The Mooney Flyer

The Official Online Magazine for the Mooney Community

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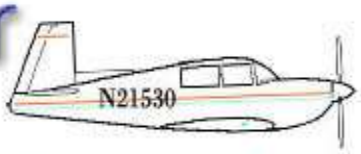
From the Editor

Phil Corman



The View from Your Mooney

Fly to Lake Tahoe with Mooneys

Summer is upon us and some great flying weather. Summer is the time for fly-ins and The Mooney Flyer is ushering in summer 2013 with The Gathering of Mooneys at Lake Tahoe (KTVL). This year, the fly-in is being hosted by Michael Golden, Mooney pilot & owner of Mountain West. There's an informal dinner at The Beacon, right on the shores of Lake Tahoe on Friday night, a free BBQ on the ramp Saturday for lunch, and a pool party at the LakeSide Inn on Saturday evening.

Click Here for all the details and Click Here to Register (FREE).

Check Out our New Website

Jim Price, co-founder of The Mooney Flyer has upgraded our website with a fresh look and more cool tools, including the Parts Finder. Check it out at: http://themooneyflyer.com/

May Be the Beginning of an Avionics Transformation

I have recently thought about the price of avionics and database updates. As many of you know, I worked at Microsoft and lived with the hegemony of the WinTel (Microsoft Windows/Intel) dynasty. In the world of avionics, the hegemony is Garmin and Jeppesen. You can't do much "GPS" in your panel without one or both of these companies and their prices are always measured in terms of AMUs (Aviation Monetary Units…. 1 AMU = $1,000). I've pondered how competition could bring the cost of the boxes and the costs of the databases down to non-oxygen required altitudes. And then I realized that we may be in the early stages of this transformation. The iPad/ForeFlight/WingX revolution is a very interesting start. The box is well under 1 AMU and the database is $75/year or $150 for Geo-referenced – for the entire USA. Granted, the iPad is not panel mounted. Remember, I said, it's a start. Having worked in computers for 35 years, I saw the transformation from mainframes to DEC's minicomputers to PCs and now mobile. Avionics may be going through such a transformation. Remember, the iPad for Aviation was an unintended consequence. Imagine the incremental effort to make a box that is still affordable, panel-able, and with reasonable database costs. It's not that far fetched. I think tablets such as the iPad and visionary companies such as Foreflight and WingX are moving our imaginations to realities.

The Connected Panel

Another effort we applaud is The Connected Panel. Connected™ Panel is a new open-platform architecture and technology that is designed to create new and exciting cockpit products that seamlessly integrate aviation application data from personal handheld devices with certified avionics installed in an aircraft's panel.. Avidyne joins other partner companies as announced by Aspen earlier today, including AvConnect, ForeFlight; Honeywell, Jeppesen, JP Instruments, Parrot, Pinnacle Aerospace, PS Engineering, Seattle Avionics, and Sporty's Pilot Shop, as companies that have all committed to collaborate on building products and applications that will be Connected Panel Enabled™. This enables different devices from different manufacturers to cross-communicate and share data. The Garmin GPS' do this in a very limited fashion. You can cross feed your flight plan from a 430/530 to your 496, for instance. But in a connected panel, data can flow freely from any compliant device to the others sharing fuel flow, engine data, weather, traffic, flightplans, etc. This enables the owner to pick the best-in-class device for each function, with the knowledge that all of the data could be used by the other devices to optimize their flight information to the PIC. Again, this is NOT a reality today, but it does seem to be "just over the horizon".

Appraise Your Mooney's Value

Don't forget about our cool new **Appraise your Mooney's Value** using Jimmy Garrision's valuation. Jimmy is from All American Aircraft, the country's largest Mooney reseller. We have implemented the models for M20C, M20E, M20G, M20F & M20J. Click on your model to simply complete the valuation. You no longer need paper and pencil. Just another benefit to our subscribers. These forms are currently Beta test quality. Please send errors to us.

M20C M20E M20G M20F M20J updated September 2012

Savvy Aviator Webinars

https://www.savvymx.com/index.php/webinar

This site is filled with FREE webinars on maintenance topics that every Mooney pilot should know.

There are two things we like most about this; First, Mike Busch, who delivers them is extremely knowledgeable, and second, they are done in such a way as to be completely understandable by non-mechanical pilots, even us Mooniacs.

A partial list of archived webinars include Oil, Annuals, Cylinders, EGT, Magnetos, Batteries, Alternators, Corrosion, Troubleshooting, Engine Problems, Electrical Problems, When to Overhaul, Spark Plugs, TBO & Beyond, Useless Maintenace, and the Post Maintenance Test Flight.

Another fantastic issue. Please pass on my thanks to contributor Linda Corman for compiling the itinerary for my visit next month to the USA! I can't wait to try the wines of Paso Robles.
Tony Rees

Another excellent issue! I haven't forgotten about the "Owner Produced Parts" article. I've been quite busy. I may send in another article entitled "The Engine Spoke To Me!" I love it that The Mooney Flyer accepts user-written articles.
Cliff Biggs

Keeping Your Cool In An Emergency
Developing a "Crash Checklist" for Survival

By Bob Kromer
Mooney Factory Engineering Test Pilot 1983-1986
Mooney Executive VP and GM 1986-1991

During my tenure at the Mooney factory from 1983-1991, I was directly involved in monitoring and reviewing most of the Mooney-related accident and incident reports received by the factory. As the factory's engineering test pilot, accident and incident reviews helped us understand those areas that might need technical improvement, either in the form of expanded POH information or added safety equipment. An example would be the information added to the Mooney M20K 231 and 252 POH's concerning flight characteristics if encountering inadvertent (but not approved) airframe icing conditions. Another was the decision to install electrical standby instrument vacuum systems for the gyro instruments as standard equipment beginning in 1986.

Later, as part of the management team, accident and incident information kept us advised of safety-related trends that might be developing in the fleet. We were hearing of partial losses of engine power in the M20K fleet as a result of engine induction system icing. That's not supposed to happen and we investigated. The result was a letter explaining engine induction system icing along with retrofit alternate engine induction air hardware sent to all Mooney M20K owners in 1985. The issue completely disappeared. From the stories of those pilots involved we were able to change for the better the future of those that followed. I personally considered these efforts my most rewarding contributions to the Mooney fleet and I am still proud of the Mooney factory's culture and philosophy back then at doing everything possible to keep our customers informed and safe.

Learning from Those Who Did It Right

Especially insightful for me was communicating with pilots who had successfully handled a Mooney thru an incident or accident. Occasionally in person but mostly by phone, I heard from numerous Mooney pilots what happened and how it was dealt with to a ensure successful outcome. At the time, I narrowed the information from these conversations into five primary areas of operation that seemed to influence the positive outcome. The following is a discussion on those five areas that made a difference in keeping those Mooney pilots and their

passengers safe when their airplanes were headed for an impact with something other than a smooth, paved runway.

Control. Belts. Airspeed. Stopping Distance. Stay. (C.B.A.S.S.)

I came to call this list "CBASS" (like sea bass). Hate to call it a crash checklist. Survival checklist sounds more appropriate. As mentioned earlier, each customer story about a Mooney emergency or incident seemed to end up with one or a combination of the five items mentioned as a factor in a successful outcome. Let me explain what each of the items meant to those Mooney pilots who faced and beat an off-airport forced landing.

Control…….Maintain

The pilots who walked away from their Mooneys after an off-airport forced landing said they kept the airplane flying as long as possible into the crash. They knew they might hit something unpleasant, so they slowed down as much as possible without stalling. But they carried enough airspeed to maintain basic aircraft control and to minimize the descent rate at impact. Keeping the wings level and the descent rate at a minimum at ground impact seemed a difference maker in many of these incidents – prevented catching a wingtip and cartwheeling and avoided high vertical deceleration impact forces. Cartwheeling is dangerous in any airplane and high vertical impact forces are the ones that really hurt.

We fly one (if not the) strongest airframes around. Continuous wing spar, tubular steel roll cage surrounding the occupants, all metal structure – an excellent structural combination to survive an accident. If the pilot gives the Mooney airframe half a chance by impacting the ground in a controlled fashion, the chances for a successful outcome are greatly increased. Hit the ground out of control and there is no airframe that can absorb those levels of crash forces. We experienced this first hand at the factory. During certification flight testing on the Mooney Porsche (PFM) in 1988, our company pilot suffered an in-flight engine failure with no chance for a restart. Kept his cool, picked a field and flew the airplane all the way thru the off-airport forced landing until it was all over in a cloud of dust. No injuries. Tore down a fence, broke all the fence posts and broke the composite prop. But neither wing tip touched the ground. Because he touched down lightly and controlled the airplane throughout the skid to a stop, no one was hurt. Secondarily, we were able to repair the damage and continue flying the test program within two weeks. If he had lost control before hitting the ground, the outcome would have been much different.

Belts…….Tighten

For those Mooney pilots who hit something other than a runway, a common statement was "our seat belts and shoulder harnesses saved the day". During this time frame (80's and early 90's), some of the pre-M20J fleet from the 60's and 70's had yet to be upgraded with front seat shoulder harnesses. I remember reviewing a few minor incidents with some pretty serious injuries. One was an off-field forced landing with a sudden stop. The airframe was relatively undamaged, but there were serious facial injuries for the pilot and front seat passenger. During the rapid deceleration, they both pivoted around their seat belts and impacted the instrument panel, face first. No shoulder harnesses. After only one of these conversations you realize shoulder harnesses should be considered mandatory as the front line defense against head and facial impacts with the panel. In Mooneys, we sit pretty close to that instrument panel. Installation and use of shoulder harnesses is especially important for us.

Airspeed…….Low But Never Stall

*Doubling groundspeed **quadruples** total destructive energy*

Could be the most important item on the survival checklist. Kinetic energy (energy due to motion) is strongly influenced by forward velocity. It's the groundspeed that counts. Doubling groundspeed ***quadruples*** total destructive energy. So keeping the airspeed (groundspeed) in check is a very important factor in walking away from an accident. Somewhere above stalling speed is crucial, but too fast and that destructive energy becomes very high. I'll never forget talking to an M20J 201 customer who inadvertently descended into trees at night during a low IFR non-precision approach. The pictures sent with the letter showed nothing but the tubular steel frame with the aluminum skins attached, sitting on the ground beneath the trees. The cabin was perfectly intact, but missing were the wings, engine, empennage and tailcone. I asked the owner how in the world he survived. His answer was clear and I still remember it today. "Saw the trees at the last moment, too late to go around. Kept it under control and the airspeed low. Had my belts on tight. Thank God I was flying a Mooney. That tubular steel cabin frame you factory guys brag about really did save our lives". Wow. Give that tough Mooney airframe half a chance and the odds are good at walking away, just as he did.

Stopping Distance…….Longer is Better

One of our very first M20K 252 customers from Alaska was flying home in his brand new airplane we had just delivered in Kerrville. He had crossed into Alaska when a seal failed in the turbocharger. All engine oil quickly left thru the turbocharger and exhaust pipe. A freakish failure that we never heard of again during my time at Mooney. This new owner glided down, saw a rock covered river bed and put it down slowly, gear up and under control. The airplane skipped and skidded quite a distance on the flat riverbed rocks. Because of the long skid, deceleration forces were minimal. No injuries and little airframe damage. We gave our customer a new replacement airplane. We recovered the other off the riverbed by helicopter, repaired the airplane back at the factory and resold it at a great price for a new owner with factory-repaired damage history.

This story has a happy ending for all because the pilot understood that low airspeed during a forced landing coupled with an adequately long stopping distance gives the best chance for survival. Sudden stops hurt. Prolonged deceleration on the ground over a distance is the best bet for survival.

Stay…….With the Airplane

One other common suggestion heard from pilots with successful survivals was to stay with the airplane after the forced landing. "I was tempted to run for help, but I'm glad I stayed with the airplane. The airplane was easier for emergency personnel to find than just me alone. And help arrived sooner rather than later". Those were the days before the widespread use of cell phones and other electronic devices. Today, it's even easier to remain near the airplane but quickly contact someone with the news that you're down and okay. The owner and his passengers in the M20K 252 in that riverbed in Alaska were tempted to start walking, but they didn't. They used the aircraft's avionics to communicate with overhead airplanes and had rescue personnel on the scene quickly. I always remembered that as good advice.

Someone Finally Wrote a Book

Hearing from these customers who faced forced landings in their Mooneys and did it right always made me wonder why someone didn't publish something on "how to crash". Probably because it's

not the most pleasant of subjects. It wasn't until 1996 that I finally found a small booklet titled "How to Crash an Airplane…..and Survive". Written by Mick Wilson, a retired FAA Aviation Safety Program Manager, this interesting booklet contains similar observations made during my time at the Mooney factory. It felt good to see published suggestions similar to those gathered from all those previous Mooney owners. The statistics and suggestions in the booklet are gathered from a large number of different models of general aviation airplanes, not just Mooneys. But most of what is in the book is directly applicable to those stories of success told to me those years ago while I was at the factory. (The booklet is published by Aviation Forum Company, P.O. Box 2885, Loveland, Colorado 80539-2885, www.crashandsurvive.com or mwilson@crashandsurvive.com). By the way, I don't promote this book in any way, just found it interesting and applicable.

Conclusion

Without prejudice, I say Mooneys are the toughest airframes built. I can attest to that statement firsthand, talking to many pilots during my time at the factory who would have been injured (or worse) if they had been flying another brand. Mooneys have the same structural design concepts as race cars. That design is somewhat complex and caused us many extra hours of labor during the production process. The tubular steel cabin frame and one piece wing were tough and time consuming to build. But at the factory we knew the extra effort was time and money well spent. One life saved would have been enough justification. But hearing from several pilots who walked away from an incident or accident because of the Mooney design, we would have never considered anything but building those airplanes the best we could. And we did.

If you have to make an off-airport landing, remember two things. First, the insurance company now owns the airplane and your job is for you and your passengers to walk away. Second, the strength of the Mooney cage and wing will give you an edge if you'll just land it like your flaring at your home drome.

7 Habits of Highly Effective Pilots

By Jim Price

#1. ALWAYS SEEKS PERFECTION

Most Mooney pilots are perfectionists. If they weren't, they'd be flying a Piper, Cessna, Beech or Cirrus. Mooney pilots strive to be the best – always. However, when on rare occasion they fall short of the mark, they accept the setback with a smile, get back up and try again.

#2. IS AN AVIATION ADVOCATE

We need to be inclusive to all aviators and, advocate for aviation wherever we go. That's the only way that the aviation community will be a winner. Because aviation is continually under attack, we must strive to lobby for our cause whenever we can.

#3. ALWAYS THINKS AHEAD

It's smart airmanship to think ahead of your airplane. In my opinion, there's no other way to fly. Mooneys are so darn fast that we either think ahead or suffer grave consequences. On a bigger level, forward thinking on the calendar is also important. Think of your life as an aviator and ask yourself, "Where will I be in 10 years?"

#4. HAS A HEALTHY EGO

As a Mooney pilot, it's hard not to be a little proud. Flying a Mooney isn't for the meek and mild, but we might need to check that ego and ensure that it's not over-inflated. Highly effective Mooney Pilots have balanced their aviation prowess and their ego.

#5. VALUES SAFETY AND MANAGES RISK

Successful Mooney Pilots need to respect the need to be safe. Be a

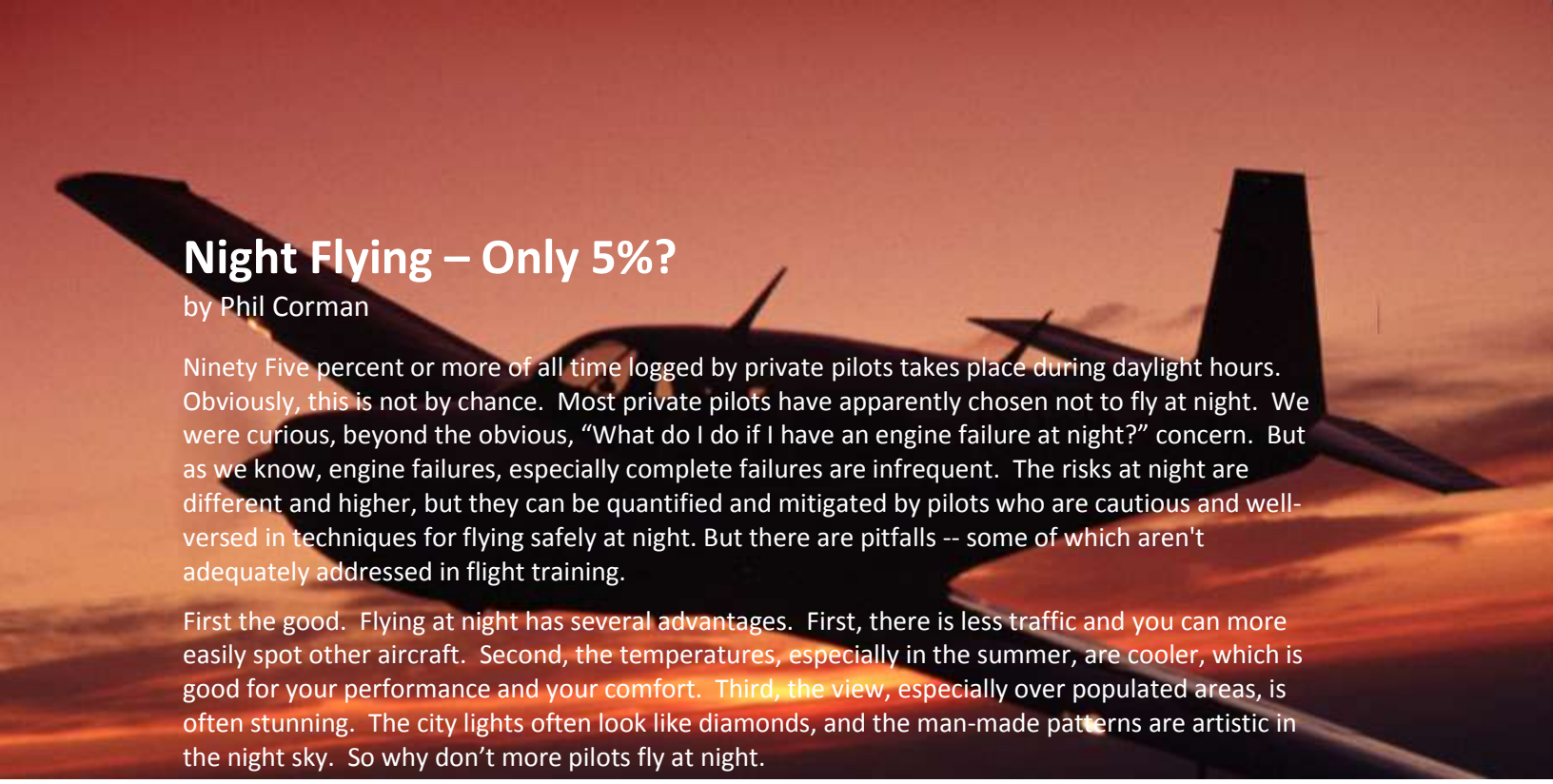
master of Risk Management and give Safety all the attention in the world. Aviators who do not respect Safety create statistics.

#6. USES ALL THE RESOURCES AT HIS/HER DISPOSAL

Computers and tablets are so powerful, making available many tools to keep us safe. Successful Mooney pilots diligently plan each flight. In addition, they keep their brain filled with great information through reading, seminars and online courses.

#7. UNDERSTANDS AND ACCEPTS RESPONSIBILITY

Highly successful Mooney pilots know how to bear the burden of responsibility. They think about the consequences of their decisions and how those decisions might affect other people. Successful Mooney pilots acknowledge and accept the responsibility.



Night Flying – Only 5%?

by Phil Corman

Ninety Five percent or more of all time logged by private pilots takes place during daylight hours. Obviously, this is not by chance. Most private pilots have apparently chosen not to fly at night. We were curious, beyond the obvious, “What do I do if I have an engine failure at night?” concern. But as we know, engine failures, especially complete failures are infrequent. The risks at night are different and higher, but they can be quantified and mitigated by pilots who are cautious and well-versed in techniques for flying safely at night. But there are pitfalls -- some of which aren't adequately addressed in flight training.

First the good. Flying at night has several advantages. First, there is less traffic and you can more easily spot other aircraft. Second, the temperatures, especially in the summer, are cooler, which is good for your performance and your comfort. Third, the view, especially over populated areas, is often stunning. The city lights often look like diamonds, and the man-made patterns are artistic in the night sky. So why don’t more pilots fly at night.

Well, there are probably several issues. At night, it is more difficult to ascertain the “horizon”. This could lead to spatial disorientation. On a cloudy night, or moonless evening, night flying can approach IMC (instrument meteorological conditions). It is much easier to inadvertently fly into a cloud at night. It is no mistake that almost 50% of VFR flight into IMC accidents occur at night. If you suddenly lose all ground reference at night, simply focus on your artificial horizon and turn coordinator to execute a standard rate 180^{o} turn back into the clear. You can also mitigate this concern by concentrating your night flying under clear skies, moonlit skies, or near metropolitan areas. If you find yourself in an area that is very dark and you become disoriented, you’ve got two good choices. First, turn around, back to the light, or concentrate on keeping straight and level by reference to your artificial horizon and altimeter trends. Landing at night can also be a concern for inexperienced night pilots, especially if they are not familiar with the approach terrain. In those cases, it’s a good idea to utilize the VASI lights. They will keep you out of trouble. My mnemonic for remembering is “Red over white — you're all right, red over red — you should dread."

The third night concern involves obstacles. These come in a variety of forms, including buildings near approach paths, TV/radio antenna towers, and electrical utility towers. The most commonly observed obstacle lighting is "aviation red obstruction lights," flashing aviation red beacons that flash 20 to 40 times per minute or burn steady red on structures not taller than 200 feet. The next type you have observed is "medium or high intensity flashing white obstruction lights" on structures 500 feet or higher. A word of caution here: If the obstruction happens to be a TV/radio antenna tower, there may be guy wires (steel cables) radiating from the top of the structure down to the ground, 360 degrees around the structure. These are not lighted in any way, and they may be impossible to see at night. So keep a safe distance away from these structures (1,000 feet above within a horizontal radius of 2,000 feet) and you'll avoid any cables that may extend horizontally from the lighted vertical structure. What you can't see may definitely hurt you! These obstacles are clearly marked on VFR sectional charts — be sure that your charts are current and always check NOTAMs before flying, as the "information age" is creating an ever-increasing amount of new communications towers.

The pilot's major concern, we think, is engine failure. Fortunately these don't occur often. But your options at night are reduced for a survivable off airport landing. You'll have more options if you are flying over populated areas with lights of civilization. You will also be amazed how much can be seen on clear moonlit nights. But no matter how you cut it, your options are reduced when looking for a landing zone at night.

So what steps can you take. First, if you haven't flown at night very often or recently, get some instruction. Double it up and get a BFR. Secondly, remember to provide redundancy for yourself. Bring a red flashlight, that is night-friendly to your eyes. This is in the event that you lose electrical power or your panel lights fail. This is so obvious, but what is often forgotten, is to hang the flashlight on a lanyard around your neck for easy access.

Knowledge is always power. So here are some easy steps to take when planning to fly at night.

Pre Pre-Flight (Know Thyself) – It can takes 30 minutes or more for your eyes to adapt to low light, but 20 minutes in dim red cockpit lighting will provide a moderate degree of adaptation. Once your eyes have adapted, if you look at white lights, the adaptation process must start again. At brightly lighted airports, you cannot avoid this exposure, so remember that your night vision may be impaired for some time after takeoff.

Altitude also degrades your night vision because the eyes' demand for oxygen increases as the light dims. And if you smoke or have inhaled carbon monoxide, your vision will be even thinner. For this reason, some experts recommend the use of oxygen for night flights above 5,000 feet.

Another night flight medical consideration concerns your biological clock, or circadian rhythm. Regardless of other factors, circadian rhythms tell us to sleep when the sun goes down. They slow your mental functions, which means you tend to be more complacent—not something to be during a night flight. Flying with a passenger or another pilot, or frequent contact with air traffic control (ATC), Flight Service, or Flight Watch can help keep your brain engaged during the flight.

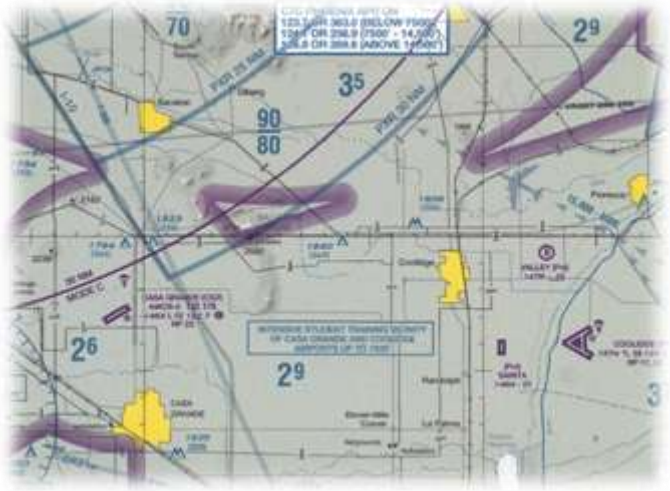
Most of your good options for night flying will be made "on the ground".

Preflight – Don't fly at night without a solid weather briefing. You must understand your situation, doubly, before departing at night. Most of your best options for night flying will be made "on the ground". Take advantage of that. Second, do a more

thorough preflight. What do we mean by this? Simple: Check your strobes, your rotating beacon, your navigation lights, your taxi & landing lights. But also remember to check all of your panel lights. We bet you are not too concerned about panel lights during your daylight operations, but it is critical for night flying. Sterile cockpits are always a good thing when departing and arriving airports. Here's one thing to think about. Don't allow flash photography in the cockpit at night. This should be part of your pre-flight passenger briefings, especially now that almost everyone has a camera on them via their Smartphones.

Taxiing – So there are two things to be aware of when taxiing at night. The first is "Do not have your propeller spinning if there are passengers on the ramp." This is plain common sense at all times, but especially important at night since people may not see the propeller in low light conditions. Secondly, ensure that you are familiar with the lighting and/or lack of lighting at the airports you will be operating at, at night. Not all taxiways will be properly lit, or lit at all, at all airports. Of course you know that blue lights are for taxiways, but make sure you know the lighting for runway threshold. Before you enter the runway environment, here's a useful adage to employ "Lights, Camera, Action". Also remember that the other planes may not be 1) Using their radio, and 2) Using their landing lights. Double check the runway environment before entering it. Putting your landing light on before entering the runway is a good idea at night. Turning about 45^{o} towards approaching planes on final when turning your landing light on will provide another margin of safety.

Takeoff – The ground roll is fine at night, but once your nose is rotated, your windscreen becomes filled with "black nothingness". You are essentially in a form of IMC, while also being low and slow. Yikes. This can be particularly dangerous, even for high time pilots, if there are few visual ground references. There are many accidents on record where the departing pilot crashed on takeoff by descending into the ground, usually within the first mile of departing the airport. How could a pilot, much less an experienced one, crash like this? The answer is in the *somatogravic illusion*, which is discussed in most instrument training classes but is rarely mentioned in night training for private pilots. According to the **FAA Instrument Flying Handbook**, "... a rapid acceleration, such as experienced during takeoff, stimulates the otolith organs in the same way as tilting the head backwards. This action creates the somatogravic illusion of being in a nose-up attitude, especially in situations without good visual references. The disoriented pilot may push the aircraft into a nose-low or dive attitude. A rapid deceleration by quick reduction of the throttle(s) can have the opposite effect, with the disoriented pilot pulling the aircraft into a nose-up or stall attitude." So what happens? A pilot taking off at night will experience the acceleration as a climb and release yoke pressure, allowing the airplane to descend into terrain. The same thing occurs often when instrument pilots reach the missed approach point and add full power to make a go-around. They perceive the acceleration as a climb and then -- rather than pitch and trim for climb at Vy -- continue to fly level at the worst possible time: close to the ground and possibly in IMC conditions. In Bishop, Calif., a Cessna 340A collided with terrain at night after a loss of control in the initial



the YELLOW areas outline the city

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takeoff climb. Witnesses reported watching the airplane accelerate on Runway 12, rotate, and climb to about 200 or 300 feet above ground level with a decrease in climb rate. The airplane was seen to initiate a left turn before descending into terrain. The impact site was east of the airport about 2/3 of a mile. The departure direction was toward the White Mountain Range with sparse population and few ground reference lights.

Cruise – The two most useful things during the cruise are 1) Your Flightplan, and 2) What you will do if you lose your horizon. Choose a flight path and a plan that keeps you near lit ground references such as cities and freeways. Select a flight path that has airports along your route and fly at an altitude that will give you the option to make these airports. Also, review the sectional for "obstacles". You can easily see most obstacles during the day, so sectionals act as more of a backup, but at night, the sectional is your best friend. Remember that tall TV/Radio towers also have guide wires, so giving them a wide berth is also wise.

Landing – When available, utilize VASI/PAPI lights to land. There are all sorts of illusions that happen in a pilot's head when landing at night. Most pilots have heard of "black holes," where an aircraft crashes short of an airport when approaching to land due to an illusion created when there are few lights on the ground between the aircraft and the airport. Few, however, know of the studies done by Boeing engineers that have proven that, in black-hole conditions, pilots consistently fly *below* a standard, three-degree glideslope and often crash short of the runway! And make sure you understand how to turn on the lights at the airport. Know the frequency and know the number of clicks. Another nice thing to remember is to "re-click" the airport lights upon entering the pattern, even if they are lit. Why? Because it would be disconcerting for them to "time out" and shut off on short final. Having said that, you should be comfortable landing without your landing light. Except on dark nights at dark airports, this is easier than you think, but still worth training for. Do this with an instructor every so often.

Flying at night can be both beautiful and rewarding. Like most anything associated with flying, knowledge and experience make it safer and more enjoyable. If you choose not to fly at night, don't. But if you don't fly at night due to fear, then get some knowledge and experience and open up the other half of every 24 hours for flying.

Basic Flying Quiz

Can you answer these without reference?

by Geoff Lee

1. What are the minimum fuel requirements for flight? VFR? IFR?

2. When is the pilot required to use full time oxygen?

3. When approaching Class C airspace, and reporting into the controller, you are simply told to "standby". Can you proceed to penetrate the C airspace? Class D airspace? Class B airspace?

4. What is the highest vertical dimension of Class **C** airspace? Class **D** airspace? Class **B** airspace?

5. Do you need a clearance to enter Class C airspace? Class D airspace? Class B airspace?

6. Approaching an airport, you are issued a LAHSO (Land & hold short) clearance; Must you accept the clearance?

7. What transponder code would you use in an emergency? What code if it your radio didn't work?

8. Your engine quits while in cruise: What is your first reaction?

9. On takeoff, your engine quits at 150 feet AGL: What is your first reaction? *What's y*our almost simultaneous second *?*

10. It is late fall and you are flying to a coastal airport, and you will arrive after sunset. The weather across the whole route is CAVU? When you are checking the destination's METARs and TAFs, what two weather related items would you be most concerned about?

11. You are down wind in a right hand traffic pattern with a strong quartering cross wind that is pushing the a/c toward the landing runway. On the base turn to final, right wing steeply down, to avoid overturning final, you apply hard right rudder to "help" the turn. (Ball is partially out on the high side). You are also increasing the back pressure and have diminishing airspeed. Which wing will drop when the stall occurs?

13. You are flying in light rain and the outside temp. 38^{o} F. Is it possible to get wing ice?

14. In your aircraft, as fuel is used, Does the C of G move forward or aft?_____

15. In your a/c, what is the maximum cabin load with full fuel? _____

16. You are on climb out from Truckee, ascending through 1500 AGL good VFR, OAT is -15^{o} and the engine is running normally. You lower the nose slightly for cruise climb and your airspeed indicator commences to "unwind." (diminishing indicated airspeed). You lower the nose and notice the airspeed diminishing rapidly to zero. Your altimeter and VSI do not function. Returning to the airport, you observe that the instruments begin to return to normal as you descend below about 1500 AGL.

What is wrong? What do you do?

17. What is the major difference between a spin and a spiral?

18. You're Mooney has a published maneuvering speed. You are in heavy turbulence at 50% of full gross weight and holding maneuvering speed. Can you exceed the published maneuvering speed? Or should you go slower?

19. You are departing South Lake Tahoe in a non turbo Mooney @ full gross, OAT 95^{o} F. How do you maximize your takeoff performance?

20, Assuming that you have full power available, the best rate of climb speed (Vy) is achieved at what pitch angle on your gyro horizon after lift off? .

21. What is your first action if you have smoke in the cockpit?

22. What is your first action if, on departure, at 300 feet AGL, your engine?

23. What is your first action if you observe/ determine an engine fire?

24. What are two undesirable characteristics of an aft C of G?

25. What is a positive side benefit of an aft C of G?

26. The direction of wind given in a "winds aloft forecast" is related to true or magnetic?

27. Above what altitude are the passengers required to use supplemental oxygen?

29. How can you tell if your wings are level if all electric and pitot/static gyro instruments have failed in IMC? (*Assuming that you do not possess any form of handheld GPS*)

30. What constitutes valid "IFR certification" in an aircraft

31. At an uncontrolled airport the 2,500 ft runway has a slight slope. The wind is blowing down slope @ 5kts. Assuming no other traffic, which way would you take off ?

32. What is the difference between a "SIGMET" and an "AIRMET" ?

33. An aviation "ceiling" is given in height above sea level (MSL) or AGL ?

34. METARS report visibility in nautical or statute miles?

35. ATIS and AWOS broadcasts report wind direction. Is direction Magnetic or True?

36. You are on an ILS approach in solid IMC, trailing a heavy commercial Jet. How would you avoid wake turbulence?

37. The greatest/strongest wing tip vortices are generated when an aircraft is (a) clean and fast or (b) heavy and slow?

38. Frost on a wing can prevent an aircraft from becoming airborne at normal TO speed by (a) Changing the shape of the airfoil or (b) Disrupting the flow of air over the wing ?

39. What is the purpose of differential aileron travel?

40. During the ground runup, an application of carb heat causes an increase in RPM. This indicates what?

Click Here for answers on page 31

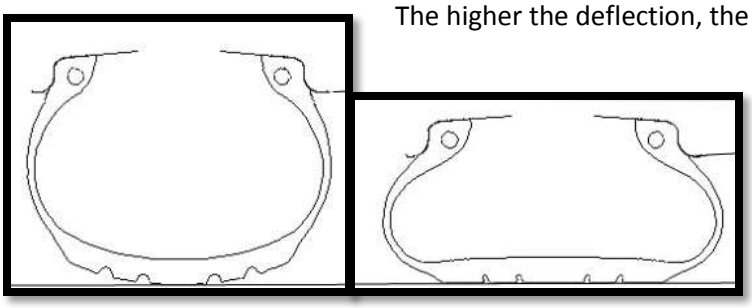
Your Aircraft Tires *by Jim Price*

There are several causes for adverse tire related events. Most of them are out of a pilot's control or reach. However, the two irregularities that we can actually touch are:

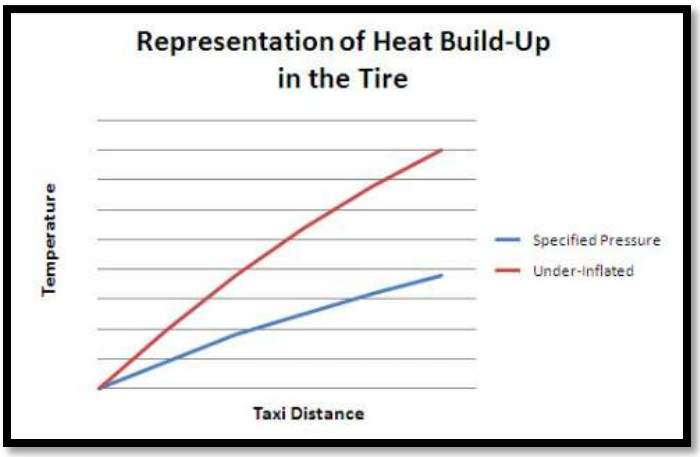
- **Under-inflation (over-deflection)**
- **Foreign Object Debris (FOD)**

Deflection

Tire deflection is the difference between the unloaded and loaded tire section heights. Typically, an aircraft tire has nearly twice as much deflection as a car tire and three times as much as truck tires. The higher the deflection, the faster heat builds up in a tire.



Because of the high deflection percentage of an aircraft tire, heat is produced as soon as the aircraft rolls. Because aircraft tires need to perform only for takeoff and landing, they can afford a high deflection. Safe, that is, if properly inflated.



Under-inflated tires become over-deflected and this causes rapid heat buildup. This increase in heat adversely affects both the lower and upper sidewall areas of the tire. This can cause

- Thrown treads,
- Ply compression,
- Irregular shoulder wear because of tread distortion,
- Faster wear, and wheel slippage.

You have probably noticed over a 30 day period, pressure losses ranging from zero to ten PSI – which is about 1% loss each day. That's very good, considering that Michelin considers a pressure loss of up to 5% daily to be normal. **At that 5% loss rate**, a Mooney with a Pilot Operating Handbook (POH) tire inflation specification of 30 PSI, could lose 1.5 PSI a day. Mooneys with 42 PSI in the mains and 49 PSI in the nose tire could lose 2.1 PSI and 2.45 PSI, respectively, each day.

Because under inflated tires are very difficult to detect visually, Michelin recommends that aircraft operators check tire inflation pressure with an accurate gauge before the first flight of the day or before each flight if you don't fly daily.

Because of the anticipated 5% per day pressure loss, Michelin recommends that you inflate your tires about 5%, or 2 PSI higher than prescribed in the POH. Aircraft tires will be fine, temperature wise, if inflated up to 105% of specified pressure. They can also operate fairly well at no lower than 90% of normal. The 90% to 105% range is:

- **Mooneys specifying 30 PSI** – 27 PSI to 32 PSI
- **40 PSI mains & 49 PSI nose Mooneys** – 38 PSI to 42 PSI and 44 PSI to 51 PSI respectively.

Tire Pressure changes by 1% for each 5°F (3°C) Therefore, when checking your tires, plan for the lowest temperature that will be experienced on your flight.

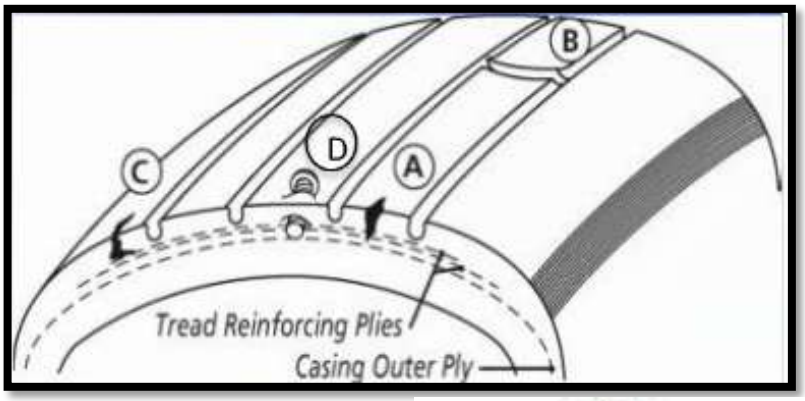
Example:	Temp °F/°C	Pressure (PSI)	Pressure (PSI)	Pressure (PSI)
Temperature **Rise**	+60°F (+36°C)=12%	37	47	55
	+40°F (+24°C)=8%	32	45	53
	+20°F (+12°C)=4%	31	44	51
Normal Pressure is >>>>>>>>>>>>>		**30**	**42**	**49**
Temperature **Drop**	-20°F (-12°C)=4%	29 (1 PSI drop)	40 (2 PSI drop)	47 (2 PSI drop)
	+40°F (-24°C)=8%	28 (2 PSI drop)	39 (3 PSI drop)	45 (4 PSI drop)
	-60°F (-36°C)=12%	24 (90% is 27 PSI)	37 (90% is 38 PSI	43 (90% is 44 PSI)

NOTE: A winter flight from Florida to North Dakota – with a 60°F change could place the tire PSI below 90% of the PSI specified in the FOM.

FOD

Tires need to be removed from service when FOD damage:

A. Cuts into the belt
B. Severs or extends across a rib
C. Undercuts at the base of any rib
D. Is caused by round objects greater than 3/8" diameter



- Check tire inflation pressure with an accurate gauge before the first flight of the day or before each flight if you don't fly daily.
- Inflate your tires about 5%, or 2 PSI higher than prescribed in the POH.
- Replace a tire if FOD has significantly damaged the tread.

FOD-prevention and clearance is the responsibility of all airport users

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Send your questions for Tom to TheMooneyFlyer@gmail.com

Question: What do I think about two blade versus three blade props on four cylinders or six cylinders?

I am going to expand this question and **add composite props and even four blades**.

We will take the first and most asked question: What do you think about putting a three blade on a four cylinder engine?

I'll tell a story. We repaired a 1990 J model that had landed in the bay, short of Palo Alto, CA., in about four feet of water. It was a real chore to deal with the salt water but the only problem we had was the owner wanted a three blade prop. At that time, McCauley had a new three blade aluminum prop and after the engine was rebuilt, we installed the new prop and that is when our troubles started. It vibrated so badly that all the instrument needles shook and the compass danced. We tried to dynamically balance, took the engine off and had it torn down again. Nothing worked. After a huge loss of time and money, I got McCauley to give me a new two blade and they took the three blade back. Now you know how I feel about a three blade on a four cylinder engine. Through my research I found that Mooney had tested the same prop on a J model and turned it down due to vibration. The Hartzell three blade has had better results but why add weight to your plane. The basic problem is there are 8 orders of vibration on a four cylinder engine and three blades just don't work as well.

When we rebuilt Top Gun's F model, we put a three blade MT composite prop on it and had very good results. Less weight and no vibration since the blades were very light. We had good rates of climb, and in general a big improvement. We also lost 14 lbs. Whether we lost or gained speed, I couldn't tell. We gained many knots with our mods on the F but never knew in detail which did which for speed. We do know we could get 165 knots with the MT on it so we never tried anything else.

Many of the older Mooneys have the Hartzell two blade with a very clouded history. When Hartzell came out with the Top Prop it was a huge improvement, except for the spinner problems. It is the most cost effective prop for the older aircraft and improves performance.

The versions of the K model, 231, 252, and Encore, all had two bladed props and were generally pretty good but a little slow on the climb. We first put a three blade MT on a 252 and it was a definite improvement for climb and it had less vibration. The three blade on a six cylinder is no problem.

When the Ovation came on line, it had a skinny two blade prop that made you want to abort, thinking it wouldn't get off the ground. Good cruise speed though. While there are several options on props for the Ovation, we find the best bang for the buck is the Hartzell composite three blade.

I had an MT four blade composite for a IO-550 but could not make a deal to put it on an Ovation so I sold it to a guy building a Lancair with a 550. There is a four blade MT for the TLS that is approved but I haven't talked anyone into buying one yet. It really looks cool.

In general, the newer composite props are really very good. When you can eliminate or at least greatly reduce vibration, the hidden savings are enormous. Less cracked baffling, broken clamps, less instrument wear, less cowling wear, etc. It is hard to see the cumulative savings, but if you give it some thought, you can realize that reducing vibration can be many future dollars saved.

The improvement in blade design is what has improved performance. The MT on our F model has the old standard blade design but the newer MTs and the Hartzells have the "scimitar" blades that really have improved performance.

Question: What are your thoughts on Fine Wire versus Massive electrode spark plugs?

From a selling point of view, I would prefer all Fine Wire plugs; much better profit margin. From an engine's point of view, it is somewhat different. Both types do the job just fine. Since we sell Massives almost twenty to one over Fine Wires, I believe most owners feel the same.

Obviously the Fine Wires last longer; about 1,000 hrs versus about 400. However, if you figure the cost per hour, the cost is not very different. I do feel , since the advent of iridium for the Fine Wire plugs, that they are better and wear less. The one case where we do use Fine Wires is on cylinders that are pumping oil. Fine Wires fire better in oil than the Massives do, so we will put Fine Wires in the lower holes in mainly 4 cylinder engines. Of course, this is just compensating for a problem that should be repaired, but it can nurse and engine to overhaul.

I have seen some manufacturers using Fine Wires on TSIO- 550s but also have seen cylinder cracking on some of those engines. So I think they have a different problem they are trying solve.

One other thought. On occasion, one of my guys may drop a plug so it costs me more with the Fine Wire plug. I can't comment on different brands. Through the years, there have been several, but I have always used Champion and they do have new competition now with Tempest. Time will tell.

Of course I will use whatever a customer wants, since all are approved.

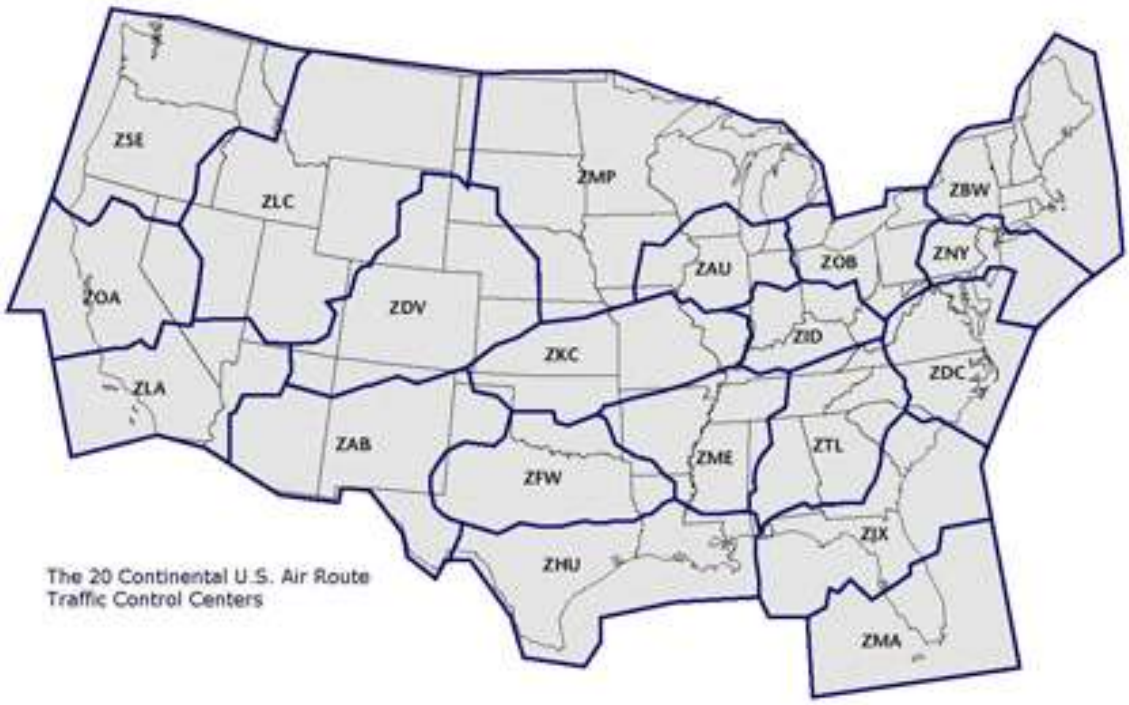
One other thing we do, and I think most shops do this, too. Every time we remove a plug, we install a new gasket to insure a good seal.

En-route Flight Advisory Service (EFAS), or "Flight Watch"

Flight Watch is the primary collector of pilot reports (PIREPs). They are there to provide pilots with en route weather updates. (Don't ask them for a full route briefing or to accept your flight plan. EFAS can provide weather updates, PIREPs, and advisories. Call them on 122.0 (below 18,000 feet MSL). Use the ATC facility's name, "Los Angeles Flight Watch", not the Flight Service name. *EFAS is available:*

- Above 5,000 AGL to 17,500 MSL. (In many areas, it's possible to make contact well below 5,000' AGL. Give it a try before you start a climb).
- 7 days a week, 6 am to 10 pm local time.

Flight Watch staffing is a direct function of demand. If there is a great deal of convective weather in Arizona and New Mexico, for example, they would be sure to have additional staff on flight watch at Albuquerque and Los Angeles Center. On a very challenging weather day throughout the U.S., you can anticipate 20 flight watch specialists on duty – that's one per Center.



Conversely, during the late evening hours or when the weather is generally tranquil and the air traffic is less, Flight Watch may drop down to as few as five specialists to cover all 20 centers in the U.S.

Travel Tips when calling Flight Watch:

- Reference them by the name of the en route center you are in, as in “Los Angeles Flight Watch”).
- State your location in reference to a NAVAID on the initial call. For example, if you are 20 miles north of the Grand Canyon VOR (Arizona), you are within the Los Angeles Center airspace. You would say, ***“Los Angeles Flight Watch, Mooney 257KW, 20 north of the Grand Canyon V-O-R, over.”*** This allows the Flight Watch specialist to use the best remote outlet to reach you."

In addition to 122.0 MHz, each Center has a dedicated frequency for its High Altitude Flight Watch. These frequencies are listed on the inside-back cover of the green Airport/Facilities Directory (A/FD).

Providing a PIREP to EFAS, 122.0

The Required Stuff for a PIREP:

- ***LOCATION (Nearest VOR or Airport).***
- ***TIME—ZULU or minutes ago.***
- ***ALTITUDE (MSL).***
- ***A/C TYPE.***

Optional Stuff for a PIREP:

- **CLOUD COVERAGE -** (CLR, FEW, SCT, BKN, OVC), **TYPE -** (Cirrus, Cumulus, Stratus), & **HEIGHT -** (Bases & Tops should be expressed in feet MSL).
- **VISIBILITY -** (in statute miles), & **RESTRICTIONS -** (Haze, Mist, Fog, Dust, Sand, Smoke, Spray, Volcanic Ash).
- **PRECIP TYPE -** (Rain, drizzle, snow, and hail), & **INTENSITY -** (Light, moderate, or heavy).
- **TEMP** - (Celsius).
- **WIND** - (Direction & Speed in knots)
- **TURBULENCE -** (Light, light chop, moderate, moderate chop, severe, or extreme).
- **ICING** - (Trace, light, moderate, or severe).
- **Then, add your REMARKS.**

Florida Mooney Lunch Group

June 8: Punta Gorda, (PGD) Skyview Cafe
July 13: Williston (X60) Pyper Kub Cafe
August 10: St. Augustine (SGJ) Fly By Cafe
September 14: Lakeland (LAL) Air Harts Cafe
October 12: Flagler (XFL) High Jackers
November 9: Winter Haven (GIF) Pappy's Grill
December 14: Punta Gorda (PGD) Skyview Cafe
E-mail DaveanRuth@aol.com by Thursday night of the week of the event so we have a head count for the restaurant on Friday.

VINTAGE MOONEY GROUP USA

June 7-9: Wings to Walla Walla (KALW) – Click Here for details
June 8: Fly-in to Don Maxwell Aviation Hangar, Longview, TX (KGGG) Click Here for details
June 21-23: Gathering of Mooneys at Lake Tahoe (KTVL)
Click Here for all the details and Click Here to Register (FREE).
October 5-6: California Capitol Airshow & Mooney Fly-In (KMHR)

Have You heard the News?

A SUMMARY OF USEFUL AVIATION NEWS

June, 2013

Kansas Congressman introduces legislation to revitalize GA

May 8, 2013 by General Aviation News Staff

Rep. Mike Pompeo, R-Kansas, has introduced the Light Aircraft Revitalization Act (LARA), which would cut regulations on the general aviation industry. “General aviation has never asked for a bailout, but we can cut red tape and at the same time improve safety, effectively revitalizing the industry by cutting the cost of new planes,” said Pompeo. “The existing outdated certification process needlessly increases the cost of safety and technology upgrades by up to 10 times. With this bill, we can ensure that the general aviation industry has what it needs to thrive.” READ MORE

Sunglasses especially for pilots (Flying Eyes) now available with bifocals

May 8, 2013 by General Aviation News Staff

MANHATTAN BEACH, Calif. — Flying Eyes Sunglasses now include the option of bifocal lenses that are designed specifically for the cockpit. READ MORE

The FAA Wednesday announced that 72 control towers (PDF) and other facilities that had been slated to shut down night operations to meet budget cut requirements will stay open. The FAA did not immediately elaborate on their decision to keep the facilities open at night and has not yet determined the fate of 149 federal contract control towers also targeted by the cuts. READ MORE

Arizona Startup To Produce Unleaded Aviation Gasoline

An Arizona company called Airworthy AutoGas said it plans to start production of a high-purity, low-vapor-pressure 93 octane unleaded aviation gasoline this fall that could replace 100LL avgas in about 80 percent of piston airplanes.

Read more

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at http://www.flyingmag.com/news/arizona-startup-produce-unleaded-aviation-gasoline#YUuFEjTTyF4zBto6.99

Fun With an iPhone Camera Mount

If you have an iPhone, you have the makings of a terrific video platform in the palm of your hand. But who can hold the iPhone steadily in place while flying? Maybe Bob Hoover, but not the rest of us.
So Nflightcam has news for you. Not only can you buy an iPhone mount that will perfectly place your camera phone over your shoulder, you can also use the aircraft headset cable to plug your cockpit communications into the video
Read more at http://www.flyingmag.com/avionics-gear/instrumentaccessories/fun-iphone-camera-mount#LYgVfWJyAek13L5r.99

Hello, I'm with the FAA. I'm here to help you

Product Review – Wash Wax ALL

When I moved from Reid-Hillview in San Jose to Paso Robles, it was a great move for my family. But Paso Robles did not have a wash rack to clean my Mooney. That's when I discovered Wash-Wax ALL. Since finding this company, which has an impressive portfolio of products to clean your aircraft, I have not used any water to clean my plane. I use three (3) of their products; 1) Wash Wax All Cleaner, 2) Wash Wax All Belly Cleaner and 3) Aero scrubbers. Before I delve into each, these products are "Spray on…. Wipe off", kinda like the Karate Kid "Wash on… Wash off". And it meets Boeing Aircraft cleaning Spec. Exterior D6-17487P and Interior D6-7127M. These products have been in use by pilots for 25+ years, so it's proven.

First the Cleaner

I start with the upper fuselage and then move to the side fuselage, empennage, and wings. This is where Cleaner is best applied. Simply spray it on, then use either a blue shop paper towel or equivalent and/or the Aero Scrubber for those persistent dirt, oil, grease or bugs. I use a clean blue shop towel to wipe it dry after the surface is clean.

Then The Belly (Purple)

I have a long body M20S with the big IO550 which seems to do a good job of leaving engine deposits on the belly of my Eagle. The Wash Wax All Belly Cleaner practically dissolves it off my belly. But invariably I need to use the Aero Scrubber to break up the grime, and then use those disposable blue shop towels to wipe it clean and buff it up a little.

So for the past 8 years, my Mooneys (first a C, now an S) are spotless and without any water. I have noticed that it's easier to keep the belly clean by cleaning it regularly, but I have also found that the Belly Cleaner seems to provide a wax layer that makes it easier to maintain a clean belly after a few cleanings.

You can order this stuff online at: http://www.washwax.com

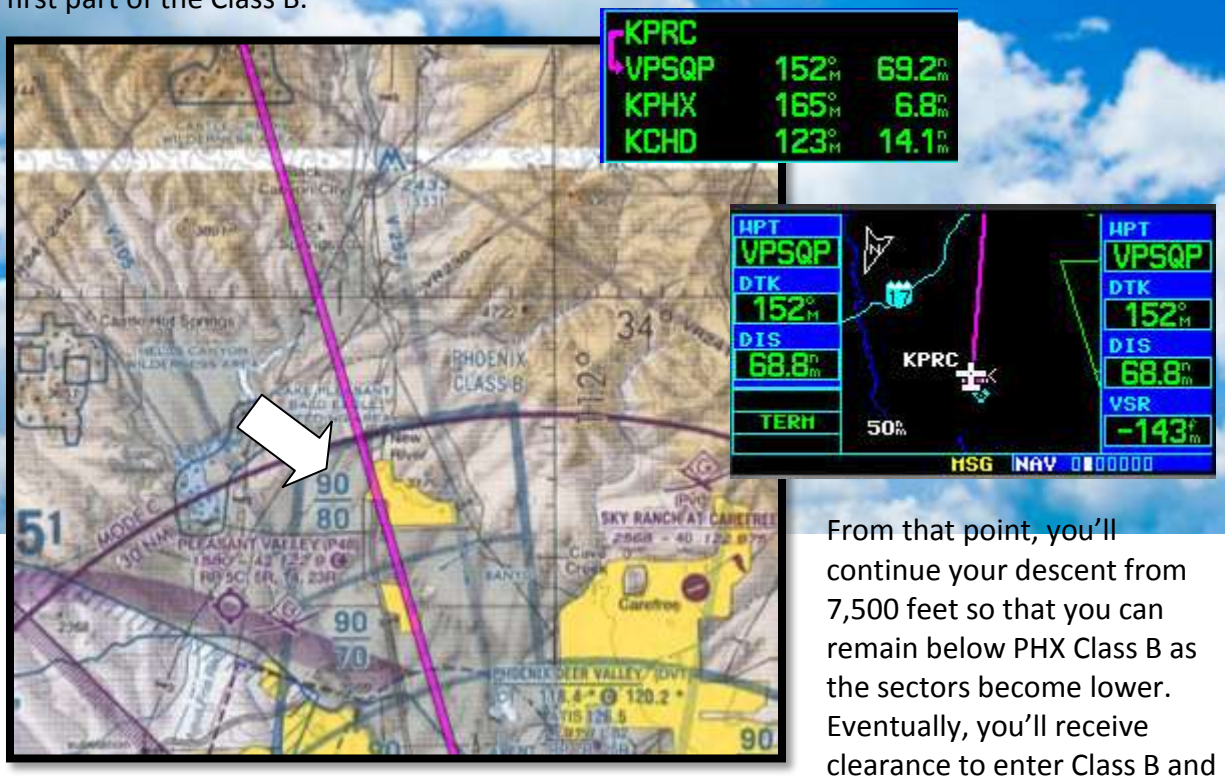
Here's an unrelated tip. Don't waste your money on any product to clean your windscreen. Local Ag pilots taught me that *Lemon Fresh Pledge* works wonders. Spray it on your windscreen and wipe it gently clean with one of those disposable blue shop paper towels. Remember to wipe only vertically to avoid undesirable scratches over time. And it smells great.

Finally, if you are an Eco-Friendly Mooney pilot, look at all the water you are saving. And you can thoroughly clean your Mooney right in the comfort of your own hangar.

Inserting Custom Points on the GNS430/530

You are flying from Prescott, AZ (KPRC) to Chandler, AZ (KCHD) at 9,500 feet MSL.

Up ahead is the Phoenix Class B, and you want to be at 7,500 feet MSL before you reach the first part of the Class B.



From that point, you'll continue your descent from 7,500 feet so that you can remain below PHX Class B as the sectors become lower. Eventually, you'll receive clearance to enter Class B and continue on to Chandler.

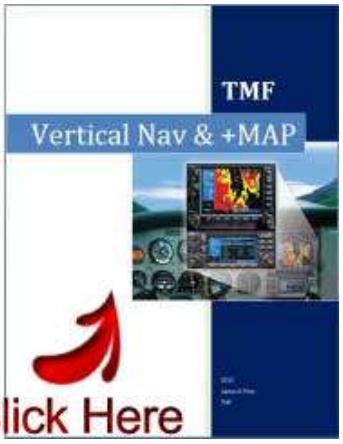
How can you make a spot in your flight plan so that you can have a point to use for your Vertical Nav?

It's simple. Just create a +MAP

Learn more about your GNS 430/530 and what it can do at

http://themooneyflyer.com/garmin.html

or just



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I Sold My Power Tow

Who needs expensive machinery when my wife does such a great job pushing? Gerry demonstrates a safe place to push a Mooney forward.

Both Hartzel and McCauley discourage putting pressure on the prop when moving your Mooney.

Answers to Pilot Quiz

1. VFR: Fuel to first airport landing at normal cruise speed plus an additional 30 minutes of flight. If the flight is during the night an additional 45 minutes after first landing is required. (FAR Fuel to 91.151).

IFR: Fuel to first airport landing plus fuel to an alternate (*if an alternate is required 91.167 (b*)) plus fuel for 45 minutes thereafter FAR 91.167 (a3)

2. *12,500 for flights over 30 min* (FAR 91.211 (a1)

3. **No.** *"**Standby**" would constitute radio contact in class D.* ***C requires that your N # be included*** *in the response in order to proceed.* ***B requires a specific clearance****, as in "Mooney 1234 Victor, you are cleared to enter Class B airspace."*

4. ***4,000 ft AGL (above the airport elevation)*** Class **D** airspace? ***2,500 ft AGL (airport elev)*** Class **B** airspace? ***10,000 ft MSL***

5. ***No*** *(2 way communications + xponder.),* Class D airspace? ***No*** *(2 way communication),* Class B airspace? ***Yes***

6. NO

7. 7700. If no communications on your radio, squawk 7600 (If "*Nordo", point your plane at the tower and flash your landing lights when landing*).

8. First reaction: S*witch tanks + turn on the boost pump* Your second... If no start. *Maintain altitude until the plane slows to best glide… Look for a place to land, debug/ declare on the way down to land site.*

9. First reaction *lower your nose* . Your simultaneous second reaction should be to *switch tanks.*

10. Temp /dew-point spread (*easy to lose 5 degrees without the sun… instant fog*)

11. Right wing (*x controlled stall*)

13. Yes (*wings are super cooled*).. Also carb ice could develop (if the engine is carbureted).

14. Forward in the Mooney

15. In your aircraft, what is the maximum cabin load with full fuel? _____-

16. You have a p*lugged static port.* What do you do? Use *alternate static if you have it. (Breaking the VSI glass in VFR weather would seem unreasonable)*

17. Airspeed *(Spin exhibits constant airspeed, the spiral results in rapidly increasing airspeed). (If you are rotating nose down and the airspeed is rapidly increasing, you are in a spiral. Level your wings simultaneously reducing power to idle, while gently easing the nose up and bringing the power to cruise.)*

18. Slower

19. Lean the mixture if not you are in a turbo Mooney. That is, *full power run up lean to peak enrich to 100 degrees rich of peak . This can be done on roll out).*

20. 5 to 7 degrees. (*Observe the ASI and optimize airspeed and vertical speed between these angles*)

21. Open the pilot's window, turn off master switch, and then smell it! *(Crack the door if necessary. The odor of electrical smoke versus engine fire smoke is very different; as should be your actions. If there is any evidence of engine fire (flame), turn the fuel selector to the off position and get the aircraft on the ground by the shortest feasible route. Smoke will incapacitate you in a very short period).*

22. Lower the nose, simultaneously switch tanks.

23. Fuel selector valve to OFF position. (*Pulling the mixture control solves nothing!)*

24. Dangerously increased pitch sensitivity. Stall/spin recovery more difficult or impossible

25. Air speed gain. (*Helps the down force on stabilizer thus reduces drag*)

26. True (*speed in kts*)

27. Above what altitude are the passengers required to use supplemental oxygen? *15,000 passengers, 12,500 pilot, 14,000 crew for flights over 30min. FAR 91.211*

29. Steady wet compass.

30. Current_pitot /static / transponder check *(every 24 calendar months*) *(assuming required instruments are installed)*

31. Downhill *(with a tail wind)*

32. SIGMET hazardous to all aircraft, AIRMET significant to light aircraft, pertinent to all, 6 hour intervals.

33. AGL

34 Statute miles *(Wind speed is in kts and the direction is in relation to true North. Routine weather report, hourly, unless the weather is rapidly changing.*

35. Magnetic

36. Stay above the glide path of a/c in front. (O*ne dot high on the GS will usually do it . . Try to touch down at a point after the heavy touches down*)

37. (b). Heavy and slow

38. (b). Airflow disruption (*get it all off, smoothing frost is a fools game.)*

39. To minimize adverse yaw

40. Carb ice (understand/recognize the phases of carb ice removal … (*Apply heat, slight RPM drop, rough running, RPM rises to level below normal before heat application*)

When planning <u>any flight</u> always think through and have a “what if “mind set for any phase of the flight,

from lift off to touch down.