# The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

March 2013

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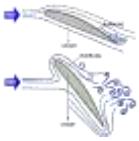

## Features




**Editors**
Phil Corman
Jim Price

**Contributing Writers**
Bob Kromer
Tom Rouch
Paul Loewen
Geoff Lee
Linda Corman

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## In Every Issue



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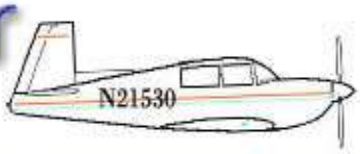
# From the Editor

**Phil Corman**





A reader sent me an email asking what I thought about the following idea. He suggested Mooneys over America. His idea is as follows. Establish a 10 day time when any/all Mooneys would fly across the country. Let all Mooney owners know that there will be a trip that starts somewhere in the US west, say Sedona for example. After spending a day in Sedona, the participants would meet for dinner or drinks and pick the next destination. The criteria is that the group is venturing eastward to the Atlantic coast. Each segment would be limited to 2-3 hours. The decision would be posted that night. Folks can travel to the next destination, or opt out. Similarly, new Mooneys might join up and spend a few days with the group. The idea is to fly around America with other Mooney pilots, with little planning, except for flight and weather planning. Let us know your thoughts. If this were to take place, the current thinking is that it would start in early May. Send your thoughts to: TheMooneyFlyer@gmail.com. If there is enough interest, we'll do it.

**Another Solution for 100LL "Back to the Future"**

As all Mooney owners are aware, there is a strong green movement to ban 100LL. Several new solutions have come to light, mostly based on biofuels, such as Swift's 100SF. But here's an alternative that has been around for 60 years, **Anti-Detonation Water Injection**, or ADI. It's simple. Inject a water-methanol spray into the induction manifold, after the carburetor or fuel injection valve, when there is a risk of detonation. Companies like Air Plains and Tecnam have these solutions, when is this water-methanol injected? It's controlled by a temperature and pressure monitoring unit. The system injects when either of two parameters are met: 25 inches or more of manifold pressure or CHTs of 400 degrees F or more. Proposed solutions include a reservoir in the baggage compartment that includes the controls and the fluid. It's an imperfect solution, but eliminates the lead. Click Here for a full story.

**Wright Brothers Master Pilot Award to Mooney Pilot**

One of our own, Mooney pilot **Cliff Biggs** from Page, AZ has received the prestigious FAA Wright Brothers Master Pilot Award. **The Wright Brothers *Master Pilot Award*** recognizes pilots who have demonstrated professionalism, skill and aviation expertise by maintaining safe operations for 50 or more years. Recipients are awarded a certificate and a lapel pin and are recognized in our Wright Brothers Master Pilot Award.

Cliff has 50 years flying experience. The first airplane he flew was a DC3, 6/62. He soloed Sept. 3, 1962 in a C150, Private Pilot Sept. 3, 1963, both at KVNY. Cliff received his Commercial Ticket from Jim Dewey, Ret Head of VNY FAA in his own Cessna 140. He's flown to Russia, Europe, Sardinia, Alaska, Canada, Mexico, Belize, Costa Rica, ST Thomas, St Croix, Jamaica, Dominican Republic, and Bermuda. Additionally Cliff has flown privately owned 727 and DC9, 727s for Eastern Airlines, 737s for Vanguard Airlines, 757s for National Airlines, Airbus and 737 for Frontier Airlines as well as Skyvans for Cherokee Airlines, plus numerous corporate jobs on Lears and Citations.

We are proud of Cliff's recognition and proud that he is a member of the Mooney community.

**Manage those CHTs – No excuses**

We've said it before and we'll say it again, because it's worth saying. Keep those CHTs in check. Ideally, you should strive to manage to keep your CHTs under 380°f. You can probably cheat a little on climbout to just under 400°. Here's why. At 400°, your cylinder strength declines by about 50%. And remember that your cylinder has a head and a barrel. The head is made of aluminum and the barrel is steel. These expand at different rates. You are asking for a crack at the junction. There are three easy ways to manage your CHTs while climbing out; 1) lower the nose, 2) enrichen the mixture, and 3) open those cowl flaps, if you have them. On cruise, enrichen a little if ROP and lean a little if LOP. Your engine will love you.


## 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

# Mooney Factory Update

A Discussion with Barry Hodkin, CFO

We have had many letters from our readers hungry for information from the factory. So we contacted Barry Hodkin, CFO MAPG Ltd, Mooney Aviation Co Inc. Our discussion was very pleasant and very informative.

First things first. It is amazing that there are only 8 full-time employees doing all of the work. That includes Mr. Hodkin. Among the staff are the Director of Engineering, Director of Quality, and former Chief Pilot. It's amazing to us, here at The Mooney Flyer, that never in the field of aviation is so much being done with so little for so many, (tribute to Winston Churchill). All kidding aside, here is what the factory has managed to continue to deliver.

Approximately 90% of parts are available from Mooney. Barry wasn't saying that was the exact percentage, but the vast majority of parts are available. As you know, many parts are sourced from third parties. In addition, Mooney has successfully maintained all the FAA Certifications and also its ISO Accreditation. This, coupled with the parts availability, is a significant piece of 1) Keeping our airplanes flying, and 2) Maintaining the value of our Mooneys. This is not necessarily true of other aircraft manufacturers that have faced situations such as Mooney.

The factory also employs 2-3 part-time employees who fabricate parts fabricating parts when that's required. In some cases, parts are made available from planes idled on the manufacturing line.

Everyone knows that the MSCs, like LASAR/Top Gun/Don Maxwell and others have stepped up in a huge way during these difficult times. Barry indicated that some MSCs have gone out of business so that this has been a tough time for the MSCs as well. There are probably less than half a dozen that have good business volume at this time.

Barry indicated that the factory is deliberately being kept alive for the reasons above and also to make it more attractive for potential investors. We did not press the status of a potential sale and Barry did not want to comment. That is understandable. But there has been ongoing interest and that remains a possibility.

We'd like to extend our sincere gratitude to Barry and the 7 other full-time employees (we know who you are) for the efforts you are making to keep our Mooneys flying while also maintaining their value. We will report more status and details as they become available.


## http://www.emergencyrunways.com

You are flying along at X thousand feet over some inhospitable terrain, or maybe not so inhospitable. Here is a site that will highlight emergency landing fields that are probably not marked on your Sectionals. As with other "social media" websites. This is maintained by pilots for pilots.



I'm always jealous of Cessna, Piper, Cirrus, etc. pilots. They always get to log more PIC time when arriving at any destination.


I read Bob Kromer's article "Phoenix Rising" with great interest. It was nice to read some promising or encouraging news about the future of our beloved airplanes.

With all the negative news lately about General Aviation, it was great to read there is a possibility for a future.

**Dan Dreher**

Compression Test is technically a misnomer. The test is actually a leakage test, where the amount of air that the cylinder leaks through the various contact surfaces is somewhat measured. The tester actually measures the pressure drop across an orifice (0.040 in if my memory serves me right). On the supply side a regulator maintains the 80psi inlet. A gauge on the other side of the orifice measures the pressure that the cylinder is able to maintain. At Top dead center, the piston is at the top and both valves should be closed so the leakage sources are the rings and valve seats. If the total gap of all leakage was equivalent in area to a hole of 0.040 in diameter, the cylinder gauge would read 40 psi.

I made a home brew version of this and regularly use it to diagnose small engine problems (generator, weed eater, mower, etc.). When you have a leaking valve, you can easily detect which one. It is a great way to determine the health of an engine and to diagnose faults.

**Bill Heybruck**, 65 M20E Owner, Mint Hill, NC

Another useful newsletter. The highlight for me was the new diesel engine. If a Mooney could do 167 KTAS at 9.6 gph, that would be amazing.
**Momo Vuyisich**

I don't fly a Mooney but I agree: there's good stuff in every issue. Thank you for letting us know when a new issue is available.
**Brian**

You do a great job with The Mooney Flyer editions.
**Seth**

Oooooooo-sume… As always!
**JB**

Page 29 said that the Bahamas will require 406 ELTs as of February 1st; that WAS the plan, but they extended that deadline to **February 2015**.
**Troy Whistman**

Thanks for a great magazine. I make a double sided hard copy for me to read, then I pass it on to another Mooney owner at our airport who is not computer savvy. He then he leaves it in the Pilot Lounge when he's done. So it gets around some.
**Bill Heybruck**

I recently had discovered and downloaded the "Tailorable Weight & Balance Calculator" from the Mooney Flyer website. Upon my initial observation it appeared to be a fine tool for me to easily verify my W&B figures for any given flight. My initial attempts to tailor the program to meet my 1987 M20J were unsuccessful. I needed some assistance from the Mooney Flyer staff. Phil Corman promptly came to my aid. Not only did he answer my questions, but he offered to personally take the time to modify the program to suit my needs and then emailed the result to me. Now I have a finely tailored W&B calculator on my PC that clearly and easily depicts my aircraft's loading. Thanks Phil for your excellent and knowledgeable support.
**Jim Simmons**, Cheshire, CT

G'day Guys, TMF website is fantastic. You are to be congratulated for making such a comprehensive and readable publication available to the Mooney community. More power to your elbow!
Cheers from Down Under, **Tony Rees**, Editor, Australian Mooney Pilots Association

# Insights into Mooney Stall Speeds and Characteristics

## Gaining Knowledge from Factory Certification Flight Testing

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

### All Mooneys Share Something in Common

During my time in the 1980's as Mooney's factory engineering test pilot and later as the executive director of a Mooney owners association, I have been fortunate to fly and evaluate most of the Mooney models produced over the years. From the early M20C's to the latest M20R's, I was able to evaluate each of these airplanes from a test pilot's perspective, investigating various changes in performance, capability and complexity. Clearly, each model year brought improvements in these important areas. But one thing has remained almost constant throughout the various Mooney models – the wing design.


Ever noticed how closely the wing shape and planform on an early M20C resembles the wing on the latest Mooney models to leave the factory in Kerrville? Wing area, airfoil type, outboard wing twist, dihedral, angle of incidence – all are very similar throughout the years. Al Mooney got the wing right in the 1950's and it remains right today. The wing's the thing that provides us the speed, strength and efficiency we all enjoy, regardless of which model we operate. Thanks, Mr. Mooney, for an initial wing design effort very well done!

Because the basic wing design has been maintained throughout the years, an important flight regime has also remained fairly consistent – slow flight and stall characteristics. It's remarkable how similar late model Mooneys behave in slow flight and stalls compared to their earlier ancestors. But that's to be expected. Similar wing – similar slow flight and stall characteristics.

**Purpose of this Article**

I've heard from several Mooney owners who stated they have some concern with rumored Mooney stall characteristics. As a result, they are apprehensive to practice stalls and slow flight in their airplanes. This "slow flight reluctance" causes some pilots to wrongly use higher than recommended approach speeds. This results in excessive floating during landing, high touchdown speeds, and increased risks of Pilot Induced Oscillations (PIO) during landing and possible runway overshoots. None of that is good.

To set the record straight and hopefully give you confidence in your Mooney's slow flight characteristics, I'd like to share some of my experiences and observations with Mooney stall speeds and characteristics. Much of this information I gleaned during many of the engineering test flights I conducted at the factory. Hopefully, this information will help you gain additional confidence while operating in the lower end of the airspeed envelope. I especially wanted to emphasize an area of caution if you decide to practice stalls in your airplane. That area is secondary stalls and it's included toward the end of this article.

**Certification Requirements Designed to Keep You Safe**

When it comes to aerodynamic stalls in single-engine general aviation airplanes (including Mooneys), engineering test pilots refer to the following four basic FAA regulations when testing for safe flight characteristics: 1) FAR 23.49 - stall speeds, 2) FAR 23.201 - wings level stall, 3) FAR 23.203 - turning flight and accelerated turning stalls and 4) FAR 23.207 stall warning.

**About Mooney Stall Speeds**

FAR 23.49 includes the requirement for an idle power, landing configuration (Vso) stall speed of 61 knots or less at maximum gross weight for all single-engine airplanes, including Mooneys. At the Mooney factory, we verified this number at the forward center of gravity limit. Stall speeds in Mooneys are generally slightly higher at forward CG compared to aft CG. The 61 knot stall speed requirement relates to keeping approach speeds (1.3Vso) reasonably low as well as minimizing the amount of kinetic energy that needs to be dissipated in case of a forced or crash landing. Surviving an off-field landing is greatly increased if you can contact the ground at the lowest possible forward speed while under control.

While at the factory, I experienced an airplane that demonstrated the importance of the 61 knot stall speed requirement. We were looking at the possibility of incorporating a new airplane into our production line – the Swearingen SX-300. This piston-single, experimental hot rod had an incredibly small wing area. From the cockpit, it looked like you could reach each wing tip with outstretched arms. I loved the cruise speed – something like 240 KTAS at 5500 feet. But because of the small wing, the stall speed was very high. So high, in fact, the test pilot I flew with recommended not flying any slower than 110 KIAS on final approach. With that kind of speed needed during the approach, I knew any kind of off-field landing would have been a very unpleasant experience.

After the flight, I remember being envious of kit plane manufacturers who can go really fast with small wings. But the tradeoff is they can't go very slow. I'd much rather be in a Mooney if faced with an off-airport landing. Touching down on that field near 60 KIAS in a Mooney gives a lot less energy to dissipate compared to 90KIAS or greater in that high performance kit plane. Mooney's lower touchdown speeds coupled with its super strong welded steel fuselage frame give me a great chance to walk away.

**Confidence**

Being able to fly slowly with confidence comes with practice. Slow flight is an area you can investigate knowing factory test pilots conducted rigorous testing during certification. And your particular airplane was stalled by factory production test pilots when it was just off the production line to verify it matched the certification requirements listed above.

I'd like to describe how your Mooney was stalled and tested in the slow flight regime when it was new. Hopefully this information will help you with your flying technique or give you additional confidence in your Mooney. Or maybe it will give you some insight into your airplane you didn't have before. Regardless, I hope you find it useful.

**Altitude is Your Friend if Practicing Stalls and Slow Flight**

Safety is first and foremost during factory test flights, as it should be in yours. Factory test pilots conduct stalls with plenty of altitude beneath the airplane. My rule at Mooney was to never initiate a stall or slow flight maneuver below 3500 feet AGL. Lower is just not wise. Keep plenty of altitude beneath when doing any air work, especially when practicing slow flight or stalls.

**Decelerating at 1 Knot Per Second**

Let's go thru a stall maneuver just like the test pilots. With the airplane configured for the stall maneuver (clean or gear down along with any desired flap setting), engine power should be set to idle and trim the airplane in pitch for hands off flight at least 10 knots above the estimated stall speed. From that trimmed condition, pull back on the wheel and attempt to slow down at a 1 knot per second deceleration rate, about the same airspeed needle movement as a second hand on a clock. This is important. Pulling too hard and decelerating too fast gives a higher pitch attitude and airspeed at the stall, resulting in a more pronounced nose drop and wing roll-off during recovery. This frightens some pilots, resulting in a reluctance repeat the maneuver.

Likewise, pulling back too gingerly and decelerating too slowly results in a "non-stall", just a mushy buffet and a false impression of a real stall. One knot per second deceleration rate is how your Mooney was stall tested at the factory when it was new. Try and imitate that by making your airspeed indicator needle look like the second hand on a clock during the stall entry. That's the way to duplicate the true and accurate stall speeds and characteristics of your airplane.

**So Exactly When Does the Stall Occur?**

It was very important for the factory test pilot to record an accurate wings level stall speed for your airplane. If he measured the speed too early in the maneuver before the actual stall was reached, the recorded speed would be too high. Measured late and the speed could be lower than the actual stalling speed. So when do test pilots note the stalling speed?

Here's how it is done. After decelerating at 1 knot per second, the buffet of the stall will be felt first. Shortly afterward, you'll feel a definite break and the nose will begin to drop downward. At the point when the nose first starts downward, note the airspeed. That speed is the accurate stall speed for your airplane in the gear, flap, weight and power configuration being tested.

**What About Stall Characteristics?**

There were several requirements related to stall characteristics the test pilot checked on your airplane during its first few flights at the factory. One of the most important is the ability to maintain the wings within plus or minus 15 degrees of level throughout the approach to and recovery from the stall. To verify this, production test pilots took your airplane up and conducted a number of clean and dirty stalls.

With a coordinated use of rudder and ailerons, they verified they could keep the wings within plus and minus 15 degrees of level throughout the stall entry and recovery. What if they couldn't? What if one wing consistently rolled off more than 15 degrees during these tests on your airplane? Did this require a new wing?

**The Purpose of Stall Strips**

No, it required an adjustment in the location of those little wedged-shaped pieces of metal you see on the leading edge radius of your wings. They are called stall strips and they are there to allow production test pilots to tweak the wing roll-off characteristics of each new airplane to meet the maximum 15 degree roll-off requirement.

Here's how it's done. When you airplane was new, it flew a flight or two with those stall strips taped into position, not screwed into the leading edge surface like you now see them. Let's say your airplane demonstrated a distinct tendency to roll off to the right from a wings level stall during its first production test flight. This means the right wing was stalling a little sooner than the left. The test pilot would return to the hangar and adjust the stall strip on the right wing a little lower on the leading edge radius. In this lower position, it would trip the airflow over the wing's upper surface a little later (slower), delaying a stall on that wing. He would then raise the stall strip on the left wing a little higher on the leading edge radius, causing that airflow to trip a little sooner (faster). Then stalls were once again checked and the strips adjusted until the 15 degree roll-off requirement was met. When that occurred, the stall strips on both the left and right wings were permanently screwed into place.

**Never Remove or Tamper With Those Stall Strips**

I remember being at the factory when an M20K 231 customer came to a fly-in. Noticing he had no stall strips on the wing leading edges, I asked where they were. He said he was a "speed freak" and he felt they were causing excess drag, so he took them off.

Don't ever do this. Doing so will negatively affect the wing roll off characteristics of your airplane during a stall, making your airplane unairworthy. If you don't have stall strips on both your left and right wings (one or two per wing depending on model), something is amiss.

**A Word About Secondary Stalls**

Probably the most important advice to pass on from my experiences with stalls as Mooney's test pilot relates to secondary stalls. As we have discussed, by regulation and design Mooneys have very acceptable and certifiable stall characteristics. The one warning I would have concerns secondary stalls. A secondary stall is a condition where the airplane's wing again reaches the critical angle of attack during the recovery from an initial stall. Here's how a Mooney can get into a secondary stall: 1) the nose is pulled up and the initial stall is encountered, 2) the pilot pushes forward on the wheel to recover from the initial stall, 3) with the nose down and the recovery underway, the pilot for some reason pulls too hard and too early in the recovery maneuver to get the nose back to level flight, 4) with this hard pull that's too early, the airplane enters a secondary stall condition.

A secondary stall in a Mooney can be more unpredictable than the initial stall. Secondary stalls were not tested for compliance to any FAA certification regulation, because there are none. Regulations only apply to the initial stall. We did investigate secondary stalls at the factory and from experience I can tell you they are pretty exciting. Wing roll-off in the Mooney can be excessive in a secondary stall. I've seen as much as 60 degrees. Recovery from a secondary stall requires a more pronounced push forward and a lower nose down angle compared to an initial stall. The ride can get interesting.

The remedy is simple – avoid secondary stalls in the Mooney by not pulling too soon and hard during recoveries from initial stalls. Recover from the initial stall with a nice forward, nose down push on the control wheel, let the airspeed build to 70 knots or so and then initiate a steady but non-aggressive pull up to bring the nose back to level. A firm but gentle pull up will avoid that secondary stall in the Mooney every time.

**Summary**

I hope some of this information will help you gain confidence in the slow flight and stall characteristics of your Mooney. We all love to go fast, but sometimes the ability to fly slowly is just as important. Have confidence in knowing your exact airplane was stall tested at the Mooney factory when it was new. Those stall strips were carefully positioned on the leading edges of your wings by test pilots who really cared about keeping you safe. The result is an airplane you can fly with confidence – fast *or* slow.

They say money can't buy you happiness
But money can buy Mooneys, and
that makes me happy!

# Pre-Purchase vs Pre-Buy Annual Inspection

By Phil Corman


After our Three-Part series on all of the Mooney models, several readers asked us about the buying process. It is not as simple as most people think, but once informed, it is very sequential and very logical. The steps for buying an airplane generally fall into the following steps:

- What is my mission
- What are my financial considerations
- Where do I look for my plane
- How do I learn about its history
- How do I determine a fair market value
- How do I actually buy the airplane
- How do I get it home

This article deals with the step after you have flown the plane and arrived at a price with the seller.

There are few absolutes in this world and this article will specify a few. The first absolute in buying any airplane is to put the following words into any Purchase Contract: "The price of the aircraft is subject to a pre-purchase inspection. Any airworthy items will be remedied by the seller, or the price adjusted to accommodate repairs." The real absolute is **Do NOT ever buy a Mooney, or any airplane for that matter, without a Pre-Purchase inspection**. If you doubt this, Click Here. After reading that link, please continue. People are human, duh. And we are taken in by a variety of symptoms. The quality of the paint and exterior has a significant impact on our senses as to the airworthiness and appeal of that airplane. Ramp appeal is strong, but unfortunately does not correlate to a well-maintained airworthy airplane. Another misleading input is "I know the guy who owned this Mooney". OK, that and a $.05 will get you a Starbucks coffee.

I recently was involved in the sale of an M20C. It's ramp appeal was low. The paint was old and the interior was "vintage". I thought my efforts would be difficult to sell this airplane. But the engine and airframe had been maintained and operated meticulously. Obviously, the owner was focused on the latter and not the paint or interior. The plane was a cream puff. It even cleaned up well after a thorough detailing. Bottom line: Looks are deceiving.

Pre-Buy Check List

LASAR PLANE SALES

900 F Sky Park Drive, Lakeport, CA 95453

(707) 263-0452 (707 263-0420 E-mail: planesales@lasar.com

Web Site: www.lasar.com

MOONEY PRE-SALE CONDITION EVALUATION

Mooney Registration #_____ Year_____Model_____ Date of Inspection _____

I = OK , O= Needs Attention

= GENERAL APPEARANCE

= Exterior, look for, dents, New, misaligned or non OEM rivets, high rivets, loose rivets

= New skins, or "non OEM" quality repairs from residual damage or evidence of damage history

MOONEY AIRPLANE COMPANY, INC.

100 Hour-Annual Inspection Guide

**Click for details:**

Pre-Purchase Checklist

Annual Inspection

As the name of the article infers, there are two types of useful inspections that the buyer can perform when purchasing a Mooney, a Pre-Purchase Inspection or an Annual Inspection. Both are extremely useful. However, there are no documents that specify what is inspected in a Pre-Purchase inspection. These can be a quick 1 hour fly-over (not very useful) to a full day or more. Click on LASAR's pre-purchase checklist in the associated text box , for the best guidelines we've seen documented. The alternative is a complete Annual Inspection. These take approximately 20 hours (inspection only) plus or minus depending on your specific Mooney model. Annual inspections are well-documented and even include FAA regs for some things. The Annual is more thorough, while the Pre-Buy is more variable. Here's another absolute: **"Have the inspection performed by a qualified Mooney mechanic who has NOT regularly serviced the airplane."** This should be obvious, but is often overlooked. The most common reason we hear is "It was serviced by a Mooney Service Center." So what! Not all MSCs are created equal and any given mechanic can miss an issue. It's always better to have a new set of eyes from a Mooney-experienced mechanic look at the plane. You can absolutely use past mechanics as a reference for the condition of the plane, and the type and extent of services that were performed. There is a lot to be learned from that. Another absolute: **Do not ever put any stock into an Annual Inspection done by the owner in preparation for the sale.** That's just too juicy, and frankly, a conflict of interest. A fresh annual should not negate the need for a new annual or a pre-purchase inspection.

You are probably asking, "How do I find a qualified Mooney mechanic for my inspection." If the plane is near your home drome, then you should bring your mechanic along. He'll live with his inspection. Most of the time, that is not possible. Your options are straightforward. If MSCs like LASAR, Top Gun, Don Maxwell, and some others are nearby, let them do the inspection. If not, you have other options. Call one of them and ask them for a reference near your potential Mooney. If that doesn't work, go to www.MooneySpace.com and post a request for a qualified Mooney mechanic in the specified geography.

Whether you do a Pre-Purchase Inspection or an Annual Inspection on your prospective new Mooney, it's money well spent. At the very least, it will confirm that you have a great new Mooney. At the very most, it will save you many many AMU (Aviation Monetary Units) in surprises after you purchase.

# My M20C flies at 150 knots TAS!

By Jim Price

Mooney pilots are always looking for ways to gain a knot of true airspeed (TAS). Based upon that quest for another knot or two, I'll bet that the title got your undivided attention. Often, Moon pilots will tell me they are able to get 145 to 150 knots from their C model. Sometimes the number is more. Sometimes, pilots will claim the Ground Speed (GS) that they just had on a flight with a nice tailwind was their TAS. (Mooney pilots never brag about the flights into a head wind. It's as though they never remember flying West). I suppose some pilots were never taught about the difference between GS and TAS. That's why I always ask the pilot boasting of a high speed, "Are you claiming to have flown at 145 knots True Air Speed?" With that, the Mooney pilot's chest usually swells with pride, and replies in the affirmative.

Wow! 145 knots TAS from a 140 knot airplane. How can that be? Are some pilots using a special racing formula in their fuel? Then I start to wonder if the pilot knows the difference between INDICATED airspeed (IAS) and CALIBRATED airspeed (CAS).

CAS is the speed shown by a conventional airspeed indicator *after correction* for instrument error and position error.

You don't need an E6B whiz wheel to make the correction. Whether you have a Garmin 396, 496, 696, 430, 530, or aera – they all feature an E6B tab or page that will calculate your TAS. You just need to enter the ***CALIBRATED*** airspeed and not indicated airspeed.

Each POH features a well hidden, often overlooked, **AIRSPEED CORRECTIONS** chart.

It converts IAS to CAS. Shown here is the M20C's Airspeed Corrections chart, which reveals that CAS is about **4 knots LESS** than IAS. For instance, 122 knots IAS converts to 118 knots CAS.

| IAS | CA<br>0° FLAPS | |
|---|---|---|
| MPH/KTS | POWER ON | POW |
| 70/61 | 67/58 | |
| 80/70 | 77/67 | |
| 90/78 | 87/75 | |
| 100/87 | 97/84 | 1 |
| 110/96 | 107/93 | 1 |
| 120/104 | 116/101 | 1 |
| 130/113 | 126/109 | 1 |
| 140/122 | 136/118 | 1 |
| 150/130 | 146/127 | 1 |
| 160/139 | 156/136 | 1 |

A typical M20C with full fuel and two people on board, usually starts off at 135 knots TAS, gradually increasing to 140 knots TAS after about one or two hours. By the time three hours have passed, it might be flying at 144 knots TAS.

You can almost trust the medium and long body Mooney pilots when they brag about their TAS. That is, *if* they've used their GPS E6B and not reported their tail wind assisted ground speed. That's because their Pilot Operating Handbook AIRSPEED CORRECTIONS charts indicate that there's very little IAS to CAS correction.

# How I got may medical back

## after a bout with lung cancer

by Bill Heybruck, Ph.D. EE

December 23rd, 2008. I'm feeling great but it's time for my yearly physical with my GP(general practitioner) and the doctor recommends a "cardiac score" test to rule out any chance of artery blockage or weakness which was the cause of my father's death (aneurysm of heart artery) at age 64. I am 59 at the time.

So on December 27th, I went to the hospital for my first of what was to be many CAT scans. On January 2nd he called and told me the good news. My arteries were like those of a 30 year old. BUT, then the bad news, there was a golf ball size mass in my right lung that needed attention.

The short story is that on February 6th I had surgery to remove the mass after several attempts at a biopsy. As you can guess, the mass was malignant and some of the lymph nodes were affected as well. A visit to a recommended oncologist resulted in a plan for 4 cycles of chemo therapy followed by a cycle of radiation. Given the fact that it was found before any symptoms were realized, a successful outcome had a high probability. A cycle of chemo consisted of a "treatment" of a very aggressive chemical followed by three weeks of treatment with a "milder" chemical. Each treatment consisted of an intravenous flow of an anti-nausea medicine. I also received a dose of radiation each week for a set number of weeks.

So what's with the flying? My method of keeping instrument current is to do 3 approaches every 3 months with holds, tracking and several types of approaches. It just so happened that December was my month for currency so my partner and I had performed our required flight before the holidays. I now had 6 months before I would get behind.

Once the surgery was performed, my medical became invalid. From then on, I had to fly with another pilot or instructor.

To make a long story short, I started chemo at the end of February and had my last radiation treatment on September 1st, 2009. During this time I kept current flying with my partner every three months or so even though my medical was technically invalid because of FAR 67.313.

So how would I get my medical back? I did some research on the AOPA site and found that the FAA had some unique requirements with lung cancer that applied to my case:

*If the lung cancer is metastatic from a tumor that originated at a different site (for example: renal cell cancer), at least one year of observation and stability will be required before medical certification can be considered. (AOPA Medical Certification)*

This told me that I would have to wait at least one full year from my last treatment (radiation in my case) to take the tests that are required for my FAA medical. My last radiation was on September 2009.

As it turned out, my 3 month doctor checkup was on September 16, 2010 so as long as I had all my tests after September 1st, I could get the doctor to pull together the information for submission to the flight surgeon. Continuing on the AOPA site, I found the list of reports that the FAA would like to see:

*When treatment is completed, the following records will need to be provided to the FAA:*

- *Hospital records: admission/discharge summaries, operative report, pathology report, and diagnostic tests results.*

- *Oncology report with tumor markers and any other testing deemed necessary.*
- *Treatment records (when completed).*
- *A detailed, current status letter from the treating physician to include date of diagnosis, date of treatment(s) start and completion, medication information (name, strength, dosage, frequency and any side effects), and prognosis.*
- *Current Pulmonary Function Test (PFT)*

In August 2010, I wrote a letter to my oncologist and included the statement shown and ask him to gather all the required information for me to take to the AME in September. His staff was great and I picked up an envelope with ½ inch of paperwork.

On October 6, I got to the office of my AME. The physical itself had no surprises for me and he was pleasantly surprised that I had lost 18 pounds since my last visit. He reviewed the package of data I had brought and found a few missing items. He mentioned that when he gets all the data, he'll call the FAA and see if they will authorize him to give me a 60 day medical while they review the data.

Now here's where the great news comes. On Wednesday, October 13th, he calls me and said he talked to the FAA in Oklahoma City. They authorized him to issue me a THIRD CLASS MEDICAL good for one year immediately! WOW this is awesome.

So today is Thursday October 14th, one week after my medical exam and I get the medical in the mail.

Saturday I'm going flying even if it's just around the pattern for a few times. Now my medical is good for only one year and the AME told me to expect a letter from the FAA with continuing requirements so we'll be sure to follow that. This 1 year cycle is expected to continue for 5 years and when I remain cancer free for the 5 year period they will issue the standard 2 year medical (over 40).

So, if you know a pilot who was surprised by a cancer diagnosis, tell them my story and that they just have to have a positive attitude, do the research and meet the requirements.

UPDATE: On November 1st, 2010 I get a letter from the FAA. It seems that the discharge summary of the surgery visit to the hospital indicated that I had an instance of atrial fibrillation. The FAA interpreted that statement to mean that I now have a "history" of a-fib and directed me to get a set of tests to indicate otherwise. On November 8, I met with a cardiologist and after performing a EKG, he is confident that the single instance was a common case of a-fib that happens after pulmonary surgery. He is going to write a letter to the FAA indicating that and that no further care is called for. I'm sure this will take another month or so but again the good news is that I have a 3rd class medical in my possession and will continue to fly until I receive a letter indicating my medical is no longer valid.

March 2011, FAA informs me that the data is OK but by September 1st I must have a Holter Monitor trace and reports from my cardiologist and oncologist regarding my treatment and status. They re-issue the medical good for only 6 months (end of October, 2011).

November 2011. The FAA reviews all the data submitted in September and provides me a medical good for a whole year. They write that I need to provide my AME letters from both doctors indicating my status and treatments during my next scheduled flight physical in October 2012.

December 2012. I get the data and present it to my AME. This time I fly my Mooney right to his office on the GSO airport! He makes note that I lost another 6 pounds and gives me a medical certificate good for a year. A month or so later, the FAA letter comes and reiterates what data I must give him next year but no physical will be necessary. Oh yea, and I pass the eye test without glasses. Seems the radiation had some positive effect on my eyes!


# March, 2013


## Bahamas extends exemption for 406MHz ELTs for GA pilots

NASSAU, The Bahamas – Bahamas Civil Aviation has extended the Feb. 1, 2013, deadline for installing 406 MHz ELTs in aircraft flying to the Bahamas. "Even better news is that this waiver extension will likely be long term, removing uncertainly in the short term about flying your plane to the Bahamas," said Jim Parker of Caribbean Flying Adventures. "For those pilots who were rethinking 2013 travel to the Bahamas, the coast is clear. Go for it." READ MORE

## New, multi-function Kneeboard/hard case for the iPad Mini

The case has an adjustable hold-flat leg strap for easy placement on the pilot's knee, company officials note. A 360° rotating cradle accommodates both portrait and landscape viewing formats.

Detaching the leg strap, the case also stands on a desk at a comfortable viewing angle — again either in portrait or landscape orientation, officials note. MORE INFO

## Audio Authority's Flexible Power Unit

More owners and pilots would probably invest in ground power units for starting and running avionics in the hangar if the things were just more flexible. This one comes from Audio Authority, which, besides being a GPU, also doubles as a battery tender. SEE THE YouTube VIDEO HERE.
www.AudioAuthority.com

## Just in time for your next low level cross country

Garmin International has introduced the GRA 5500, a high-performance, all-digital radar altimeter for general aviation. READ MORE

# Aeronautical Decisions

by Geoff Lee, CFI

*Sometimes we teach,*
*Sometimes we are taught.*

Earlier this year, I was asked to fly a friend to Burbank to look at an automobile that he was interested in purchasing. The flight from South County would take about 1.5 hours in my 231 Rocket. Weather was not great but not discouraging during the day, 2 layers of cloud topping out at 10,000ft, very cold, freezing level around 7000ft with light winds. There would be 3,000ft clear space between 7,000ft and 10,000ft along most of the route and the 10k layer was broken in certain areas. A light quartering tail wind would prevail on most of the trip to BUR. There was a weak cold front creeping down the coast from Alaska but it was not expected in the Bay area until late evening.

Having been taught to fly in abysmal English weather as a young man it was de-rigueur to check the position of low pressure relative to the plotted course line. No computers, cell phones or FSS in those ancient times, just a Michelin road map, a compass and my Grandfather's pocket watch. The WW2 instructor/ ex Hurricane pilot just said "put your back to the wind son, the worst weather will be on your left. Note the compass heading and try not to turn in that direction if you get lost". That never gave me much comfort: I have an RAF instructor's manual from that era that states that "*in the event of engine failure, climb!!*" The counter clockwise rotation of wind around a low pressure system obviously accounts for the "back to the wind" homily. The angle of one's shoulders, when back to the wind relative to plotted course, would give some idea of the proximity of the low to ones then position. Consulting ADDS works better these days.

It's an archaic form of forecasting, but it still works in a pinch most of the time. Terrain and buildings can affect it some. I asked one of my students to come along on the BUR trip. The exposure to the LAX class B would be a good experience for him and he could have fun playing with his new iPad and Foreflight without me chewing his ear off relative to flying the aircraft instead of poking an iPad screen.

There are two basic routes to the Los Angeles basin: the "inland route" via Avenal, Gorman, and Lake Hughes and the "coast route" via Paso Robles, San Marcos then either Fillmore or Ventura. It depends upon destination within the LAX basin. There's not much difference in time between the routes, but sometimes wind and weather can affect the choice. Wind should always be a consideration in Gorman area, since crossing the Tehachapi's can be a daunting experience in a light aircraft in winds 20kts and higher.

The Gorman area is notorious for turbulence and strong updraft conditions. It's great for gliding, but no fun for most power pilots and passengers. High pressure in the Mohave Desert coupled with lower pressure in the central valley produces a very strong wind flow across the Tehachapi range.

For the coast route, fog is usually the consideration, but if it is clear in the LA basin it should not be a major issue assuming one has sufficient altitude, fuel and confidence in the engine and aircraft. The California condor sanctuary between PRB and RZS should be a consideration in choice of altitude and exact route. I have seen these magnificent birds riding thermals at 7,000ft and suspect that they can get higher with that enormous wingspan. My habit, generally, is to fly the coast route. I find it more interesting than inland and certainly cooler and smoother in the summertime.

In good VFR weather, I usually file an IFR plan to be acquired over RZS so that I will have good controller coverage when entering the LAX class B. One can thread a way through the class B maze in LA via the

VFR corridors but it is tiresome. The busy LA controllers cannot always be relied upon to keep a VFR pilot clear of airspace infractions. I would recommend over the top of Class B airspace if travelling to San Diego. That's another story. The three of us launched from E16 around noon. The lower cloud layer had opened to about a five tenths covering so we departed VFR and climbed briskly up through a convenient hole to 7,500ft. This altitude positioned us safely below an upper cloud layer. I noted OAT at -5 degrees C. A normal minimum altitude for me on this route would be 9,500ft, particularly between PRB on V25 to RZS. The clearance I had on file at RZS should provide an 8000ft assignment to join the ILS for runway 8 at BUR.

We were afforded another opportunity to climb VFR to 9,500 just prior to PRB. Our ground speed was 196kts with RPM at 3200 and MP at 29 inches; a slight tailwind. This setting at 9,500 would normally produce about 185-190kts, no wind ground speed in my Rocket burning about 17 GPH. The descent after RZS was through ragged clouds and mist to join the ILS at KBUR. A LAHSO clearance is normal occurrence for runway 8 at Burbank and we did manage that well. I pointed out to my two companions that the elapsed time between RZS and BUR was the period that a pilot should use to consider gradual cooling down the engine and consider configuring the aircraft for the approach and landing. It is proficient to be at gear extension speed when intercepting the localizer such that gear extension can occur smoothly upon glide slope intercept. Pitching down to hold the slope needle with the gear still in the wells can elicit some drastic throttle changes in a Mooney which are not kind to the rapidly cooling engine. Give yourself time to configure.

My emphasis to students is that *knowledge of available time is more important than knowledge of distance* when approaching a landing point. There is much to consider in this period when operating a complex aircraft. My old Hurricane instructor told me to always know, at any point, how far across the ground your aircraft will travel in one minute. Our Mooneys fall between 2.5 and 3.5nm per min. Have a good idea where yours resides during any phase of flight. This works well in descent when you need to know at what rate in FPM you must pitch to in order to achieve an initial approach or pattern altitude in a given time period.

My friend's plan was to have a salesman bring the vehicle of interest to the airport at Burbank and he would decide to buy the car or not. We would then depart for home forthwith, sale to be consummated

via phone /Email. This did not happen. The salesman showed up but in a company vehicle and wanted to take my friend back to the dealership in LA to inspect the expensive vehicle; a 40 minute drive in traffic. I agreed to wait at BUR with my student for about 2 hours while we did lunch. The two hours stretched to three and dark was descending as was the weather conditions. He had decided to buy the car but was still at least an hour from returning to the airport. It would be dark and raining in that hour so I told him to drive it home as I did not want to depart in the dark in deteriorating weather. I checked the forecast and current weather conditions along our route home and decided we could get out immediately VFR along the coast to RZS at 4,500 to 6,000 ft below the advancing clouds and it showed improvement between RZS and PRB, where I would need to stop for gas.

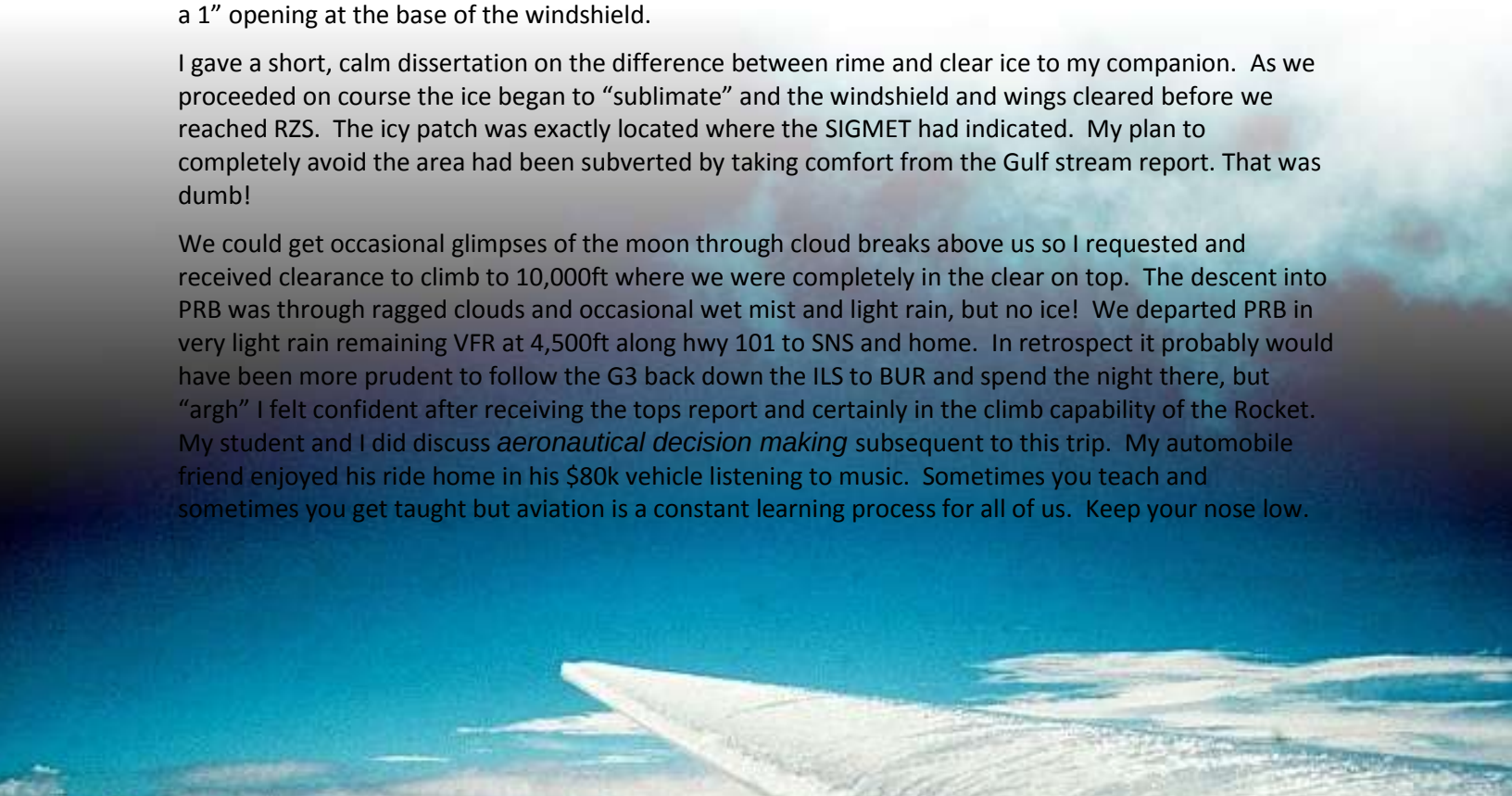
I did not wish to file IFR as there was an "icing in clouds" SIGMET in a small localized area between BUR and RZS. We departed in the fading daylight and the departure controller vectored us on a path outbound and parallel to the inbound runway 8 ILS, we were at 4,500ft well north and east of the ILS. The terrain begins to rise in this area and we were getting squeezed between cloud base and terrain. The controller would not allow me to proceed to the coast line across the inbound localizer path, because he had a Gulfstream descending on the approach path.

I asked the controller to enquire if the Gulfstream had encountered any ice in his descent. He had not and reported layered clouds topping out at about 10,000ft. We spotted the Gulf G3 break out off to our left and I requested an IFR clearance present position to PRB at 10,000ft, he cleared me immediately to 8,000ft. With relief I applied full power and pitched the Rocket to a 1,400 FPM climb. We were well below gross and indicating 165kts so it held the rate nicely at 125-130kts and we broke out between layers at 8000ft in less than 2.5 minutes.

As we penetrated the cloud layer we were instantly flash frozen across the windshield and half the side windows with rime ice. It was now dark. I did have the pitot heat on upon departure. This was not much comfort as I realized that the Gulfstream is somewhat better equipped with surface heating resources than my little Mooney. He would not even notice a little rime ice during his descent. I informed the controller and related the OAT as minus 8 degrees. My student was a little wide eyed and asked if that was ice. I nodded. We could see out of the side windows somewhat and a thin line of rime ice was visible on the leading edges. Windshield defrost was useless as it only managed to defrost about a 1" opening at the base of the windshield.

I gave a short, calm dissertation on the difference between rime and clear ice to my companion. As we proceeded on course the ice began to "sublimate" and the windshield and wings cleared before we reached RZS. The icy patch was exactly located where the SIGMET had indicated. My plan to completely avoid the area had been subverted by taking comfort from the Gulf stream report. That was dumb!

We could get occasional glimpses of the moon through cloud breaks above us so I requested and received clearance to climb to 10,000ft where we were completely in the clear on top. The descent into PRB was through ragged clouds and occasional wet mist and light rain, but no ice! We departed PRB in very light rain remaining VFR at 4,500ft along hwy 101 to SNS and home. In retrospect it probably would have been more prudent to follow the G3 back down the ILS to BUR and spend the night there, but "argh" I felt confident after receiving the tops report and certainly in the climb capability of the Rocket. My student and I did discuss *aeronautical decision making* subsequent to this trip. My automobile friend enjoyed his ride home in his $80k vehicle listening to music. Sometimes you teach and sometimes you get taught but aviation is a constant learning process for all of us. Keep your nose low.




Send your questions for Tom to TheMooneyFlyer@gmail.com

## How important is shock cooling on descent and how do you manage it?

The question of shock cooling brings controversy since there is a large crowd that claims it doesn't exist. I am in the "old wives tail group" as we are called, but there is no doubt in my mind that shock cooling exists. My definition is anytime you descend and allow the cylinders head temps to go below the green. In most cases this will cause no harm since the outside temps are probably not a wide range. However, when we got the first 231s, we now had a turbocharged plane that could cruise as high as 24,000 ft in sub-zero temps.

My best example was a 231 cruising at about 18,000, OAT 0$^{o}$F, going south down the San Joaquin Valley to Burbank. Since Burbank is on the south edge of the Tehachapi's, it requires a steep descent to get into Burbank if you don't pre-plan a gradual descent. This owner just pulled the throttle and came down fast. The exhaust pipe to #6 sheared off like it was cut with a torch and the inside of the 5 and#6 cylinders were severely scored from the cylinder walls being cooled faster than the pistons because of the extreme temperature drop.. The engine was changed.

That was an extreme example but there is no reason you shouldn't control the engine temps whether you believe

Is shock cooling a problem or not? I will say it is most important for the turbocharged engines since they operate at the more extreme temps. With the advent of speed brakes they made controlling Speed brakes we would plan a long descent and reduce power about two inches at a time keeping the CHTs in the green. The CHTs are the most important temp you deal with so keep them in the green.

## Is baffling important?

Since our engines are air cooled the Baffling is the second most important item in keeping cylinder temps in the green. The operator is first by setting power and fuel flow but the baffling is the one thing he can't control in-flight. In many models there are cowl flaps to help control the airflow through the engine but it is the baffling that directs the airflow. I have seen some of the most broken, cracked, deformed baffling imaginable but we find these problems usually at Annual inspections. There is no way we can assess if any damage is done by poor airflow but you can bet that there are hot and cold spots on cylinders because of baffle leaks. How much does that contribute to early cylinder failure?

Just this last year we changed several cylinders do to cracks in the heads. Since everyone always runs their engines at the correct settings I always wonder why the cylinders cracked.

When your engine is uncowled, take a good look at the baffling for cracks, looseness, and especially for gaps between the cylinders and engine case that should be filled with sealant.

The most common problem with baffling is the flexible baffle between the metal and the cowling. It gets worn, stiff, and loose and can be displaced by the airflow through the cowl. This is especially true for the rear baffle on the J models. It has little plastic screws on the rear corner to keep the flexible baffle in contact with the top cowl. If the screws are missing the baffle will blow over the back of the engine. Cylinders and engines are very expensive these days so keeping the baffling serviceable is a real money savings for the future.

# Out of the Clear Blue of the Western Sky, Comes Sky King

Those words introduced my hero who encouraged thousands of youngsters like me to fly from 1951 through 1962. Forever chasing bad guys, Sky, played by Kirby Grant, seemed to land wherever and whenever he wanted in the Arizona desert. I've been searching, but I'll be danged if I can find Grover, Arizona, or any of Sky's dry lake beds!

http://www.skyking.com/


# St George, Utah

by Linda Corman

We have been to southern Utah many times because there is so much to see and do. On this particular trip, we flew into St. George and rented a car, which is very easy as they have a new airport with all the conveniences of a regional airport. It is a bit out of town, but an easy drive. We decided to stay in downtown St. George. The main street is St. George Blvd, with hotels and restaurants. I can't recommend one hotel over another as they are all pretty much generic. They seem to be clean and well maintained so it would be your preference where to stay. After we checked in we decided it was time for an early dinner and we just walked a few feet from our room to a really cute restaurant called The Painted Pony. It is on the second floor of a small courtyard shopping area. We were pleasantly surprised at how good the food was and the service was outstanding. After dinner we drove to the end of St. George Blvd where there is an outlet center. We walked around for a while, but the shopping bug did not bite that day.

The next day, we were off to Zion Canyon National Park. We had breakfast at a local favorite called The Bears Paw, which has great waffles and eggs. It was a fairly short drive to the entrance, only about an hour. This park is easy to get around as they have a free shuttle service that goes all over the canyon floor. We just parked our car and hopped on the shuttle. You can get off where ever you like as another shuttle will be along shortly. We hiked around the canyon floor up to Weeping Rock and did a few other easier trails. We strongly recommend the river walk at the end of the canyon, pictured to the right.

On the following day, we decided, as we had time, to do the little known side of Zion, Kolob Canyon. That side of the canyon was almost deserted. The hike through Kolob Canyon is mostly flat but it zig-zags back and forth across a small river. The hike was only five miles round trip, but the quiet and solitude was wonderful. We ended at a large grotto which was almost hidden by trees. I highly

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recommend the hike for the beauty and serenity. If you take the drive to the top of Kolob Canyon, you will be inundated with amazing vistas along the way. On our way out of the valley we stopped for dinner in a small town just at the park entrance called Springdale. We decided on Mexican food and we were surprised by a restaurant called Oscars Café. The food was wonderful and the view of the canyon simply amazing.

The next day was our last day in the St. George area so we decided to hike around another little known state park called Snow Canyon which is just outside of the town of St. George. There are numerous hikes around the canyon floor and a great hike up a cinder cone. The cinder cone hike is classified as difficult but we made it to the top with just a few stops. The whole park has colorful rock formations and more than eighteen miles of trails. The cinder cone trail of course was the highlight of the day for us.

So again we traveled to a destination that we would not have gone but for our Mooney. I believe everyone needs to get out and see our wonderful Western parks and I believe our Mooneys are the best way to get there.

**PIC Notes:**

The new KSGU airport is huge with great approaches from both ends and a 9300' runway. The old airport was also identified as KSGU, and was a mesa top landing next to the downtown area. The new SGU is about 20 minutes or more southeast of St. George. Renting a car is easy. The main FBO is Above View and they took good care of us and our Mooney.



**March 9:** Fort Pierce (FPR) Airport Tiki Restaurant

**April 13:** Flagler (XFL) High Jackers

**May 11:** Winter Haven (GIF) Pappy's Grill

**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 headcount for the restaurant on Friday.


**March 15-17:** Yuma Formation Clinic (KNYL) – Click Here for the details.

**April 27:** Return to Kerrville – Click Here for details.


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# My Aspen 1000 by Jim Price

I have wanted an Aspen for a long time, so after months of thinking about it, I chose Arizona Air-Craftsman in Prescott, AZ for the installation. They have a wonderful reputation in the Avionics field and the flight from Chandler (KCHD) to Prescott (KPRC) was short and simple. The Aspen 1000 Pro costs $9,500 and Arizona Air-Craftsman estimated that it would take 50 man hours to install. My wife encouraged me to add the Synthetic Vision upgrade for $2,900 (no labor required). Alright Dear, if you insist! The Garmin 430 upgrade to WAAS was $3,200 plus two hours of labor to install the new WAAS antenna.

## Small Lettering?

I had heard stories about the small lettering on the Aspen, but I disagree! I suppose that some people just like to complain. For me and my young 66 year old eyes, the lettering is very easy to read. The Vref and stall speed writing on the airspeed tape are in a tiny font, but these speeds are not meant to be in a font that jumps out at you. Rather, they are there in case you have a sudden onset of dementia and can't remember your aircraft's customary approach speed. Now, where was I?

The GPS Steering (GPSS) is a wonderful feature and when it is coupled to the autopilot, it brings you into the world of glass cockpit automation. GPSS and Aspen's Auto Course, when enabled, allows you to sit back and watch in amazement as the course changes automatically and the Aspen computes a lead turn to the next flight plan course. (No waypoint overflys).

It has an assigned altitude window above the altimeter tape, complete with aural and visual warnings that alert you when you stray.

Barometric pressure, speed bugs and approach minimum altitudes – they are all easily set on the Aspen.


## Yup, there's an app for that

If you are worried about learning a new system and you think a glass cockpit is daunting, **stop it right now!** The manual is very good and for those who like courses, Sporty's has an iPad app and a DVD course that covers everything. Cost is about $32. After a few trips through the course, you'll be quite comfortable when you pick up your aircraft.

## Steam Gauge Weaning

It's been seven years since I retired from flying A-320s. I found myself "cheating" and looking at the steam gauge airspeed and altimeter instead of the Aspen's tape display. Slowly, I'm weaning myself from the steam gauges. If you want to be stern with yourself, you can wean yourself "cold turkey" by placing "failed instrument covers" on the airspeed, altimeter and VVI.


My panel configuration: With just the 1000 Pro, one must keep the attitude indicator in case the Aspen loses power. The Aspen comes with its own battery to provide 30 minutes of power should you lose aircraft power.

Aspen is expandable in steps. If you just want to start with a Primary Flight Display (PFD), that's great. If later you want one or two Multifunction Displays (MFD), add those. The MFDs can display weather if you install an Aspen SiriusXM receiver and government published instrument approach plates.

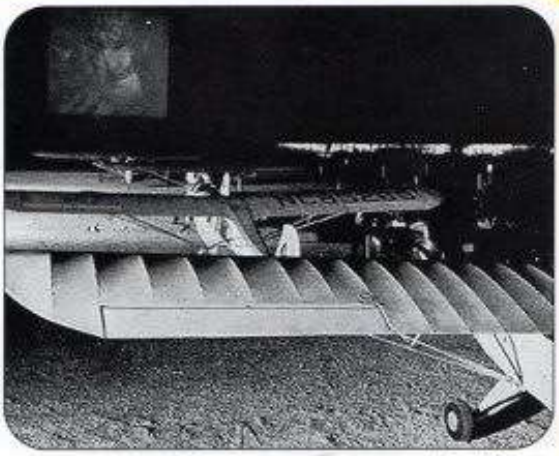
The Aspen 1000 Pro has so many nice features. Resale value may or may not increase, depending on the market, but your aircraft will have great cockpit appeal! I could not be happier with the installation.

# Nostalgia

## Fly-In

I had learned to fly and received my pilot's license during my summer vacation from college in 1947 by washing, waxing and refueling airplanes at Morristown Municipal Airport in northern New Jersey. In 1951 I read about an innovative addition to an airport in central New Jersey—the airport had provided taxiway access to an adjacent drive-in theatre, where an airplane could enter the outdoor theatre from a nearby runway. From the taxiway a pilot could get to the raised rear row and have an unobstructed view of the movie screen while listening to the show through a standard door-mounted speaker. The ad billed this as the first Fly-in Theatre in the United States.

The prospects of taking a date to a movie in an airplane were too tempting to pass up. On a nice night in late June, I invited my girlfriend to go on a flying date, not saying where we were heading. After a 35-minute flight in Beechcraft Bonanza N3401V, the young lady and I landed as dusk approached. We taxied from the runway to the Fly-in Theatre. I shut down the engine, retrieved the speaker from the hook on the post, and hung it over the left sill of the Bonanza's cockpit window. The coiled speaker cords were extra long to assure they would reach the cockpit. The rest was a normal drive-in theatre experience, with popcorn, a good show, and the special atmosphere associated with an outdoor theatre.



Library of Congress

Many curious patrons wandered back to the plane during intermission, oohing and aahing at this unusual drive-in theatre visitor, but when the show resumed, they all returned to their cars for the rest of the show. We were the only airplane there that night, and because of it we did not have to pay to see the show. I guess we were an added attraction!

When the theatre lights came on after the show, we waited for most of the cars to leave before starting the engine, taxied back to the airport, and took off into a clear night sky. What an evening! I took two other dates there, one in July of 1952 and again in August 1953. From what I heard, the Fly-in portion of the drive-in theatre was never filled with airplanes, but for those who took advantage of the provisions, it was a very memorable evening and an experience that most theatre-goers never had.

—Ned Gilliand, Morristown, New Jersey


# FOR SALE Mooney Stuff

Model: M20C
Model Year: 1964 (c of a dated 12/1963)
Tail No.: N1357W
Serial No.: 2638
Airframe Time: 20 SMOH
20 SNEW Prop
TTSN: 5,699
Location: North Las Vegas, NV (KVGT)
Size: Four Place Retractable
Price: $48,900
If you're looking for a plane that will give you top performance at an economical price, this Mooney is a contender! Due to a prop strike this aircraft has a freshly overhauled engine and new Hartzell Prop. A side benefit is that this new prop hub eliminates the recurring inspection A.D.

**Specification**:
KY92 Com
KNS80 RNAV
KR87 ADF
MX170B Nav/Com
KT78 Transponder
Carb Temp Gauge
PMA 7000M-S Audio Panel
Shoulder Harness
20 SMOH by Western Skyways with New Cylinders transferable warranty
20 SNEW Hartzel Top Prop 2-blade
Electric Flaps
Leather Seats
Annual Completed October 2012
Fresh IFR Certification
Prospective purchasers are requested to seek independent verification of all specifications. Information provided is approximate and may change at any time. Listings are presented with no warranties expressed or implied. Please inspect to your satisfaction prior to making any purchase!
Offering for sale is subject to prior sale or withdrawal which may occur at any time without notice.

For additional information please contact:
David Rubinger, owner
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I will deliver to any continental state for the cost to deliver plus expenses for a return trip to Las Vegas, NV. A nonrefundable deposit to cover these costs is expected prior to delivery.

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