officials said.
Price: $195.00.

New Airfoil Jacket

November 15, 2022

Flight Outfitters has introduced the Airfoil Jacket, which keeps pilots warm without the bulk, according to company officials.
Weighing in at under 1 pound, the jacket is lighter than most sweatshirts, company officials say.
It's insulated and quilted and features a water-repellent coating.

Priced at $119.95, the jacket is designed to pack down into its own pocket when not in use, company officials noted.
For more information: **FlightOutfitters.com**

Aircraft Re-Registration was Every 3 Years – Now it is Every 7 Years


REGISTRATION NOT TRANSFERABLE
UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION
NATIONALITY AND REGISTRATION MARK: N 12345
AIRCRAFT SERIAL NO.: 6565
MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT: CESSNA C-150L
ICAO Aircraft Address Code:
ROBERT E. BARO
300 MOERKLE ST
ANYTOWN, OHIO
12345
DATE OF ISSUE: February 15, 1990
David Hinson ADMINISTRATOR
AC Form 8050-3(11/92) Supersedes previous editions
U.S. Department of Transportation Federal Aviation Administration

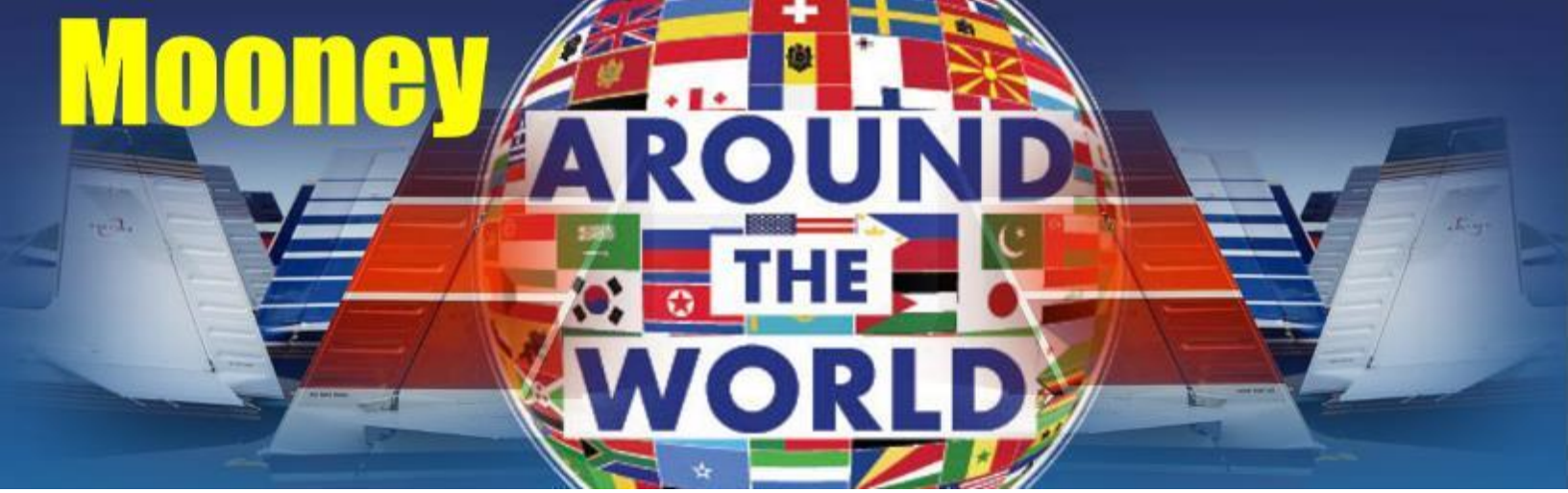
The FAA will issue a Direct Final Rule extending the registration interval for general aviation aircraft and the new seven-year duration applies to all GA aircraft. Until 2010, aircraft registrations lasted for the life of the aircraft but that resulted in a lot of inaccurate and ghost registrations on the books. In 2010, the agency made all operators re-register their planes and set a three-year limit for re-registration. The alphabets argued that was too onerous for private operators and

got the ear of Congress. The 2018 FAA reauthorization mandated the agency extend the limit to seven years for non-commercial aircraft.

That caused an issue for the FAA because use and not aircraft type defines the distinction between commercial and private operation. “Consequently, it is impracticable to have different durations for commercial and noncommercial general aviation aircraft registrations,” the final rule says. “Therefore, the FAA is extending the registration duration for all aircraft to seven years.” As before, re-registration has to take place by the end of the month of the anniversary of the existing registration.

Safety Pilots and BasicMed

On November 16, with the stroke of a pen, Acting FAA Administrator Billy Nolen granted holders of BasicMed medical certificates the opportunity to fly as safety pilots, a right not previously held. Previously, they needed to have at least a 3rd Class FAA Medical. The new rule goes into effect **Dec. 22, 2022**. READ MORE



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* Dec 10: Lakeland (KLAL) at new Waco Restaurant Jan 14: Leesburg (KLEE) will carpool to our house
MOONEY SAFETY.COM	**2023** January 26 & 27 Lakeland, FL (KLAL) April 13-14 Henderson, NV (KHND) June 9-10 Lexington, KY (KLEX) September 8-9 Westfield, MA (KBAF) October 13-14 Tupelo, MS (KTUP) Sign Up at https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	**Learn more at** https://www.mooneysummit.com/
Australian Mooney Pilots Association	
EMPOA	**Learn more at** https://www.empoa.eu/index.php/en/
Other Mooney Events	

ACK Technologies ACK E04 406mhz ELT

The E-04 ELT is a direct replacement for the more than 62,000 model E-01 ELT's (by ACK) on the market today. The E-04 fits directly into the current E-01 mounting trays and uses the same remote control panel indicator. The E-04 external antenna will utilize your current antenna mounting and wiring installations.

What we like about the E04 is that it utilizes the existing wiring which significantly reduces labor hours to install.

It does not have a built-in GPS, so you connect it to your existing GPS for that capabllity.

Note: The installation manual for this item requires the installation of 2 very specific batteries for operation - Duracell part number PX28L or Eveready part number A55 (or equivalent) for installation into the switch assembly and Duracell part number CR2 or equivalent for installation into the audio alert indicator.

Retrofit Kit does not include remote.

Warranty: All warranty issues must be handled directly with the manufacturer. These are non-returnable and non-refundable once installed. If any attempts have been made to install this unit, it becomes a warranty issue and can only be resolved with the manufacturer directly. Please view the warranty tab for additional information on the manufacturer's warranty.

There is a $250 Recertification fee in addition to the 15% restock fee on all ACK products that have been opened.

Features

- Accepts GPS position input data from Bendix/King. Garmin, Nema 0183 GPS.
- Antenna is swept back 20 degrees, and features a molded plastic base.
- 5 watts @ 406MHz for 24 hours, and 100 Mw @ 121.5 MHz for 48 hours.
- Simple plug in audible alert indicator.
- Lithium battery pack offers a 5 year battery life, and makes it substantially lighter.

Specifications

- 7.75" long.
- 2.85" width.
- 2.85" height.
- 1.6 pounds in weight with battery.
- Remote requires a Duracell PX28L 6 volt lithium battery or an Eveready AS44 battery.
- Audible Alert Indicator requires a Duracell CR2 3 volt lithium battery or equivalent.

Warranty

Avionics products manufactured by ACK Technologies, Inc. are warrantied against defects in materials and workmanship for a period of three years from their manufacture date. This warranty is limited exclusively to repair or replacement of the E-04 ELT and associated parts which were manufactured by ACK Technologies, Inc. the defective parts must be returned freight prepaid to our manufacturing facility. This warranty does not include repair or replacement of any part that has been improperly used, installed or physically damaged. This warranty does not cover any damage caused by chemical exposure. Discharge of the ELT lithium battery is not covered by this or any other warranty. Except as provided herein ACK Technologies, Inc. makes no express warranties, and any implemented warranty of merchantability of fitness for a particular purpose is limited in its duration to the duration of the written limited warranties set forth herein. ACK Technologies, Inc. shall not be liable for any direct, indirect, special or consequential damages arising from the use or misuse of this product. Except as provided herein no employee, agent, dealer, or other person is authorized to give any warranties of any nature on behalf of ACK Technologies, Inc. YOU MAY HAVE ADDITIONAL LEGAL RIGHTS WHICH VARY FROM STATE TO STATE

CLICK HERE for the full specifications

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)

Item 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

1965 Mooney M20C, N5533Q s/n 2955, TTAF 6212, Engine 1680 SMOH, Prop 1680 TSN, 10/1/22 Annua
All cylinders ≥ mid 70's. Fine Wire Plugs. Great IFR panel: Garmin GTN650 Nav/Com 1,
GTX327/GDL-88 UAT ADS-B In/Out, FS210 links to Foreflight. Garmin G5,
King AI & slaved HSI, King KX155 Nav/Com 2 with Glideslope and DVOR, KN64 DME.
EI MVP-50 engine analyzer (11+ primary instruments), one SureFly eMag, one Slick (<125 hrs. both).
Manual Johnson Bar gear, Manual/Hydraulic flaps, PC & Brittain 1-axis AP and more!
Original paint but she'll get you there @ 141 kt on 10 gph going GPS direct.
Useful load 981 lbs, 669 lbs with full (52 gal) fuel. 30+ STCs, email for more info.
Partners bought 2 other Mooneys, we don't need 3 sadly ☹
$76k Larry@LarryShapnek.com 505-366-4586 Sandia Park, New Mexico

For Sale, shares(s) of my 1984 Mooney M20K 262 N57785 11/2022

Ditch the Airlines !
Looking for one, two or three partners to share this slick, modified 231.

Based at Sandia Airpark (1N1) in Edgewood, New Mexico now,
I could consider a move to other nearby fields for the right reasons.

~$170k invested, a partnership or LLC would allow an easy path to the best maintenance and upgrades - enabling fast, private transport all around North America.

s/n 25-0845, TTAF ~4384, Continental TSIO 360-MB4B ~85 since IRAN rebuild, Heated Prop ~85 since new, King KFC150 Flight Director/HSI/AP, Avidyne IFD540, KX-165 w/GS, Avidyne AXP340 ADS-B, Built-in O_2, +++

Larry Shapnek 505-366-4586 Larry@LarryShapnek.com


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