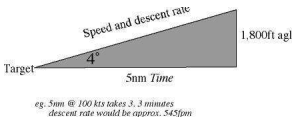
The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

August 2013



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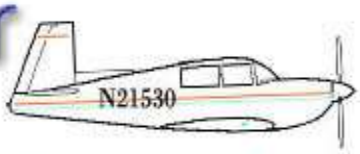
From the Editor

Phil Corman



This month we were notified of a new Mooney group that was formed in Argentina, called Mooneys de Argentina. Hernan Perez and Raul Lifschitz contacted us to let us know this past month. The group already consists of 21 Mooneys. We think there are only a little over 30 Mooneys in all of Argentina. You can CLICK HERE to see the roster of Mooneys and Owners from Argentina. Please welcome our Mooniac brothers and wish them well. Maybe we could organize a joint fly-in, for those adventurous long distance Mooniacs some time in the future.

Expert Mooney Instructor Compilation

The Mooney Flyer is going to compile a list of expert Mooney Instructors. If you are such a CFI or CFII and would like to be listed in The Mooney Flyer magazine and the website, just send us a Picture of yourself, your location, and a brief (150 words or less) bio. We will list your name/location at no cost. A picture and bio is $1/month for a year. We are reaching 3,300 Mooney pilots per month, new and old, and even wannabes… Give it a try. Click Here to send us your information. **Editorial NOTE**: *Our database was corrupted and we lost several CFI listings. Please resend your information and we will place it in all future issues.*

Children of Magenta -- Reader Carl Swepston sent a video to me entitled "Children of Magenta". As its name implies, it refers to pilots trained with powerful automation in the cockpit. Although this training video is for American Airlines captains, it is very relevant to Mooney pilots as well. And if that doesn't catch your interest, this video training was performed in 1997 and has strong implications to the recent Asiana crash at SFO. Click Here to watch this fascinating video.

Bush Pilots

For those of you that miss Flying Wild Alaska, here's a new TV show called Bush Pilots which focuses on pilots flying in Africa.

It's not cold and snowy, and the dangers are different. But the show is in the same spirit as Flying Wild Alaska.

Click Here to watch the first episode.

First Mooney Ride -- There are some joys in this world and taking someone for their first airplane ride is one of them, especially when their first ride is in a Mooney. My youngest daughter, Erin, asked me to take her husband, Josh, and her for a flight over Paso Robles, the Pacific, Hearst Castle and the Lakes. Josh is pictured in the co-pilot seat and was like a kid on Christmas morning. He even snapped our shadow on the ground during departure.

It was a great day and then it became a bad day. Later that afternoon, we got word that my wife's Mom had passed away at 83. No matter how much you prepare, it still rips your heart out. I will remember her for many wonderful times together. She loved flying all around the west in our Mooney. I remember one time when she was asked about flying in a general aviation airplane. **She said, "It's not a general aviation airplane, dear, It's a Mooney. There is nothing else like it."** We'll miss you Maggie, but never forget your amazing spirit.

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Mooney Aircraft and a Mooney Owners Forum at Oshkosh

Mooney Aircraft had a booth at Oshkosh! We, at The Mooney Flyer are ecstatic that Mooney showed up and hope it foretells some good news in the near future.

Dave Marten hosted a Mooney Owners Forum at Oshkosh this year. It was run on Monday and Wednesday and had a wonderful turnout.

There were Mooney reps there as well as Don Maxwell and the bulk of the questions centered around Maintenance and the status of Mooney.

There was a suggestion that Mooney may shortly be coming out of hibernation. And to add to that, there were some Chinese reps at the forum. Thanks to Dave Marten for putting this together.

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

Emergency Runway Finder

http://www.emergencyrunways.com

You are flying along, with everything sounding smooth and feeling smooth. Then all hell breaks loose and you need to make an off field landing. This website provides emergency landing sites around the country. The best part is that it is pilot-maintained, just like AIRNAV. So you can enter additional emergency landing sites to make it even more valuable.

It uses Google Maps with the usual "pins" so you can plan for these. If you are ambitious, you can even add them as "emergency waypoints" to your GPS.

I thoroughly enjoyed Geoff Lee's article "An Angel on My Shoulder". But he certainly has had more than his share of inflight engine issues. I don't like these kinds of issues since they will not show up in a typical pre-flight since it is so difficult to remove the Mooney cowl each flight.
Tom G

I really found Cliff Bigg's article "The Engine Spoke to me, But was I Listening". These articles are written by guys that know engines, but are written in English that a non-mechanical owner can understand. I find this valuable. Keep up the good work guys!
Eric G

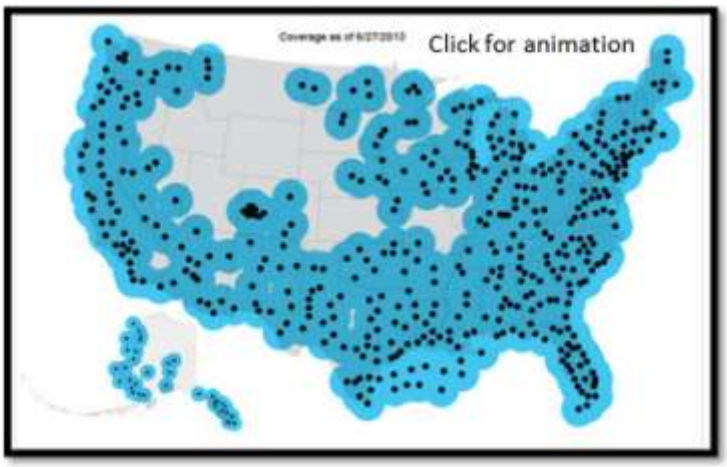
I have always loved Top Gun Aviation. Tom Rouch, and now Mark, are top notch. But I did not know the story of Tom and how Top Gun got started. During this time when there is no Mooney factory, it is places like Top Gun that keep us flying. Great story about a great MSC. Thanks.
Don B

ADS-B Configuration Choices

By Jim Price

For more background, refer to my previous article, "ADS-B, What You Should Know" at

http://jdpricecfi.wordpress.com/2012/05/03/ads-b-what-should-you-know/



On June 27th, 2013, ADS-B services were available in the areas shaded in blue. You can see an animated growth map HERE, courtesy of *ForeFlight*.

The FAA expects to have ADS-B fully deployed by the end of 2013 or early 2014.

Do I need ADS-B? Only if you want to fly your Mooney after New Years Day, 2020 in airspace that presently requires an aircraft to have a transponder.

Will I need a panel installed WAAS GPS?

Yes. ADS-B will use your GPS location and transmit that information to the controllers. WAAS allows the accuracy needed and a portable GPS won't do the job. So, if you don't have a panel mounted GPS, let's start from the least expensive options.

ebay has some used *GNS 430 WAAS* for sale at around $7,300, plus installation. A new *Garmin GTN 650* will cost almost $10,000 plus installation. Want a bigger screen? The *Garmin GTN 750* starts at about $15,000 plus installation.

If you already have a non WAAS Garmin 430, then the upgrade to WAAS will cost about $3,200 plus two hours of labor to install the new antennae. Yes, *Garmin* will still upgrade the *430/530* to WAAS, and they will still support it. It is the non-WAAS units that they no longer support.
(The *GTN 650/750* series is shown at left).

ADS-B "In" Goodies for those flying in the "Blue" covered areas depicted on the map above

Can I receive weather and NOTAMs?

Yes. Flight Information Service-Broadcast (FIS-B) gives you FREE access to about the same information that is currently provided by a SirusXM Radio "Aviator" subscription:

- METARs & TAFs
- Non-Routine Aviation Weather Reports (SPECI or Special Report)

- NEXRAD
- Both Distant and Flight Data Center (FDC) NOTAMs
- AIRMETs and SIGMETs, including Convective SIGMETs
- Special use Airspace (SUA) status
- Temp Flight Restrictions (TFR)
- Winds and temps aloft
- PIREPS

FIS-B may soon receive more weather information, such as Lightning, Turbulence NOWcast, Icing NOWcast, Cloud tops, and 1 minute AWOS – all uplinked every 10 minutes.

In contrast, XM's data service packages can be seen HERE. To be fair, XM's weather is more timely and, depending on the package, contains more analytical products.

But wait, there's more!

Can I receive a traffic display in my cockpit, just like the big jets?

Yes, from the Traffic Information Service-Broadcast (TIS-B). The data link transmitter that commercial, biz jets and high performance / high altitude aircraft will use to report their position and altitude is a Mode S transponder that uses a feature called "Extended Squitter" (ES). These transponders transmit using the **1090 MHz band**, which is the international standard for ADS-B Output. A Mode S transponder with ES is required if you are flying in class A airspace (Flight Level 180 and above) or internationally.

Specific only to United States airspace – and not approved elsewhere – is the **UAT** data link transmitter, which is an alternative to the Mode S transponder. It transmits your position and altitude on the **978 MHz band**. In 2020, UAT transmitters may only be used on GA aircraft that are flying below FL180 in the USA.

At left is a traffic display on a Garmin GTN 750. TIS-B will uplink to ADS-B "In" aircraft, allowing a traffic display in the cockpit. It will also display on a GNS 430W / 530W.

How do I receive FIS-B and TIS-B?

There are two ways.

#1: Install a Universal Access Transceiver (UAT) in your aircraft. Only the UAT has the bandwidth to receive the FIS-B and TIS-B signals. (ES transponders don't have enough bandwidth). Garmin's UAT is the *GDL 88* ($3,700 - $4,000 plus about 20 hours to install). The *GNS 430W / 530W* or the newer *GTN 650 / 750 displays can present the data in the cockpit*.

#2: Buy a portable FIS-B and TIS-B receiver. These connect either with Bluetooth or Wi-Fi to an iPad and power the applications:

- The *ForeFlight* app works with the ***Stratus*** receiver. Stratus 1 sells for $700. It provides a Wi-Fi connection that allows ForeFlight to receive FIS-B. It also receives TIS-B using the 978 MHz band (only ADS-B participating aircraft). That's the band used by GA aircraft operating below Class A airspace.

Stratus 2 ($900) uses both the **978 MHz** and **1090 MHz bands**. This allows you to see ADS-B participating air carrier and private or commercial operators of high-performance aircraft as they "Squit" their location using ES Transponders. This makes the Stratus 2 traffic picture more complete. The Stratus 2 also features a built-in AHRS for backup attitude information and is 30% smaller, with improved GPS performance and better heat resistance. See the *Stratus* video HERE.

- The ***Dual XGPS170*** ($700) powers: *AOPA FlyQ EFB*, *Avilution* (Android app), *Bendix King myWingMan*, *eKneeboard*, *Flight Guide iEFB*, *Naviator* (Android app), *WingX Pro7*, and EFIS models from *GRT Avionics*. It connects to the iPad via a Bluetooth connection, providing FIS-B and TIS-B. Watch the Dual *XGPS170* video HERE.
- The *Garmin Pilot* app, works with the Garmin ***GDL 39*** receiver ($700). It connects via Bluetooth, allowing the *Garmin Pilot* to receive FIS-B and TIS-B. It also supports portable Garmin GPS units like the *aera* and *GPSMap*. See a *GDL 39* video HERE.

When it comes to receiving Traffic (TIS-B), it becomes a complicated mess that would thrill the Marque de Sade. You see, the concept behind ADS-B is that airplanes, using their WAAS GPS position, will report their position, altitude, speed and other data via a UAT or ES transponder datalink to FAA ADS-B ground stations. This is ADS-B Out. ADS-B compiles position reports from participating aircraft and crunching this data packet to a specific aircraft. That data shows where nearby aircraft are located, complete with relative altitude and target trends.

Without ADS-B Out, and using a portable ADS-B In receivers do a good job with weather (FIS-B), but they are fallible when it comes to traffic (TIS-B). Without ADS-B Out, you're not a participant, so you are unable to receive a custom traffic packet. If there is a participating aircraft nearby, it's your lucky day – you can see his traffic packet, but it won't be centered on your airplane.

Portable ADS-B In Receivers and TIS-B Traffic Displays – Three Scenarios

Scenario #1 (Worst Case): You're flying with a portable ADS-B receiver like the *Stratus*, *GDL 39* or the *Dual XGPS170*, but you don't have an ADS-B Out transponder like the Garmin GTX 330ES installed in your panel. You're not near an ADS-B ground station, so you will only receive TIS-B target information for airplanes that are transmitting ADS-B Out via air-to-air. You won't pick up basic Mode C target information. (Most airplanes do not have ADS-B Out, but this will change after 2020 when the FAA's mandate goes into effect.)

Scenario #2 (Better Case): You are flying with a portable ADS-B receiver like the *Stratus, GDL 39 or the Dual XGPS170* without an ADS-B Out transponder like the Garmin GTX 330ES installed in your panel. You happen to be close

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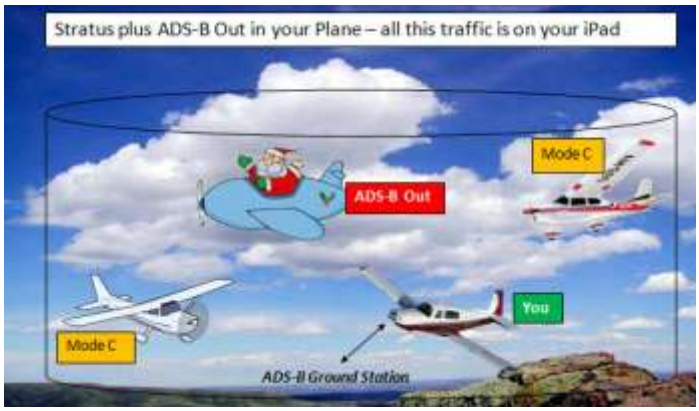
to another aircraft that is ADS-B Out-equipped and within range of an ADS-B ground station. The ADS-B Out airplane can relay traffic information to your ADS-B portable receiver in a 30-mile bubble and in this case, you will see what Santa has broadcast to the ADS-B Ground Station. That is, you'll see all in-range Mode C and ADS-B targets.



Scenario #3 (Best Case): You have an ADS-B Out transponder like a Garmin GTX 330ES installed in your airplane, which will continuously transmit to the ground stations and create your own bubble of traffic information. You'll see all radar traffic within a 30-mile diameter and 3,500 feet of your altitude on your iPad using portable ADS-B receivers like the Stratus, GDL 39 or the Dual XGPS170.

Scenarios reference: Sporty's

So ask yourself, "Where do I fly?"

Let's assume that you are equipped with a WAAS GPS, a Mode-C Transponder, and:

- ***You desire to fly in Class A airspace or internationally after 2020, and***
- ***You want ADS-B weather and traffic displayed on the GPS unit(s)***

Option 1 – FIS-B and TIS-B Panel Display.

- ***Upgrade*** to a Garmin GTX 330ES Transponder - $3,500 + about 4 hours to install. This satisfies the 2020 ADS-B out requirement. 330 INSTALL NOTES: If you are replacing a Garmin GNX 327 transponder, from the outside, it looks like a simple 'slide out the old and slide in the new' install. However, the GTX 330ES is 2.55 inches longer than the 327, so "some assembly required". Good news: Both transponders use the same antennae. ***THEN . . . . . .***
- ***Install a Garmin GDL 88 Diversity Datalink*** - $3,745 - $4,000 + about 20 hours to install. This uplinks FIS-B and TIS-B data to your display(s).
- ***OR*** . . . . If you already have a Garmin Data Link (GDL) for XM Weather, you can keep that. You will forego the TIS-B Traffic Display. XM Monthly costs depend on your desires. Click HERE for plans. See your Avionics shop for GDL install costs.

Option 2 – ADS-B "In" FIS-B and TIS-B on a portable Garmin GPS or iPad OR keep XM Weather:

- **Upgrade your transponder.** A Garmin **GTX 330 ES** Transponder will cost $3,500 + 4 hours to install. See **330 INSTALL NOTES** in Option 1, previous page. THEN . . . . . .
- **iPads and portable Garmin GPS units like the aera or Garmin Map696.**

The iPad starts at $400 for the 16 gig model. Wi-Fi models need an external GPS like the **Dual XGPS150A or Bad Elf GPS** - $100. The Garmin aera runs $600 and the Map696 costs $2,000.

- **Choose a portable receiver**. This will allow you to receive FIS-B and TIS-B. Once again those receivers are the **GDL 39 (**iPad or Garmin portable GPS'), **Stratus 1st Gen, Stratus 2nd Gen,** (ForeFlight only) and the **Dual XGPS170** (works with a myriad of apps)
- ***OR*** . . . . If you already have a Garmin Data Link (GDL) for XM Weather, you can keep. Monthly costs depend on your desires. Click HERE for plans. See your Avionics shop for GDL install costs.

Can a Garmin ***GTX 330 Mode-S Transponder be updated to ES?***

Yes. It can be upgraded to a ***GTX330 ES*** for only $1,200 + about 4 hours to install (see 330 INSTALL NOTES – previous page. If you'd like weather and traffic displayed on the GPS display(s), you'll need to add a UAT, similar to the ***GDL 88 Diversity Datalink.*** Or, if you don't mind viewing weather and traffic on your iPad, you can simply use the app and portable "ADS-B In" receiver options noted above.

Resale thoughts

If you own an aircraft that is capable of flying above FL180, but you choose to not equip your airplane with a Mode S (ES) transponder, consider this: One day you might want to sell your airplane. Without a Mode S (ES) transponder, you've handicapped your airplane a bit. It's capable of flying high, but banished from Class A airspace. You will probably need to adjust your selling price accordingly.

Perhaps you have a normally aspirated Mooney that will never see Class A airspace. Being ready for 2020 makes your aircraft more exciting when compared, side by side, with one that needs some work.

If you:

- **Fly below FL180 and**
- **Have no desire to venture outside the USA and**
- **Your aircraft is already equipped with a WAAS GPS and**
- **You have either a Mode-C or Mode-S (non-ES) Transponder and**
- **The idea of weather and traffic displayed on your GPS display excites you.**

You'll need to add just one piece of hardware in order to meet ADS-B requirements – a UAT. *Garmin's* UAT is the *GDL 88 Diversity Datalink* - $3,745 - $4,000 plus 20 hours to install.

Any Garmin GDL 88 model UAT will make an honest pilot out of you on January 1st, 2020. In the meantime, you'll be able to enjoy (TIS-B) and subscription-free weather (FIS-B) on your *GNS or GTS* panel mounted GPS display. For more information, contact your favorite Avionics Shop.

100LL Fuels our Mooneys… Oxygen fuels Us!

Earthbound humans take oxygen for granted. A Mooney pilot does so at his or her peril. FARs guide most of our thinking about the use of oxygen, when it is required, and so on. I hope to shed some light on the entire topic of Oxygen and Flying in order to help guide all of us to improve our oxygen productivity.

Oxygen Basics

The air that we breathe is 21 percent oxygen. However, the amount of oxygen available for your lungs is a factor of partial pressure of oxygen and is measured in torr. As altitude increases, the available oxygen pressure in torr decreases. The percentage of oxygen in the air is always 21 percent no matter how high you go, but it's 21 percent of a smaller total air pressure. At sea level the partial pressure of oxygen is 21 percent of 760 torr, while at 10,000 feet it is 21 percent of only 199 torr.

Oxygen delivery to the human body starts with the diffusion of oxygen from the air in the lungs into the blood. Young pilots with good lungs have good diffusions; older pilots with older lungs or those who smoke have poorer diffusion. The next step in the system is cardiac output that drives the red cells loaded with oxygen to the big toe or up to the brain. This too varies from individual to individual. The blood's hemoglobin molecule unloads the oxygen to feed, say, hungry brain cells, and the deoxygenated blood heads back to the heart and lungs to be reloaded with oxygen.

Consumption at the brain is not constant. High-concentration activities such as reading a map, flying an approach, or even stress because of family concerns consume more oxygen than watching TV. When the brain is not getting enough oxygen, the only options your body has to deliver more oxygen is increasing the cardiac output (your heart beats faster and harder) or unloading more oxygen from the blood. This means that you become tachycardic (high heart rate) and tachypneic (breathing faster).
Tachycardia stresses your heart and breathing faster can lead to hyperventilation with neurologic side effects. You can avoid the problem by mixing some pure oxygen into the air you're breathing using a mask or canula. This increases the percent of O2 in the air flowing into your lungs, leading to a higher O2 torr, and getting more O2 into your blood. Essentially, breathing supplemental oxygen creates the O2 torr equivalent to a lower altitude.

FAR Basics

FAR 91.211 states clearly that pilots must use supplemental oxygen if above 12,500 and 14,000' MSL for longer than 30 minutes, and immediately if above 14,000'. This works to meet the requirements of the FAA, but is it the optimal solution? We don't think so. We recommend use of Oxygen above 10,000' MSL. The AIM (Airman Information Manual) agrees with us. So there is a disparity between FARs and

FAA regulations for use of supplemental oxygen date back to the 1930s and were based on the height of the Rocky Mountains and some military test data. FAR 135.157 requires oxygen for commercial flight crews above 10,000 feet MSL in unpressurized aircraft and a two-hour supply for cabin-pressure loss.

good medical practices. This becomes even more important as we age and our bodies are not as efficient at most things, including breathing. But it affects everyone.

At night, things diverge even more. Our vision is sensitive to diminished oxygen and this is exacerbated at night. Oxygen is recommended above 6,000' MSL at night. There is no FAR guidance here, but once again, the AIM recommends 5,000' MSL at night.

All of this is overlooked by most pilots. Things get even more sensitive if the pilot has respiratory issues which might reduce the effectiveness of the oxygen-blood transfer process.

Pilots tend to be conservative so the AIM seems to be a better decision than the FAR. We all know that insufficient oxygen can result in Hypoxia. The brain is the first organ affected and therein lies the conflict. The evidence is a loss of judgement. It is insidious since the onset of hypoxia, as we all know, is commonly a sense of euphoria, a feeling of well-being. And nothing could be further from the truth. Medical tests have shown that subjects experiencing hypoxia can't write their names or perform simple tasks, but think that they are doing fine. This is not a good scenario at altitude as PIC.

The predominant symptoms for most of us vary, but include: increased breathing rate, headache, lightheadedness, dizziness, tingling or warm sensations, sweating, poor coordination, impaired judgement, tunnel vision and euphoria. Whew! None of these are good for the PIC.

The Solution

The situation inside your body is complex, but the solution is simple. A blood saturation of 91 percent is the critical number. When you reach this point, the oxygen tension of your blood is at 60 torr. This is when physicians consider an individual hypoxemic. Some pilots and writers claim that 88 percent is a better number, but remember that cardiac output is also a factor. A saturation of 91 percent provides sufficient oxygen without extra stress to the heart.

The reason 91 percent is so critical is that the relationship between torr and O2 saturation. As torr decreases, O2 saturation decreases slowly from its maximum down to 91 percent. Past this point, even a slight decrease in torr means a precipitous drop in blood saturation. What this means to you is you could be doing fine from sea level to 9000 feet and then suddenly be in a bad situation only 2000 feet higher.

Studies show that 91 percent can occur as low at 5,000 feet in a 65-year-old physician and can be over 11,000 feet for a 21-year-old college rower. Most adults with no significant underlying medical problems hit 91 percent between 8,000 and 10,000 feet — not the 12,500 feet dictated by the FAA.

The pressure altitude where this occurs seems to be reproducible in each pilot over several months and even years, although it does decrease for all pilots as they age. Once you know the critical altitude for yourself, you can use it as a rough gauge even if you don't have a pulse oximeter. Pilots will desaturate quicker as altitude increases, but resaturation of the blood once O2 is introduced usually happens in two minutes or less up to 20,000 feet.

Here's our final recommendation. Pilots should use a pulse oximeter to watch their oxygen saturation. When it drops below 91, note the altitude — or, better yet, the pressure altitude — and start the flow of that supplemental oxygen. There are other factors also: Humidity, carbon dioxide in the blood, carbon monoxide in the cabin, and other items can play a role in how well your brain and muscles use the available Oxygen. These factors matter, but not enough to change the magic number for most pilots most of the time. If you're flying high, strap a saturation meter on your finger and keep the number in the 90s.

If 91 percent blood saturation seems restrictive to you, here's an alternative. Take a sample pulse oximeter reading at sea level and use that blood saturation reading as your baseline. You should be ok if you maintain that level or higher while flying. But remember, if your brain is working hard, which is usually the case while pilot in command, it will require more oxygen. Always err on the side of being conservative. As we like to say here at The Mooney Flyer, "Live to Fly Another Day".

Mooney Tunes

Jim Price

A monthly review of abnormal and emergency procedures

It's hard to make the effort to review your airplane's systems and emergency procedures. So, the Mooney Flyer hopes that we can encourage you to study a system each month. August's focus is ***Electrical Fire in Flight****.*

Electrical fires are subtle — manifesting in several ways. Your first clue might be a slight burning odor (sweet, sickening smell), a higher than normal electrical load, or tripped circuit breakers. Abnormal behavior of electrical components (avionics, for example), or random failures of multiple components, can also tip you off to fire in a hidden area. Pay attention to the clues and don't wait for a major problem before taking action.

Every second counts, so you need to know what to do without fumbling through the POH.

All Electrical Power – OFF

- If you're talking with ATC, tell them that you have a fire and that you may need to shut down the electrical system.
- Declare an Emergency
- ***Mooney*** recommends that you **SHUT DOWN THE ENTIRE ELECTRICAL SYSTEM:**
  - **Master Switch – OFF** (With no power, you'll lose lighting, some instruments plus the stall and gear warnings).
  - **Alternator Field Switch(es) – OFF**

GET RID OF THE SMOKE – BREATHING WOULD BE NICE:

- **Cabin Ventilation – OPEN**
- **Heating Controls – Closed**

WHAT IS CAUSING THE PROBLEM?

- **Check for tripped Circuit Breakers**

A tripped CB could point to the culprit. If one or more CBs are NOT tripped, but you can identify one or more components that are potentially involved and not essential to a safe landing, pull the breaker(s). This may stop the smoke or smell, and prevent further damage.

Remember: The underlying problem is still there, so DO NOT RESET TRIPPED BREAKERS!

If electrical power is essential for flight and or a safe landing, and if you have time, perhaps you can isolate one or more faulty circuits.

If you have the time and electrical power is essential for flight, ***Mooney*** recommends the following:

- **Individually, turn all the electrical equipment – OFF**, and THEN . . .
  - **Master Switch – ON**.

IF SMOKE PERSISTS OR WORSENS, THE MASTER SWITCH COULD BE THE PROBLEM. IF NOT:

- **Turn the Alternator Field Switch(es) – ON**
- **Turn essential equipment ON, one at a time, waiting a short time before turning the next switch to ON.**

Only reset the flight-essential breakers when absolutely necessary. NEVER reset non-essential circuit breakers.

If the flight-essential breaker(s) will not reset, there could be extensive damage to the aircraft's wiring. Leave the breaker(s) in the pulled or tripped position, and don't try to reset them again.

If flames are present, or if smoke persists or worsens, use a fire extinguisher to extinguish the flames.

Prepare to land as soon as practical, even if it means an off-airport landing.

If you are flying in instrument meteorological conditions, try to reach VFR conditions.

When you land, get it fixed.

PHIL CORMAN

Be sure that wiring has been inspected and defective items have been repaired or removed before operating the aircraft again.

Camping by Mooney

by Jim Price

Airplane Camping can be fun if you do your research. If you subscribe to Pilot Getaways, you can be a member of *American Air Campers* - FREE: http://aaca.pilotgetaways.com/ . They have great resources to help you plan your trip. You can find camp friendly airports and then learn about all the camping resources that they offer. Here's an example of the info for Columbia, CA (O22):

WHAT YOU'LL NEED

You can carry enough equipment to be more comfortable but, you must consider gross weight, and density altitude issues. You don't need the best and most expensive products on the market but, you do need something that will last and provide the comfort you deserve when out in the boonies.

The following is a list of equipment to consider for your next camping adventure:

- Sleeping Bag
- Tent
- Mattress & inflator (Campbell Hausfeld makes a portable power supply)
- Ground cover (plastic tarp)
- Chair(s), folding
- Cooler, collapsible
- Cookware (coffee pot, pan, plates, utensils)
- Camp stove (single or double)
- Lighting (flashlights, lantern)
- Matches, lighter, etc.
- Table (very optional). Some airports have picnic tables.
- Portable toilet (You can avoid this by camping at an airport like Columbia, CA, (O22), with toilet and shower facilities)
- Water, water, water – unless it's readily available at your camping airport
- Food

Other items you may want to consider having in your airplane are:

- Tie downs
- Toolkit
- Survival Kit
- Tire repair / air pump

Spread it all out, and you realize that your Mooney's cargo space is a bit smaller than the cargo area in your RV. Perhaps you could remove your rear seats for more cargo space.

Phil's Favorite Mooney Camping in California

Georgetown (E36) – This place is in the foothills of the Sierra Nevada and nicely remote. It's about 2 ½ miles into a small village with a general store, a B&B, and a restaurant. The views from the treed camping area is beautiful. This is a place to get away from it all. There is running water and flush toilets available.

Kern Valley (L05) – Another remote camping area with running water and toilets in a grassy meadow with a 5 minute walk to the Kern River for fishing & bathing. There is a wonderful restaurant down by the fuel depot and transient parking. The camping area is away from all of that and about mid-runway, with its own parking area.

Columbia (O22) – Perhaps the king of all Mooney camping is located at Columbia. It's a wooded area with sinks, showers, toilets, grills on a grassy side runway. It's a short walk to historic Columbia, a California gold town.

And in Arizona & Utah, Jim's Favorites include:

In **Utah**, I like Canyonlands and Beaver because of their proximity to National Parks. They even have taxi service available.

Name	Airport ID	State	City
Beaver Municipal Airport	U52	UTAH	BEAVER
Canyonlands Field Airport	CNY	UTAH	MOAB
Parowan Airport	1L9	UTAH	PAROWAN
Dutch John Airport	33U	UTAH	DUTCH JOHN
Cal Black Memorial Airport	U96	UTAH	LAKE POWELL
Richfield Municipal Airport	RIF	UTAH	RICHFIELD
Carbon County Regional Airport-Buck Davis Field	PUC	UTAH	PRICE

In **Arizona**, I like Payson, Bisbee, Holbrook and St Johns because of their proximity to local attractions.

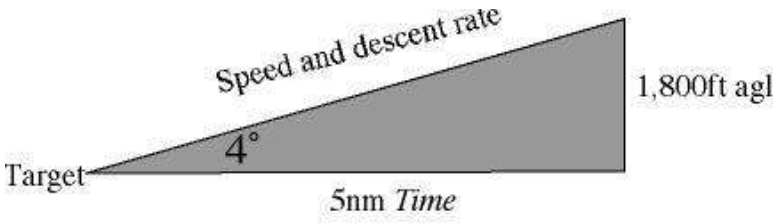
Name	Airport ID	State	City
Bisbee Municipal Airport	P04	ARIZONA	BISBEE
Pleasant Valley Airport	P48	ARIZONA	PEORIA
Payson Municipal Airport	PAN	ARIZONA	PAYSON
Holbrook Municipal Airport	P14	ARIZONA	HOLBROOK
St. Johns Industrial Air Park	SJN	ARIZONA	SAINT JOHNS
Estrella Sailport	E68	ARIZONA	MARICOPA
San Manuel Airport	E77	ARIZONA	SAN MANUEL

Landing

by Geoff Lee

Someone asked how I know when to allow a student to fly solo. My response was that I look for the student to begin to take charge of the aircraft and the flight situation. Initially, a new student waits until the instructor has first demonstrated or described the next event be it a stall demonstration to be performed by the student or an approach to an airport of intended landing. When the student, without prompting, initiates the next obvious action in any given circumstance, it is a key moment in the process of learning to command the aircraft and the situation. Progress leading to solo operation usually moves quickly from this moment. Most new students, when asked, what they find is the hardest thing to grasp in the" learning to fly" process will respond that learning how to land is the toughest portion of the process. In actuality I find that the last thing that fledging pilots can grasp is the capability to fly straight and level, primarily because they get very little practice at it throughout the process. The training stages are rife with turning, slow flight, stalling and touch and go, etc. They maneuver to such a degree, that just flying in a straight line holding a fixed altitude and heading seems to get minimal attention. Learning to land can be described simply. The process involves the same elements for most aero planes:

1. Initial approach altitude
2. Distance from touchdown
3. Approach speed
4. Rate of descent



eg. 5nm @ 100 kts takes 3. 3 minutes
descent rate would be approx. 545fpm

These 4 elements actually describe a right triangle with its sloping side being a path of descent that allows the aircraft a comfortable transition from flight to ground if all four elements are initiated and accomplished correctly. Ideally the acute angle of the triangle should be about 3 to 4 degrees. *(5nm out and 1800 ft above touchdown*). Should any one of these 4 elements (*sides of the triangle*) be chosen incorrectly, the landing process becomes a little more challenging for the inexperienced or inept pilot. Broader experience will provide some options for corrective adjustment.

Time is the key factor in most aviation planning; when the planning elements of course, heading, track, indicated airspeed , true airspeed, ground speed, wind speed, wind angle etc. are formulated together you end up with time. Knowledge of how much time you have left to descend from cruise to pattern altitude is infinitely more useful than knowing your distance from the airport. Indicated airspeed certainly swells the ego. But it does convey that the craft is capable of flight but does not factor in wind and density altitude when we need to know how long we have left to destination. The advent of the GPS was like manna from heaven to old pilots who had to rely on a good watch and identify crossing fixes by time in order to keep track of the flight, the fuel remaining and time to destination. ATC used to require reporting over fixes and providing "time to next fix". That GPS jewel will always give you the time to any point along your path as well as heading and distance plus all the other great navigation and position information. Cherish knowledge of time more than distance as it is more useful in aviation.

New students are introduced to the landing process via the traffic pattern. The classic traffic pattern when performed correctly actually establishes the aircraft within the bounds of the afore mentioned

triangle but it is amazing how any variations on that pattern can be devised by new and not so new pilots. The variations usually begin to be revealed on the downwind when abeam the approach end of the landing runway or abeam the intended touchdown point. (*key point*)

At the key point, power should be reduced and about a 300-400 fpm descent initiated straight ahead until the touchdown point (*target*) is viewed at approximately 45 degrees over the shoulder, at this point the base turn should be executed, the rate of descent should continue. The turn from base leg to final should be completed via a generous radius and the eyes should be on the ball and the target through base to final. Power and flaps to be used to maintain the target in a fixed sight line location. Descent rate should be maintained throughout the path from the key point to touch down.

That base to final turn should appear to the pilot as if the aircraft nose is sliding down toward the runway end. A constantly reducing angle of attack will minimize exposure to a cross control stall in the event of sloppy footwork in the turn (*ball out of center on the high side*). The descent rate (VSI) can be nailed with minimal/judicious throttle use, the airspeed is controlled by pitch, not throttle (1.3 VS_o max). Assuming that the target has remained in about the same place in the windshield, the descent rate should still be at 300-400 fpm. Vertical speeds in excess of this need to be viewed with concern if carried to the surface, a decent landing will occur out of descent rates of 200-400 fpm. Arrival using 500-700 fpm descent rates will be remembered. Above 700fpm you will need external help to exit the runway. During the round out to touchdown when the runway is clearly within reach the power should be brought to idle. My instruction to the student would be to hold the plane parallel to the ground with a slight pitch up to keep the nose wheel clear and then try to fly the plane to the far end of the runway with power off, this would then entail steady gradual back pressure, thus increasing the angle of attack as the aircraft settles to the runway. The slight pitch up attitude is encouraged in this initial touchdown phase in order to ensure that the nose wheel does not contact the ground before the mains. Excess speed will result in a longer airborne “float” or a “ballooned” landing since drag is reduced by about 40% when the plane enters ground effect (*about 15 ft above ground*).

I am always surprised by how many pilots, even those who are experienced, commence a ”fishing” motion with the yoke in the last stages of touchdown.. trying to feel the for the ground. This is not an advisable act since the nose wheel will probably be the first portion of the plane to achieve ground contact and a 50 to 70 mph wheelbarrow is hard to handle. The plane rotates about the C of G via pitch input it does not simply go straight up and down in a horizontal attitude, so “bobbing” the nose up and down close to the ground does not seem smart. Other common errors are; **not descending at key point**, carrying excess power and speed throughout, turning base too late or too soon, holding altitude on base, not picking a touchdown “target”and descending at rates above 500 fpm. (*Caused by all of the above).*

So, in summary, in the pattern and on final approach, control airspeed with pitch not power, control descent rate with power, start the descent to landing at the location (*key point*) on the downwind leg opposite the intended touchdown point and do not “fish “with the yoke.

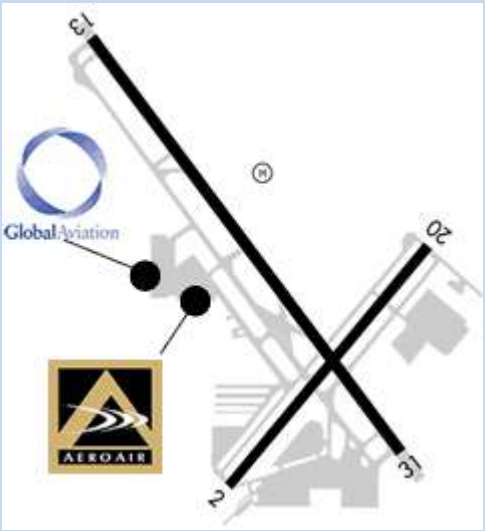
The foregoing does not consider obstacles, slope, or short runways, strong or cross winds, but is a basic guideline that I use on single engine training. Keep your nose low and the ball centered!

Portland, Oregon

By Linda Corman

My husband and I have talked about visiting Portland, Oregon for a long time and finally got there a couple of weeks ago. The weather was a factor in our long delay, but it finally turned clear and warm so off we went. I had always heard that Portland was a pretty city with lots of restaurants and shopping. We were not disappointed with what we found there.

Pilot Comment: We flew into Hillsboro (KHIO) as it was uncongested and had no fees. There were rental cars on the field and the FBO was extremely helpful and friendly. It's about a 20 minute drive downtown.



After arriving at the airport and getting our rental car we were off to Portland and our hotel. We found a nice hotel, the Red Lion on the River, on an island in the middle of the Columbia River, one side is Oregon and the other side of the river is Washington. The island is called Hayden and is large enough to have several hotels, condos and restaurants. It is nice to wake up in the morning and walk along the riverside after a wonderful breakfast at the hotel, with river views.

The first day after arrival we drove into Portland to the heart of the city. I had heard they had distillery tastings in town and I had never tried one before. We walked all around town, and spent time shopping/drinking/eating in the Pearl District with shops and restaurants. We tried the famous Henry's Tavern on 10 NE 12th Avenue and I had my first Lavender Martini, which was very nice I would have had another but we had to explore more of the city. Portland is a nice walking city as everything is easy to get to within a few blocks. We headed to the river that flows through Portland called the Willamette River looking for our favorite restaurant called McCormick and Schmicks. They are located right on the river bank and we had wonderful views with our seafood lunch. The city is very nice however we were surprised at the number of street people living on the sidewalks in Portland. They were no problem as they do not panhandle, but you do have to walk around their sleeping bags.

The View from Beacon Rock

The next day we decided to travel up the Columbia Gorge to Hood River and back. This took most of the day as we had to climb Beacon Rock for the great views and the exercise. Beacon Rock is a 850 foot high rock that dominates the area and was viewed by Lewis and Clark on their trek through the Northwest. When you see the rock from the highway you think there is no way you can get to the top without repelling up. However, some clever people built steps and paths into the rock to the top so the difficulty is only easy to moderate. It was great fun hiking up and we meet several hardy souls also going for the top. After enjoying the views of the Gorge and taking dozens of photos we were on the road again to Hood River. We wanted to explore the Gorge area and we were rewarded with beautiful scenery and a lovely ride.

Our next stop was at Hood River to visit a unique air museum there, The Western Antique Aero & Automobile Museum (WAAAM). The museum was located right outside the town of Hood River at the Ken Jernstedt Airfield. They have a nice little gift shop area as you walk into the museum, but I will get back to that later. This tiny museum was a real treasure. The people working there were friendly and very helpful with extensive knowledge of their business (air planes and antique cars.) We spent hours looking at and climbing inside of some rare old planes. One docent even let me climb into the cockpit of an antique plane. I also love old cars and they had some beauts. We took photos of everything (almost) and enjoyed the shared love of planes old and new. If you are ever in the area of Hood River I recommend you drop in and check out this museum. It is called WAAAM which stands for Western Antique Aeroplane and Automobile Museum. On our way out of the museum we again walked through the gift shop and I had to buy some local wine with airplane labels on them. This is a unique idea to couple wine with airplane motifs. It caught my eye and now I have a fun reminder of our visit.

On the road again heading back to Portland area we passed several beautiful waterfalls. They are only a short hop off the main highway and very easy to find. The first falls is called Horsetail Falls and there was an easy walk to a great viewing area. The next falls however, was spectacular. This is the world famous falls called Multnomah Falls. This particular falls is the highest in the northwest region and has been featured on many posters and calendars. You can walk up to a bridge that spans the falls and I highly recommend doing that as it is a perfect place for pictures. As we had now hiked or climbed many rocks and hills by this time we were ready to head back to town. On our way driving back up the Columbia Gorge we pass by another must stop place. On the Washington side of the river right on the bank is a restaurant called Joe's Crab Shack. This was a great find. We stopped for dinner and, as this was my first steamed crab feed, I didn't know what to expect. After ordering our usual Margaritas and tying on our crab bibs we dove into some wonderful food. There was everything the great northwest is known for. Clams, crab (we had Snow & Dungeoness), shrimp, corn and New Red potatoes in a light sauce all steamed together. Joe's is located at 101 SE Columbia Way and you have to eat outdoors. The river, the bridge and the warm open air patio makes the experience even better.

Going to Portland was well worth the time to get there and waiting for just the right weather. I did find out later the distilleries are there but on the opposite side of the Willamette River, oh well maybe on our next visit. Again we had a great time because we would probably not have gone to Portland except for our Mooney and she made it possible to enjoy this cute city.

Send your questions for Tom to TheMooneyFlyer@gmail.com

Advice or tips on hot starting a TSIO-360 in a K model

I was a little surprised at this question, since I find the TSIO-360 about the easiest engine to start, hot or cold, that I have operated.

This engine in the Mooney has a plus with a primer system. A standard start is about 6 seconds of prime and if you have a GB or LB, you may need to "pump" the prime switch until all 6 cylinders are firing. This is because the prime fuel goes into the engine at the front of the intake tubes through two nozzles into the horseshoe shaped intake system. It takes a little more fuel to get back to the rear cylinders and is very noticeable when you start, as the cylinders don't all fire at the same time. Just keep "pumping" the primer switch till they all fire.

Hot or cold starts is just a matter of how much prime, more when cold and less when hot. Throttle cracked a little and mixture full in. This engine is almost impossible to flood but check your POH for a flooded start procedure. If your primer is not working then use low boost to prime with. This is a little different since the low boost pushes the fuel through the injector nozzles and is not as effective as the primer system.

All the hi, low and primer fuel comes from the same pump but is routed differently. The primer and low boost has less pressure due to a controlled drop in voltage to the pump. Later K models actually have a voltage regulator just for this purpose, while earlier models have a very large adjustable resistor that only cost about 1/10th of what the voltage regulator cost. For more trivia, while we do adjust the voltage, we are actually adjusting the fuel pressure to about 8 PSI.

Thoughts about Camguard and effects on either a Lycoming or a Continental

I will start by saying that in the 30 plus years I have spent in general aviation, plus the 26 in the Air Force, I have only seen a little damage from rust and that has been on Lycoming 4 cylinder engines. Most of the engines we have changed have been factory engine exchanges so I never see the teardown but most have been runout engines. As I write, we are changing a TIO-540 in a TLS because the engine has 2200 + hours but still runs fine. I have followed the history of the cam wear problems with the Lyc 360 and I feel that letting those engines sit for months without running and not being preserved has caused a lot of the problems.

That being said, I feel Camguard would be effective in that engine but I don't recommend one way or the other. At least four oil changes a year, or every 25-35 hours will do more to prevent excessive cam wear than an additive. When requested by the owner we will use it.

For more info, google Camguard, and there is a good article in Avweb that includes and Article from Light Plane Maintenace, Jul 2005. I see no need for additives in the TCM engines.

Mooney Accidents

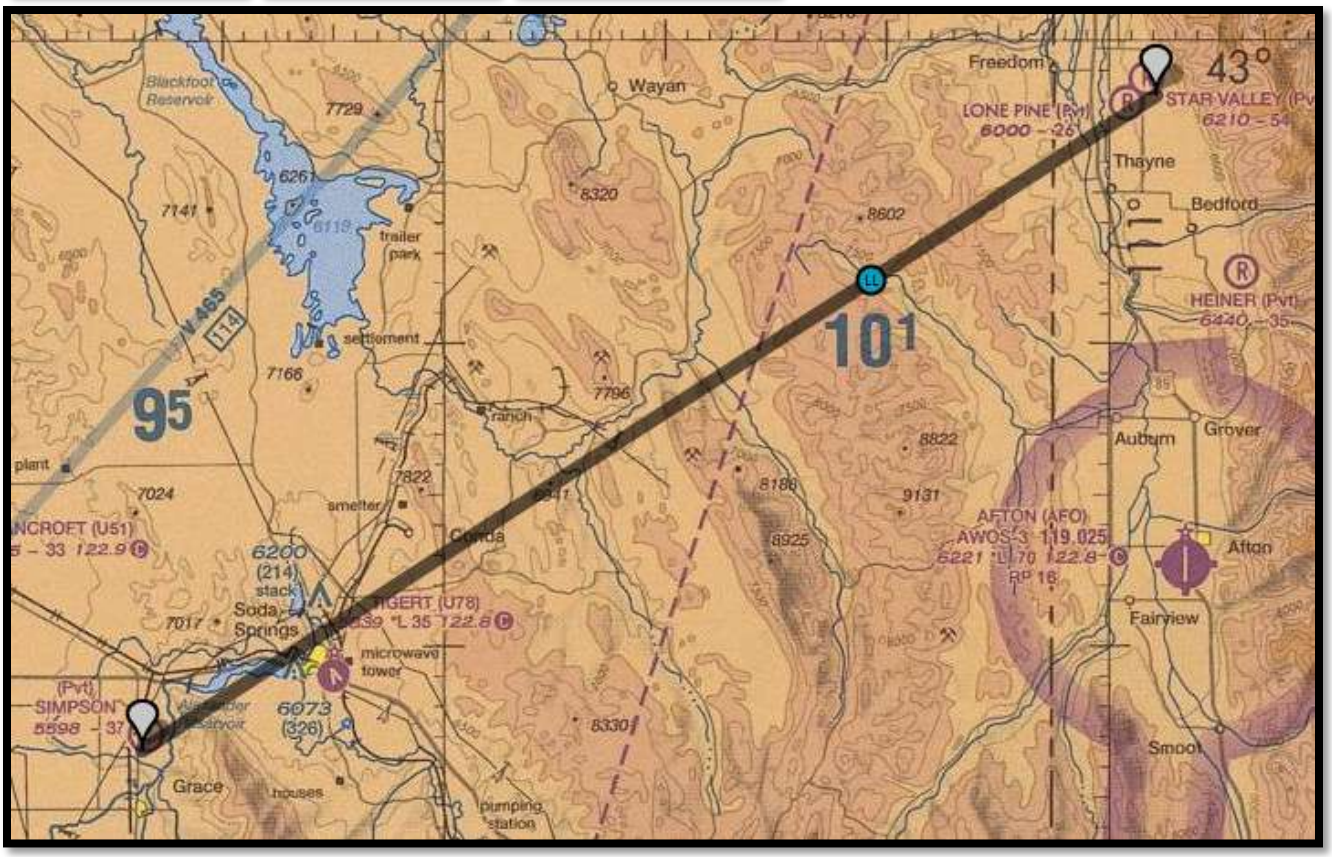
What can we Learn?

by Jim Price

On July 18th, 2011, a Mooney M20C, N6855N, was totally destroyed all all aboard perished. It was piloted by the owner, Norman Gunderson, of Menen, ID. Norman had an electrical contracting company and was training his 16 year old son, Issac, to be an electrician. Norman's company, Gunderson Electric, had an electrical contract to help build a church in Star Valley. Gunderson, a private pilot, took off from Star Valley Ranch Airport (WY39), enroute to Simpson Airport (ID62) near Grace, ID. Kacey James Crane of Grace, ID, was also working on the church, and as a courtesy, Norman offered to fly him to his home in Grace.

Shown, from left to right: Norman Gunderson, Isaac Gunderson and Kacey James Crane.

They had planned to land in Soda Springs (U78), but perhaps because they wanted to be closer to Crane's home, they elected to land at Simpson, a 3,700 foot gravel crop duster strip. (We will never know the reason for choosing Simpson).



A review of Norman Gunderson's logbook showed the last entry on April 28, 2011, where he logged three flights that day for a total of 1.3 hours. The logbook indicated that as of that date, the pilot's total flight time was 563 hours, with 303 hours in the Mooney.

What happened?

The accident happened during an attempt to land at Simpson, just north of Grace, ID. According to witnesses on the ground, the airplane made a slight right turn, followed by a left bank turn toward the runway. The left bank increased to about 45°. Kacey's family, waiting for him at Simpson, watched in horror, as the plane appeared to drop to the ground.

The airplane impacted the ground, coming to rest less than 1 mile from the approach end of the runway. Given the witness statements and the GPS track, it is likely that the pilot over corrected the airplane's course by making a steep turn at low speed, which led to a stall. The post-accident examination of the engine, airframe, and related systems revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Probable cause: The pilot's failure to maintain control while maneuvering in the traffic pattern, which resulted in an aerodynamic stall.

What Can We Learn?

As you approach the destination airport, try to determine which way the wind is blowing at pattern altitude. If you find yourself crabbing to maintain a course to the runway, adjust the lateral spacing of your downwind accordingly. For instance, if the wind would blow you towards the runway on downwind, crab into the wind and if possible, make a wider than normal downwind. Don't let the wind put you in a tight position on your turn to final.

Most accidents occur when close to the ground and maneuvering. To help maintain a buffer between safety and disaster, base legs should be flown at least 10 MPH or 10 Knots above final approach speed.

Limit your turns in the pattern to no more than 30°. Steep turns have no place in the pattern and if you find yourself overshooting final, just go around! The worst thing that could happen would be adding another 1/10th to your time.

Can participation in the FAA Safety Program "Wings" help decrease accident rates?

Participation in the Wings program has increased dramatically since its inception in 2007. The results are amazing! Do you know how many pilots had earned a phase of wings, yet had a FATAL accident since Jan. 1, 2010? TWO. Even more impressive is the number of pilots since 2010 who had a "current" phase of wings, yet sustained a fatal accident. That's right – ZERO! Go to http://faasafety.gov/ . .

FAASafety.gov

. and start your Wings Program today. Your family and your insurance carrier will love you for it. Just three short flights a year will help increase your proficiency and confidence. You can thank me later.

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.

October 12 at the Wings Over North Georgia Airshow in Rome, GA (KRMG). We'll be meeting around 9am at Cole Aviation, one of the premier MSCs in the area and having a talk with the owner Joey Cole. Folks should know that once the airshow starts there will be no departures, so expected departure time will be 5:30 pm. We'll have Sunday the 13th as a rain day option.

October 5-6: California Capitol Airshow & Mooney Fly-In, Sacramento Mather Airport (KMHR) http://www.californiacapitalairshow.com/

August, 2013

Extended Warranty Plans for Avionics

Some owners are reluctant to buy avionics warranties, but they might not realize the high cost of component replacement and flat-rate factory repairs. On top of that, there's expensive shop labor. The going hourly rate at most avionics shops is over $100 and won't include the shipping costs for sourcing replacement parts. For some glass-cockpit systems, a single repair could cost thousands of dollars. READ MORE

ForFlight Adds More Features

As a result of our expanded relationship with NAV CANADA, we are excited to announce the availability of digital Visual Navigation Charts (VNC) and Visual Terminal Area (VTA) charts in ForeFlight Mobile.

In the latest release, they revamped the document engine to make it faster and more feature-filled. The documents catalog has grown, too, with Stratus 2 Pilot's Guide, 2013 EAA AirVenture Oshkosh NOTAM, NOAA Imagery Legends, FAA Domestic Flight Plan Form, and AOPA's 'What to do if stopped by law enforcement' guide.
With the latest update, they greatly improved the FBO and service provider displays inside the app.
MORE FEATURES: Enabled in Settings, the new Distance Rings feature displays three concentric rings around your aircraft's current location, allowing you to quickly get a sense of distance to features around you. Based on either time or distance values, the rings give quick estimates for time enroute or nautical miles to a nearby storm cell, traffic target, shoreline, or anything else shown on the Map. READ MORE

Deohako introduces aviation iPad case and mounting system

It works as an iPad Kneeboard, iPad yoke mount and iPad suction cup mount, all within one design. READ MORE

Product Review:

Lucas Slick Mist Speed Wax

by Jim Price

Recently, a retired commercial pilot named Craig Smith moved to my home town in Arizona and started an aircraft detailing company. When I saw his price to wash, wax, and shampoo the interior of a Mooney, a mere $125, I just had to give him a call. After the wash, he proceeded to wax the plane, using something I had never heard of before: *Lucas Slick Mist Speed Wax.* He loves the stuff and won't use anything else. I looked at the bottle and noticed that the folks at Lucas Oil claim that it is great for airplanes.

After the *Speed Wax* application, I passed my hand over the wing, and Al Mooney would be so proud!. It was "slick" like the bottle says. In all honesty, it is the smoothest waxed wing ever!
Craig made an audacious claim that the bugs will no longer stick to my wings, tail, cowl and windscreen. Yes sir, he sprayed *Slick Mist* on the windscreen, too. This stuff does everything!

Well, I just had to test Craig's "no bugs" claim, so Gerry and I flew to Sierra Vista and back – one hour each way. When we returned to the hangar, I became a living witness to *Speed Wax's* bug repelling powers. Sure, there were three or four miniscule bug remnants on the wing and tail, but nothing like I've experienced in past summers. After a few minutes with a cloth and *Speed Wax*, my Mooney was bug free and slicker than a Mr. Universe contestant, all oiled up for the show. Slicker wings also mean faster speeds. This is the cheapest speed mod that you'll ever "install" on your Mooney.

Lucas Slick Mist Speed Wax:

- Can be used on Wet or Dry Surfaces
- Provides UV Protection
- Can easily be used in direct sunshine
- Helps keep mud, bugs, and tar from sticking to your airplane or vehicle
- Is excellent for all vinyl wraps and decals
- Won't harm leather, rubber, plastic, or aluminum surfaces.

Directions for Use:

- If necessary, wash and rinse vehicle
- Shake well to activate the ingredients
- Apply a fine mist to wet or dry surface
- Wipe dry with a chamois or a terry cloth towel
- For best results, use a micro-fiber towel (that's what I used)
- Between washes, simply mist on and wipe off to keep that Airshow shine
- Avoid Freezing

Available online, or:

AutoZone, Advance Auto Parts, Auto Value, CARQUEST, NAPA, O'Reilly, Bumper to Bumper and Pep Boys. See The Lucas site HERE

Mooney Instructors Around The Country

California

Chuck McGill (Master CFI) located in San Diego, CA 858-451-2742, Website: Click Here

Florida

Mike Elliott (CFII) located at Tarpon Springs, FL, Contact 317-371-4161
Quality instrument & commercial instruction, transition training, ownership assistance, plane ferrying

Two Bose Headset cases, both for $20. Free shipping.

Send $20 to my PayPal account - jimpriceaz@gmail.com

Don't forget to send your mailing address to jimpriceaz@gmail.com