The Mooney Flyer

The Official Online Magazine for the Mooney Community

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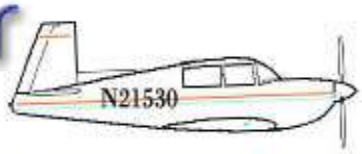
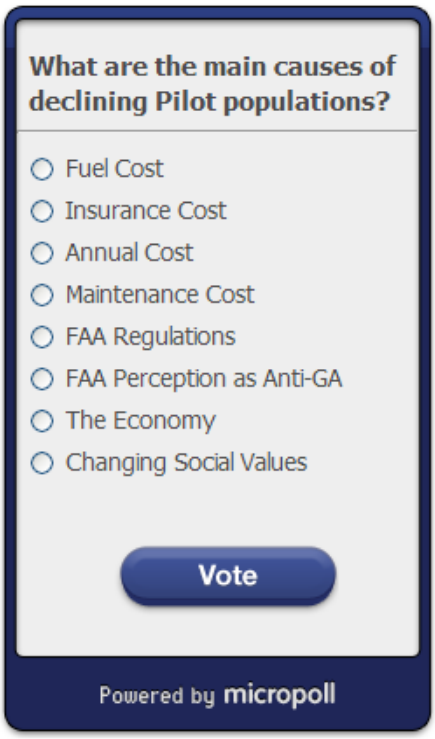
From the Editor

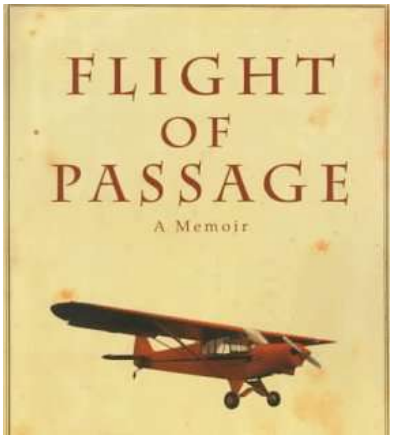
Phil Corman



We have not done any interactive surveys for awhile. In the past, they have been popular with our readers. Below is our survey for this month. Just Click on the Survey and let us know.



Book of the Month



In 1966, Rinker & Kernahan Buck flew their Piper Cub from New Jersey to California, landing at 30 airports enroute. They did this at the ages of 15 and 17.

This is a terrific book that chronicles their adventure. It's , one which most pilots would have liked to do.

CLICK HERE to buy it from Amazon

On Recurrent Stall Training

We've had a lot of input from Mooney Flyer readers on stalling Mooneys. Some say they are no big deal and others are not inclined to do power-on or accelerated stalls in their Mooney. It got us to thinking. First, no Mooney pilot should have concerns about stalling their Mooney. If they do, they should find a CFI and practice them. But our thoughts in this OpEd are focused on what's more important: recognizing the onset of stalls and preventing them, or recovering from stalls? OK, OK, we know many will say they are both important, but we think

In theory there is no difference between theory and practice. In practice there is.

"recognition and avoidance" are more important. Why, you ask? Well, the stalls that will bite you are Departure (Power On) and Approach (Power Off). Typically, the PIC is low and slow in both of these scenarios, plus he or she has a a lot of things going on. These stalls are most likely going to bite you if you are low, so *recognizing and avoiding* seems more important to us.

It seems to us that some excellent training would be to present the PIC with a high workload and/or distractions as the CFI positions the plane in a near stall situation. Think about an approach stall. You are low and slow, and then you have one or more distractions, whether it's passengers, a busy traffic pattern, someone cuts you off, etc. It's this type scenario that might be very useful when doing a BFR or a FAA Wings flight. The main point we are making is that in a normal, everything's is fine scenario, practically every pilot can recognize the onset of a stall, especially when the CFI warns you, "OK, let's do a Power On stall next." Recognizing stalls in a high workload/distracting environment is different; especially when they are not broadcast to the PIC. When is the last time you felt the onset of an accelerated stall in your Mooney? We bet it hasn't been recent for many pilots… Just our $.02.

Aviation Associations

We've seen several forums, including MooneySpace (our favorite), discussing the Pros and Cons of AOPA. It's an appropriate question since AOPA just got their new President, Mark Baker, and many things are changing under his leadership. What we've read has been lackluster support. Light heartedly, we've seen comments such as "I like the AOPA hat", "I like the AOPA pilot bag", "I like the magazine", or "it's the only association protecting me from the FAA."

It got us to wondering. What do our readers expect from our aviation associations? Most provide the following: 1) Magazine, 2) Forum, and 3) Convention. Please tell us your expectations and priorities. We will do an article on this in the future.

Long Body –Two Batteries

For redundancy, the long bodies have two batteries. How does the charging work? The battery selected is connected to the charging system. The battery not selected is trickle charged at a lesser rate. There are fuses in the tailcone for the trickle charge through a diode bank. There are a total of three fuses.

Therefore, it is a useful practice to switch to the other battery before each departure. You can read how to keep both of your batteries charged and desulfated in our Product Review this month of the BatteryMINDer.

It's good practice to make the battery selection before starting. If you should switch batteries enroute, to a battery that is dead, that is NOT GOOD.

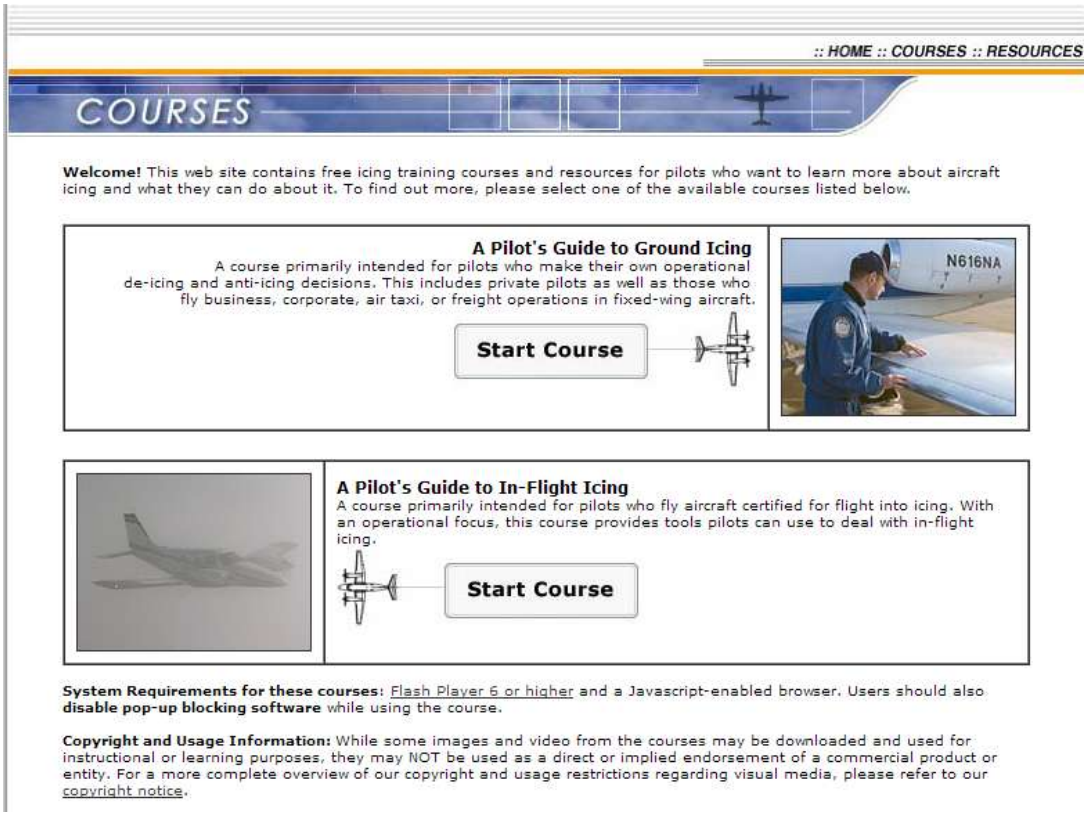
Appraise Your Mooney's Value

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

FAA Courses

http://aircrafticing.grc.nasa.gov/courses.html



These course are a little "dry" in the presentation, but they contain valuable information regarding "Ground Icing" and "Inflight Icing". So, these are pretty relevant for flying this time of year!

You've got be very careful if you don't know where you are going, because you might not get there.

Regarding And Then There Were None – The handbook on how to kill general aviation:

1) Fence off the airports so that no one can enter
2) Establish secure areas around the airfield and harass anyone that stops to watch the planes
3) Expand class B airspace to include all metro areas
4) Increase fees, fuel cost, and cost of new aircraft

John H

Hi guys.....Thanks again for the usual good read. "Line up and wait" is in fact a recent photograph taken at my home town, Gisborne, New Zealand. I think one of only two airports in the world where a railway line crosses an airport. The trains crossing the runway have to give way to us. The control tower controls the trains as well. The airplane is a DH82 Tiger Moth ZK-BAL and is current. Gisborne's claim to fame is that it is the first city in the world to greet the sun every day! Enclosed, a photo of my little buzz bomb from Kerrville. Best wishes to all.

Granville J

Regarding Gabriel Silverstein's Articles -- I'm a MAPA Safety Foundation Clinic instructor, and Gabriel attended our last session up in Owensboro, KY (OWB) a few months ago. Suffice it to say that he's not your typical Mooney pilot that attends these clinics, so he stuck out just a bit. . . That said, the guy is sharp as a tack, absorbed everything we put out like a sponge, and asked all the right questions. His description of the Customs incidents was alarming

MooneyDude

A Mooney Flyer Correction: The article by Gabriel Silverstein brought some letters to us regarding the definition of a Complex Aircraft. The definition is as follows: A complex aircraft has a constant speed propeller, retractable landing gear, and movable flaps. So the fact that a Cirrus removes control of the constant speed prop from the PIC has no bearing on it as a Complex Aircraft.

Response from Gabriel: To clear up a poorly worded paragraph, the Mooney was the only complex airplane of my finalist three under consideration (complex as defined by FAR 61.1, with retractable gear, controllable pitch prop, etc.). The Cirrus was the least complicated operationally, with both fixed gear

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RICH MIXTURE - What you order at another pilot's promotion party

and no pilot-controlled propeller pitch. The Columbia was in between with fixed gear, but a pilot-controlled prop governor like the Mooney. At one point I used the word “complex” in a prosaic manner, not as per the definition in the FAR.

"What Can Help Impact The Decline": A few things actually, My 2 cents are:

1. Convince Uncle Sam to provide a similar level of subsidy to Avgas manufacture (like ethanol production) thus reducing Avgas cost at the pump.
2. Stop the export of cheap aircraft- read C150/152, Ercoupe, 172 etc. Restore/rebuild keeping the cost of ownership/operation down.
3. Modify/Update FAR Sec. 61.113 — Private pilot privileges and limitations: Pilot in command. - Allowing for compensation, be it in fuel/time, etc. to pilots for simple, non commercial activity, i.e.: flying a friend to his relatives and letting them pay for all expenses if need be. Or allow said pilot/owner to without question charge his employer for expenses to move passenger(s) or equipment to common location required to fulfill common "goal/location" etc... as long a incidental to travel- Non Commercial activity. Once and a while.
4. Develop "Hold Harmless" agreements throughout GA. Rides, Airport, Public/Private, Maintenance, MFG etc.....
5. Utilize Airport space more efficiently, increasing tie downs/hangars. Low cost housing geared towards cheaper fixed cost of ownership.
   I bet somewhere there's a container ship full of surplus portable hangars, no longer needed for the war effort. Likely to be given away. I could go on for days...

One last point- I'm 40+ yrs old and one those guys that "knew I had to be a Pilot" in grade school. General Aviation is an American Icon that will die if one thing is changed- fuel cost, Period! Just like auto fuel, if it cost more we use it less. If that’s not corrected, and in a big way General Aviation is over.
DB

Having read the January 2014 issue of the Mooney Flyer I would like to offer the following comments.

A truly excellent publication with very up to date information from real experts.

I have one minor disagreement with a point made by Cliff Biggs in his article on single engine IFR.

He claims that aircraft owners must follow the instructions for continuing airworthiness on their batteries with regard to battery capacity testing, claiming that the ICAs are part of the batteries approval. Not so fast. Instructions for continuing airworthiness are ONLY required for STC'd or field approved items. They are not required for original equipment approved items, as those are covered by the OEM (Mooney) maintenance manual. There is an argument to be made that the small number of Mooneys that were certified with the battery specific portion of Part 23 on the type certificate, that might require testing. The vast majority of Mooneys were certified mostly or entirely under CAR 3. With both variety of type certificates only the specific items required under the listing of airworthiness limitations are mandatory.

Only the most recent models of Mooneys even have this section. The point being that only the FAA can add requirements beyond what the original type certificate called for, and that has to be done by AD or

by a regulations revision. No component manufacturer can add new requirements. The FAA has specifically approved all batteries of the same size and weight for your aircraft via advisory circular, and Mooney specifically added the recombinant gas batteries to their approval with an engineering drawing.

If you read the battery manufacturer's ICA, again only the one item that is airworthiness limitations list mandatory items. Concorde makes a circular argument to imply that capacity testing is mandatory, but it is not, except for a very small number of aircraft that have been certified in the last 25 years or thereabouts.

Having said all that, battery capacity testing is a good idea. You do not need the over $1,000 tester that the manufacturers sell (unless you are flying for hire or are a repair station, and the operations specifications on your operating certificate call for it). You can approximate the load to what you must draw for day or night IFR, (nav and anti-collision lighting, one nav/com, perhaps transponder) with either your landing light or other items. (do not use pitot heat as it can overheat without airflow on it). Time how long until your battery drops below the specified minimum voltage. If you have more than 30 minutes, you meet the minimum required capacity by regs. You do not need to have the 80 percent of rated battery capacity that the battery manufacturers claim as a minimum.

Yes, having that full 80 or 85% the ICAs call for is nice, but not required by regulation for the majority of Mooneys. I've gone on too long, but just wanted to point out that what is recommended for optimal equipment and maintenance is not necessarily required by regulation.

Regards,
Kelly M

TOTAL HOURS FOR ALL AIRCRAFT TYPES

Part 61	Part 141
105	70

Break down by aircraft type	
Part 61	
105.6	Airplanes
49.1	Gliders
7.4	Lighter than Air
122.2	Rotorcraft
Part 141	
71.2	Airplanes
7	Gliders
1.3	Lighter than Air
67.9	Rotorcraft

Why So Many Hours for Pilot Certificate?

Safety Alerts to Keep you Alive by Jim Price

In December, 2013, the NTSB issued its five newest Safety Alerts. These are aimed at helping pilots develop strategies to prevent accidents. These alerts follow five that were issued in March, 2013 which focused on the most frequent type of general aviation accidents. "Knowing these accidents can be prevented is why 'General Aviation Safety' is on our Most Wanted List of transportation safety improvements," said NTSB Chair Deborah Hersman. "At a time when many people are putting together their list of resolutions for the coming year, these five Safety Alerts remind pilots, mechanics and passengers of the basic safety precautions that they can add to their checklists to ensure a safe flight for all on board."

The five December 2013 safety alerts are summarized below:

1st: Check Your Restraints. Restraints can fail because they degrade with age, UV exposure and use. Prior to July, 1978, aircraft manufacturers were not required to install shoulder harnesses. You should consider installing shoulder harnesses because they can prevent occupants from impacting the interior during a crash. Although restraints are required to be inspected annually, it can be difficult for aircraft owners and maintenance personnel to detect degradation.

WHY THE CONCERN?

The NTSB has investigated several accidents in which restraint systems did not perform to their design standards because they had degraded or in which shoulder harnesses were not installed on the aircraft.

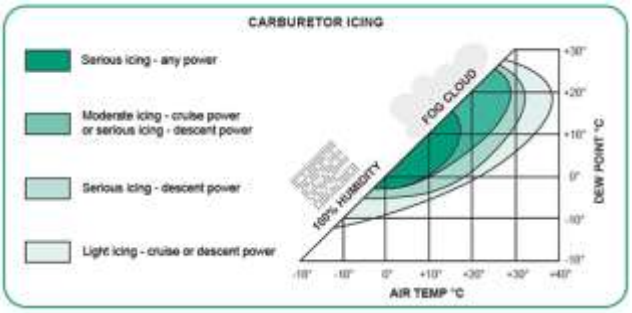
NTSB HISTORY:

On March 28, 2013, about 1115 mountain standard time, a 1960 Mooney M20A, N6018X, made an off airport forced landing near Wikieup, Arizona. The private pilot and his son (in the back seat) sustained serious injuries; the pilot's wife in the right front seat, sustained fatal injuries. Shoulder harnesses were not installed in the aircraft.

A commercial pilot died when his Taylorcraft F-19 airplane impacted terrain after takeoff and his shoulder harness failed. The passenger's restraint system remained intact, and she sustained serious injuries.

What can pilots and aircraft owners do?

- Know the history of the restraints in your airplane. Have the restraints examined by a mechanic or the manufacturer to verify that they meet required specifications. Replace the belts if the examination deems it necessary.
- If your airplane was designed without shoulder harnesses, (prior to July, 1978), install them if possible.



2nd: Engine Power Loss Due to Carburetor Icing.
Pilots need to learn to detect and deal appropriately with carburetor icing. READ MORE

WHY THE CONCERN?

From 2000 to 2011, carburetor icing was a cause or factor in about 250 accidents. On average, carburetor icing causes or contributes to two fatal accidents per year.

Accident evidence shows that some pilots fail to recognize weather conditions favorable to carburetor icing and inaccurately believe that carburetor icing is only a cold or wet-weather problem. Some pilots do not use the carburetor heat according the aircraft's approved procedures to prevent carburetor ice formation. They also fail to recognize and promptly act upon the signs of carburetor icing.

NTSB HISTORY:

A pilot was flying an American Champion 7GCBC airplane in the traffic pattern when the airplane lost engine power. During the ensuing attempted forced landing, the pilot failed to maintain a safe flying airspeed, which resulted in an inadvertent stall and crash and the pilot dying. Analysis of GPS and engine monitoring system data revealed that, as the airplane was rolling out on the downwind leg, the throttle was reduced, and the airplane then continued on the downwind leg for at least 14 seconds. As the airplane turned to the base leg, the first attempt to actuate the throttle occurred along with an increase in manifold pressure, which continued to fluctuate as the airplane flew straight toward the open field. An examination of the engine and airframe revealed no anomalies that would have precluded normal engine operation. A carburetor icing chart showed that the weather conditions were conducive for moderate icing at cruise power or serious icing at descent power. Therefore, data indicate that, as with the accident described above, it is likely that the pilot did not apply carburetor heat during the flight, and the airplane experienced a loss of engine power due to carburetor ice.

What can pilots do?

According to AOPA, you should check the temperature and dew point for your flight to determine whether the conditions are favorable for carburetor icing. Remember, serious carburetor icing can occur in ambient **temperatures as high as 90° F** or in **relative humidity conditions as low as 35 percent** at glide power.

The "Danger Zone".

Although you may have heard that only a specific set of conditions lead to carb ice, the truth is that most of us fly inside the "danger zone" on a regular basis. Carb ice can form over a wide range of outside air temperatures and relative humidities. While the word "icing" typically brings to mind blustery winds and frigid conditions, carb ice can form when outside temperatures are as high as 100 degrees

Fahrenheit with 50 percent relative humidity. At the other end of the spectrum, the risk doesn't go away until the humidity falls below roughly 25 percent and/or the outside air temperature drops well below freezing. In other words, carb ice can form at pretty much **any time, in any phase of flight.** Icing is most likely to occur—and to be severe—when temperatures fall roughly between 50 and 70 degrees F and the relative humidity is greater than 60 percent. As engine power is reduced, airflow is restricted and ambient heat is lessened. This makes low-power operations, like descents, considerably more prone to carb ice. REFERENCE AOPA SAFETY BRIEF

What can pilots do? REFERENCE FAA Bulletin, June 30, 2009

- Refer to your approved aircraft flight manual or operating handbook to ensure that you are using carburetor heat according to the approved procedures and properly perform the following actions:
- Check the functionality of the carburetor heat before your flight.
- Use carburetor heat to prevent the formation of carburetor ice when operating in conditions and at power settings in which carburetor icing is probable. Remember, ground idling or taxiing time can allow carburetor ice to accumulate before takeoff.
- Immediately apply carburetor heat at the first sign of carburetor icing, which typically includes a drop in RPM or manifold pressure (depending upon how your airplane is equipped). Engine roughness may follow.
- Consider installing a carburetor temperature gauge, if available.
- Engines that run on automobile gas may be more susceptible to carburetor icing than engines that run on Avgas.

3rd: "Armed" for Safety: Emergency Locator Transmitters. ELTs can save pilots' and passengers' lives by helping search and rescue (SAR) personnel locate a downed aircraft after an accident and even minimize risk to SAR personnel during SAR operations. However, these lifelines can be rendered inoperative if the switch position is improperly set or if the ELT becomes detached from the aircraft. READ MORE

WHY THE CONCERN?

Several NTSB accident investigations have found ELT switches in the "off" position (thus, not "armed") and ELTs detached from the airplane, which rendered them inoperable. In these cases, the inoperability of the ELTs delayed the aircraft's discovery and/or the rescue of occupants. The NTSB is concerned that these examples of ELT issues represent a more widespread problem that could endanger the lives of pilots and passengers who survive an aircraft accident in a remote area.

NTSB HISTORY:

An airline transport pilot and four passengers died and four passengers sustained serious injuries when a de Havilland DHC-3T airplane impacted terrain. A search for the airplane was not initiated until hours after it had crashed because its overdue status was not noticed right away, and no signals from its ELT were received. The investigation found that the ELT, which was secured by a hook-and-loop style (Velcro) mounting mechanism, was dislodged from its mounting tray and detached from its antenna, thus the radio signals from the ELT were not transmitted. If the ELT had remained attached to its antenna, its signals likely would have been detected soon after impact, and rescue personnel would have received timely notification of the accident and its location and could have reached the survivors hours earlier.

A private pilot died when a Cessna 182D airplane collided with terrain about 35 miles from the flight's intended destination. After the flight failed to arrive, concerned family members contacted the FAA. SAR operations commenced, but the wreckage was not located until a week later. The 121.5-MHz ELT switch was found in the "off" position.

What can pilots, aircraft owners, and maintenance technicians do?

- Confirm that the ELT unit is "armed" and properly installed in the aircraft.
- Follow manufacturer instructions for properly securing the ELT and inspecting the fasteners.
- Remember that ELTs secured to the aircraft via Velcro-style mounting mechanisms can be susceptible to strap looseness and misalignment during installation and inspection. Further, the retention straps may degrade over time due to wear, vibration, temperature, or contamination, and they may not properly restrain the ELT during an accident.
- Consider upgrading to a 406-MHz ELT, which the NTSB has long recommended be mandatory due to its superior accuracy when reporting position, timeliness of alerts, and ability to provide aircraft identification and other information.

4th: All Secure, All Clear. Forgotten and unsecured items within an aircraft can lead to accidents or incidents as they move during flight. These items can include tools used on the aircraft before flight; aviation-related items such as GPS units, clipboards, and antennas; non aviation-related portable electronic devices (PED) such as personal phones and computers; and personal items such as jackets or carry-on items. READ MORE

WHY THE CONCERN?

The NTSB has investigated numerous accidents involving forgotten or unsecured items, each of which serve as an important reminder about the critical need to ensure that items are accounted for and secured before flight.

NTSB HISTORY:

A portable XM-GPS antenna migrated to the tail section of an Extra EA-300 airplane and jammed the elevator bellcrank, which resulted in an uncontrolled descent into terrain. The pilot and passenger died.

A tool, which the pilot had used just before the accident flight and had not accounted for, interfered with the control stick, causing it to jam. The Czech Aircraft Works Sport Cruiser collided with terrain during takeoff, but the pilot was not injured.

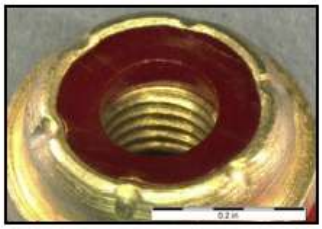
The pilot's personal locator beacon became lodged in the bellcrank for the elevator torque tube and jammed the XtremeAir airplane's pitch control, minimizing the range of available movement. The pilot was able to land the airplane, but it bounced and ran off the runway. The pilot was not injured.

What can pilots do?

- Inspect the airplane for forgotten or misplaced tools before takeoff. Remember that even experienced pilots and aviation maintenance technicians can make mistakes. If you have recently had maintenance performed on your airplane or if you have conducted maintenance yourself, this action is especially important.

There are some people who, if they don't already know, you can't tell them.

- Conduct an inventory of cockpit items before takeoff, including the number of PEDs, GPS units, and antennas on board the aircraft, and ensure that they are secured. This also helps to assure their availability throughout the flight.
- Account for all flight gear and personal items such as hats and jackets before and after each flight, and ensure that they are secured.
- Incorporate all of these checks into your preflight actions.
- Remind passengers during the preflight briefing of the importance of item security and proper stowage of PEDs and personal items.



A new nylon insert.

An old, degraded nylon insert.

5th: Proper Use of Fiber Self-Locking Nuts.

Some pilots and maintenance personnel do not adequately inspect or install fiber or nylon self-locking nuts. These nuts have fiber or nylon inserts incorporated into their construction to provide tight connections that will not loosen under vibration. READ MORE

WHY THE CONCERN?

Fiber or nylon self-locking nuts' ability to provide a tight connection degrades with each use. They may not meet the minimum prevailing torque value, which can lead to loose connections or, eventually, liberate hardware and lead to accidents and incidents. Trying to save money by reusing a fiber self-locking nut has caused degraded insets to fail to hold the nut on the bolt-leading to a crash.

NTSB HISTORY:

A P-51 Mustang airplane collided with the airport ramp in the spectator box seating area following a loss of control during the National Championship Air Races. The investigation found that the trim tab attachment screws could be rotated through the nuts by hand, and the fiber inserts were visibly worn and displayed the full thread form. The degraded nuts allowed the screws to repeatedly loosen at race speeds, and, during the accident flight, led to aerodynamic flutter of the elevator trim tab and the subsequent loss of airplane control. The commercial pilot and 10 people died and about 64 people were injured.

An experimental, amateur-built Air Command Elite gyro copter collided with terrain following an in-flight separation of a control system rod. Post accident examinations revealed that the bolt and lock nut used to attach the control rod in the cyclic system were missing.

What can pilots and maintenance technicians do?

- Comply with instructions in your aircraft's applicable maintenance manual or Federal Aviation Administration Advisory Circular 43.13-1B, chapter 7, section 4, if there is no guidance on nut reuse in the manual.
- Confirm that the specified hardware is installed correctly.
- Ensure that adequate torque is required to spin the nut on the bolt. Be aware that binding in the assembly may produce a false indication of nut effectiveness.
- Throw out a nut that can be rotated on the thread by hand.
- Ensure that sufficient thread protrusion exists.

- Do not run a tap through the fiber or nylon insert because doing so removes the locking capability of the nut.

In case you missed 'em, here are the five Safety Alerts that were published in March 2013:

Avoid Nonoperational Use of Portable Electronic Devices (PEDs) Before and During Flight.

Nonoperational use of PEDs by pilots (including cell phones, smart phones, tablets, and laptop computers) can divert attention from activities necessary for safe operations, both in the air and on the ground. READ MORE

WHY THE CONCERN?

PED-related distraction has played a role, or at least been present, in accidents involving improper fuel management, loss of positional awareness, loss of automation mode awareness, collision with obstacles, and loss of control.

NTSB HISTORY:

On December 30, 2007, a Cirrus Design SR-22 impacted terrain during a low-altitude fly-by of a friend's residence. The pilot was speaking on his cell phone during the fly-by when he encountered turbulent wind conditions and initiated a rapid climb; the airplane experienced an accelerated stall, resulting in loss of control. The NTSB found that the pilot's diverted attention while using his cell phone contributed to this accident. The pilot was killed.

What can pilots do?

- Recognize the potential for distraction arising from nonoperational use of PEDs.
- Avoid nonoperational use of PEDs during preflight planning and preparation to focus your attention on these critical tasks.
- Turn PEDs off before engine start if they have no operational purpose during the flight. Ensure that PEDs that are used in flight are not used for purposes other than those intended to support the flight.
- Establish your own sterile cockpit procedures to reduce distractions. Avoid the nonoperational use of PEDs when the sterile cockpit applies.

Pilots Need to Manage Risks to Ensure Safety. Although few pilots knowingly accept severe risks, accidents can result when several risks of marginal severity are not identified or are incorrectly managed. These can compound into a dangerous situation. For more information, CLICK HERE

What can pilots do?

- Develop good decision-making practices. Recognize and cope with stress. Understand the safety hazards associated with human fatigue and try to eliminate fatigue contributors in your life.
- Understand the risk management takes practice.

- Be honest with yourself and your passengers about your skill level and proficiency. Don't allow external pressures, such as the desire to save time or money or the fear of disappointing passengers influence your thought process.
- Be honest with yourself and the FAA about your medical condition.
- Plan ahead with flight diversion or cancellation alternatives. Brief your passengers about the alternatives before flight.

Is Your Aircraft Talking to You? Listen! Some pilots do not pay attention to indications of aircraft mechanical problems, which could lead to in-flight emergencies and accidents. Powerplant system or component failure is the third most common defining event for GA fatal accidents. Non-powerplant system or component failure also ranks high on the list. For more information, CLICK HERE

NTSB HISTORY:

A commercial pilot was killed when his Beech 36 with a newly overhauled engine, struck a tree and then the ground during a "loss of power" emergency landing at night. The pilot reported low oil pressure problems to a mechanic. The mechanic told the pilot that it was important to have the problem checked because there might be a problem with the engine overhaul. The pilot continued to fly the aircraft but continued to have the same problem. The investigation determined that the airplane lost engine power after the crankshaft fractured due to improper maintenance performed during the recent overhaul.

A private pilot was killed when his Cessna T210R lost power after takeoff. Previously, the pilot had experienced at least two engine power loss events in the airplane in the past 18 months. During one such event, the pilot had passengers on board when the engine lost power during the takeoff roll. The pilot rejected the takeoff and taxied back for another takeoff, which was successful. The pilot attributed the power loss to a cold engine or a too-rich mixture. The accident investigation found debris in the fuel manifold valve which had interrupted the fuel flow.

What can pilots do?

- Don't let the desire to save time or money influence your desire to fly with a potential problem.
- Listen to your aircraft.
- Get it fixed completely – not a patch.

For more information, CLICK HERE.

Reduced Visual References Requires Vigilance. Two thirds of these accidents are fatal. They typically involve spatial disorientation or Controlled Flight into Terrain (CFIT). Even in VMC conditions, flights at night over areas with limited lighting (black holes) can be challenging. For more information, CLICK HERE.

What can pilots do?

- Get an official preflight weather briefing and use all appropriate sources to make timely inflight decisions.
- Don't let external pressures influence you. Be honest with yourself and your passengers about your skill level and proficiency. Don't allow external pressures, such as the desire to save time or money or the fear of disappointing passengers influence your thought process.

- Seek training and be proficient. Understand the limitations of your aircraft.
- Don't allow a situation to become dangerous before deciding to act. Be honest with the air traffic controllers. Do you need help? Ask for it.
- Manage distractions. Fly the airplane.

For more information, CLICK HERE.

Mechanics: Manage Risks to Ensure Safety. Mistakes while performing maintenance and inspections have led to in-flight emergencies and fatal accidents. Reference the Beech 36 fatal accident in #8. For more information, CLICK HERE.

Prevent Aerodynamic Stalls at Low Altitude. Use timely recognition and appropriate responses.

THE PROBLEM

While maneuvering in VMC, many pilots fail to avoid conditions that lead to a stall, recognize the warning signs of a stall onset, and fail to apply appropriate recovery techniques. For more information, CLICK HERE

More safety alerts not addressed in this article can be found at the NTSB website, http://www.ntsb.gov/safety/safety_alerts.html.

Interesting topics that were not included in this article include:

- Meteorological Evaluation Towers (MET) (Mar 2011)
- Child Passenger Safety on Aircraft (May 2010)
- Aircraft Inflight Icing (Dec 2008)
- CFIT in VMC (Jan 2008)
- Thunderstorm Encounters (Oct 2006)
- Aircraft Ground Icing (Dec 2006)
- Prevent Rote Callouts (No date indicated)
- In Cockpit NEXRAD Mosaic Imagery (No date indicated)

Fly Safe,

Jim

There are some people who, if they don't already know, you can't tell'em

PHIL CORMAN

Gentlemen, Start Your Engines

Questions and techniques for starting Mooney engines run rampant. The only piston-powered airplane that we know of, that was a no-brainer to start every time, was the M20L powered by a Porsche engine modified for aviation use. It was always a cinch to fire up because it had basically the same electronically controlled ignition and fuel injection system as a modern car. You can see posts all the internet about what works well when starting an engine. It's aso a frequent source of discussion on the ramp. Our POHs specify the starting procedures, but they don't always work as advertised. Moreover, each engine is slightly different. There probably is no single procedure that works for each specific engine. It varies by engine, engine wear, ignition, ambient conditions, and more. We'll focus on the three major start conditions:

- Cold Start
- Hot Start (within 15 minutes to 2 hours since shut down)
- Flooded Start

Further, we will cover the more popular Mooney engines, namely Lycoming's O360 & IO360, and Continental's TSIO-360 & IO-550.

Before we start, it's interesting to note that aviation fuel is also culpable. The very qualities that prevent vapor lock at high altitudes and temperatures make the fuel unwilling to vaporize easily at startup. All engineering typically involves designing around conflicting objectives; very true in this case.

During a Cold Start, it's likely that there will be very little fuel in the lines. So it is easy to assume that we should give the engine a little more fuel to start. This is especially true for the fuel hungry IO550s. In general, it might also be helpful, especially in colder weather, to prime a bit more and/or run your low boost pump either while cranking or after it catches.

On **Hot starts**, the culprit is vapor. If that is the case, running cool liquid fuel from the tanks through the lines, especially injection lines, can clear the vapor. This is easy on the IO550. Simply set the Mixture to Idle Cutoff so that the fuel goes through the lines and returns to the tank, thereby not flooding

Save Your Engine *with this one simple tip: Do NOT let your engine run above idle for the first 15-20 seconds after start. Most engine wear takes place during this time as the oil warms up and gets pumped to where it's needed.*

the engine. Fuel injection hot starts suffer from two main problems.

1) Most systems, particularly Lycoming's Bendix injection setup (rarely found on the Continentals), don't meter the fuel very accurately at low engine speeds. 2) The fuel-delivery lines reside on top of the engine, directly over the cylinder fins. Heat rippling off the just-shut-down engine, boils the fuel out of the lines. Moreover, many of the Continental installations have the throttle body — which also houses a pair of spool valves that meter the fuel to the injector spider — installed above the engine. That's just asking for vapor formation. 3) At low engine speeds, carburetors tend to meter fuel better than the fuel-injection setups.

Here are a few things that might help with a Hot Start as well. When you shutdown, park with your nose into the wind, Open your engine cowls, and even pop your oil panel. All of these can help in dissipating the heat caught in your engine compartment.

The culprit in **Flooded starts** is too much fuel in the cylinders.Therefore, the starting procedures specify cranking at Mixture Idle Cutoff and advancing the Mixture slowly until the engine starts.

If you are having any start issues, consider these three key things before attempting creative start procedures : **1) Battery** – Is it delivering starting current/voltage? **2)** Are your **Spark plugs** operational? **3)** What about your **Magnetos**? Recently, my Magneto checks were perfect, but at annual, I had them serviced. There were a few issues and now the Eagle starts like a charm. When's the last time your Shower of Sparks or Impulse Coupler was checked? Be nice to your starter. Don't crank it too long. The POH specifies thirty (30) seconds, but I think that is too long. Your mileage may vary.

Lycoming O-360

Many think the venerable O-360 is the most reliable engine in the Mooney fleet. It's the only carbureted engine we cover in this article.

For Cold Starts, The M20C Ranger Owners Manual specifies *Mixture Full Rich, *Prop Full, *Turn Boost Pump On, *Pump throttle twice to prime the engine, *Set Throttle to ¼" Open, *and crank. An alternative procedure is : *Start the engine in "Idle Cut Off" and *Boost Pump "ON". *As the engine starts, advance Mixture to rich, but then lean the engine right away to prevent plug fouling and *Turn the Boost Pump OFF. These work well with a hot or cold engine.

For Flooded Starts, the Owners Manual specifies *Throttle Full, *Mixture Idle Cutoff, *Fuel Pump Off, *Retard Throttle as the engine starts, *Slowly advance the mixture to Full Rich.

Lycoming IO-360

For Cold Starts, the POH specifies *Throttle ¼", *Prop Full, *Mixture Rich, *Fuel Boost On to establish pressure, then Off, *Mixture to Idle Cutoff, *Crank, *then advance Mixture slowly to Rich.

The above works well in practice, but one tip would be to run the Boost pump 30 seconds before cranking in order for the fuel to vaporize.

For Hot Starts, the POH specifies *Fuel Boost Pump Off, *Throttle slightly open, *Mixture Idle Cutoff, *Crank, and *Move the Mixture slowly to full rich. A useful alternative is as follows: Throttle to approx. 1000 RPM, leave the Throttle and Mixture alone, then Crank.

For Flooded Starts, the POH specifies *Fuel Boost pump Off, *Throttle Full, *Mixture Idle Cutoff, *Crank, *Mixture Full forward when engine starts.

Continental TSIO-360

For Cold Starts, the POH specifies *Throttle Full while priming, then *Retard to 1/4" Open, *Prop Full, *Mixture Rich, *Primer On, *Crank. Owners report that this procedure works well.

For Hot Starts, *Fuel Boost Pump Off, *Throttle slightly Open, *Mixture Full Rich, *Crank, *Advance throttle to 1000-1200 RPM. We have two (2) owner reported alternative Hot Start procedures. Owner procedure #1: *Fuel Boost Pump Off, *Throttle slightly open (3-4 turns), *Mixture Idle Cutoff. *When engine starts, hit the Primer Switch for a second and quickly move Mixture to Full. Owner Procedure #2: *Throttle full, *Mixture cutoff, then *Clear any vapors with 15 seconds of Low Boost. *Advance the throttle 1/4, *Mixture Rich, *1-2 seconds of Prime, and *Crank while advancing the throttle. The engine should start when the throttle is about 1/2 open. *Reduce power and Voi La.

A leading MSC suggests: *Mixture RICH, *Throttle Cracked, *Prime a short burst, then *Crank.

For Flooded Starts, owners report that this procedure works well: *Fuel Boost Pump OFF, *Throttle Full, *Mixture Idle Cutoff, *Crank, *Retard Throttle to 1200 RPM, *Mixture Rich.

Continental IO-550

For Cold Starts, the POH is straightforward. *Throttle FULL OPEN, *Prop FULL FWD, *Mixture RICH, *Low Boost Pump for 5-10 secs. In a discussion with Tom Rouch of Top Gun Aviation, he told us that those 550s love a lot of fuel on starts. The POH procedure, using the Low Boost didn't work for my Eagle, so instead, I use turn the High Boost Pump ON for 4-8 seconds. (Don Maxwell says the Low Boost Pump is the little girl pump). With this technique, my 550 starts cold every time. So a takeaway here might be to err on the side of giving this engine more fuel. Remember that you must have the Mixture RICH or the fuel will simply recycle back to the fuel tank. More on this in the Hot Starts.

Cranking should be limited to less than 30 seconds, with several minutes between cranking.

For Hot Starts, the POH specifies *Throttle IDLE, *Mixture FULL Rich, *Low Boost ON. For Hot starts, the pilot is generally vexed by considerations such as vapor locks. On the IO-550, if the POH method does not work, here is another method that works for many owners. If vapor lock is occurring, *Set the Mixture to IDLE cut off and *Run the low boost pump. This runs fuel right through the vapor lock, probably on the fuel lines from the spider to the cylinders. Because you have the Mixture in Idle cut off, you are not flooding the engine, but simply running cool fuel through the lines. Then you can *Start the engine. If the engine is stumbling, *Turn on the Low Boost Pump until it smooths out.

For Flooded Starts, the POH specifies *Throttle to ½" Open, *Mixture Idle Cutoff, *Low Boost for 8-10 seconds, *Engage ignition and *Slowly advance the mixture towards Rich until the engine starts. This procedure is pretty universal with the exception of running the Low Boost pump, which in our tests, was optional.

ROGER - Used when you have no idea about what else to say

Starting The F-100 Super Sabre by Jim Price

The F-100 Super Sabre, nicknamed “The Hun”, had a large chamber to accept a large gas-generating cartridge. When ignited by electrical current, the expanding gas from the black powder-like pyrotechnic cartridge drove a starter turbine which brought the engine up to a self-sustaining RPM via a drive system. This eliminated the need for heavy and bulky ground starting units. There was a drawback. The starter cartridge spewed out a characteristic dense cloud of choking black smoke, which was often mistaken by inexperienced ground crews for an engine fire.

Five B-57s during a cartridge start. You get the idea . . . effective, but lots of smoke!

The powder charge for the ground start came in a big sealed can, and upon opening and extracting the cartridge, one could find two small metal tabs on the bottom of the cartridge. These tabs were the electrical contact that fired the cartridge when the pilot moved the throttle outboard on start, before bringing the throttle forward. As soon as a tiny RPM registered on the tachometer, the pilot would bring the throttle around the horn to feed fuel and engine ignition to the rapidly-building engine speed.

Sometimes the big metal receptacle that held the gas generator cartridge would get so dirty from repeated use that the metal tabs wouldn't make contact. In this case, the cartridge would refuse to fire, and the crew chief would give the starter receptacle a good healthy whack with a wooden wheel chock, usually curing the powder charge of any reluctance to detonate.

When on a cross country flight, F-100 pilots would often take a starter cartridge along with them as an alternative starting means.

Let the journey begin:

In the early 70's, then-Captain John Green flew his F-100 into the Marine Corps Air Station, Naval Air Station Millington, 16 miles north of Memphis. NOTE: NAS Millington was decommissioned in 1998 and turned over to the city. It's now Millington Regional Jetport, (KNQA).

Captain Green was met by a couple of young Marine ground crewmen, who asked what kind of plane he was flying. When he told them it was a F-100 'Supersabre', this only generated puzzled looks.

One of the ground crew said, "Sir, I don't think we have tech data on this bird. What do you need for start . . a huffer . . or just electrical?"

"Neither one," John replied, with his tongue in his cheek. "If I can get, oh, about six of you guys to give me a push, just to start me rolling, I'll just 'pop the clutch' and get the engine started that way."

That generated more and more doubtful looks, but, "Uhhh, yes sir," was the final comeback. What else would a young Marine say?

The 'Hun' was a pretty finely balanced aircraft on the two main gear struts, so when you tapped the toe brakes, the nose strut compressed so much the nose would dip, just like the hood of cars used to dip when being clutch-started after a similar push from young friends.

Now six young Marines were standing at the ready, still doubtful, but not about to question a pilot on 'procedure.'

"Just get me going at about a fast walk," John called down from the cockpit. "I'll wave you all clear when we're fast enough, pop the clutch on this baby, and be on my way. And thanks for the good turnaround!"

With six Marines pushing, they quickly got the bird up to a brisk-stepping speed. John waves his arms, and the Marines warily stood well clear.

The nose dipped as John 'popped the clutch.' There is a huge cloud of choking black smoke as the starter cartridge fired, and the Hun's engine lit off – spinning up. Off went Captain Green to the end of the runway, leaving six puzzled Marines in his wake.

The Thuderbirds flew "The Hun" from 1956 to 1964

National Geographic 2013 – Great Planes, Episode 12: F-100 Super Sabre - VIEW the *YouTube* Video HERE

The Ten Biggest Lies about Piston Engines

We came across another great article from Mike Busch. This was written a while ago, but is very interesting and in keeping with our theme of engines this month.

Lie #1: Lycoming Engines are better than Continental Engines

Here's what these engines have in common: 1) Similar design and metallurgy, 2) horizontally-opposed air-cooled designs with bolt-together aluminum case halves and bolt-on cylinders with sandcast aluminum heads screwed onto nitrided steel barrels, 3) fixed-timed dual magneto ignition systems, and valve trains with overhead rocker arms, shrouded hollow pushrods, and hydraulic valve lifters, 4) similar compression ratios, similar RPM red-lines, and similar power-to-displacement ratios. And both have comparable records of reliability and longevity.

Says Mike Busch, "Certain problems tend to occur more frequently in one brand or the other. **Continentals** have a lot more crankcase cracks, head-to-barrel separations, and premature valve guide wear problems than Lycomings. On the other hand, **Lycomings** suffer stuck and broken valves and spalled cams and lifters much more often than Continentals."

Lie #2: Turbocharged Engines are troublesome, inefficient and costly

This might be true if operated incorrectly. But if operated properly and at higher altitudes, they are extremely reliable and cost on average $10/hr more than a non-turbocharged engine.

Lie #3: Multi-viscosity oils offer superior engine protection and longer engine life than single viscosity oils

Multi-vis does NOT provide better protection than single viscosity oil. The reason is that multi-vis oils are made by starting with a thin, single-weight oil stock and adding man-made polymers called "Viscosity Index improvers", that increase viscosity as temperature increases. However, such VI improvers are not lubricants. There's more oil in a quart of single-vis than multi-vis.

The best protection is to fly regularly, duh? Have you heard that before?

Lie #4: If you can't fly regularly, at least turn the prop by hand every week

Does this "redistribute the oil?" Sure it does! It scrapes oil off the top of the cylinders and accelerates its flow downhill. The same is true of cam lobes and lifters.

Lie #5: The less oil an engine burns, the better

For a cylinder to make it to TBO, it must be protected from metal-to-metal scuffing by the piston rings. This protection comes from a film of oil that coats the cylinder barrel and causes the rings to "hydroplane" instead of scuffing the barrel.

Now, if the cylinder barrel is properly coated with oil, it's inevitable that some of this oil will be burned up in the combustion process. That's why a certain amount of oil consumption is perfectly normal.

Lie #6: The cooler the engine oil and cylinder head temps, the better

Oil temperatures lower than 170°F present a different problem...namely, that the oil is probably not reaching the boiling point of water at the hottest point in its travel. Why is this important? Every time we shut down the engine, a slug of water condenses inside the cooling engine and runs down into the oil sump. If we don't get rid of this water the next time we fly, there will be a progressive water build-up inside the engine. That water will mix with the sulfur and nitrogen byproducts of combustion to form sulfuric and nitric acid.

Regarding cool CHTs, ethylene dibromide doesn't do its scavenging job unless combustion temperatures are fairly high. That's why lead fouling problems tend to emerge when CHTs are below about 300°F.

Lie #7: Aggressive leaning results in burned valves and detonation

Lycoming has long authorized leaning to peak EGT at any cruise setting up to 75% power. TCM authorizes leaning to peak EGT up to 65%, and its latest recommendations endorse lean-of-peak operation for many big-bore engines, provided the engines will run smoothly when operated that lean.

Lie #8: It's bad to cruise at high manifold pressure and low RPM ("oversquare")

Operating at minimum RPM and maximum MP (within the allowable envelope) actually helps your engine last longer. Low RPM operation provides numerous benefits: better cylinder compression, lower frictional losses, improved propeller efficiency, cooler-running valves, lower EGTs and TITs, and a quieter cabin.

Lie #9: Continuing to fly an engine beyond the manufacturer's recommended TBO is dangerous, illegal, and could void your insurance coverage.

Published TBO has no legal significance for the majority of us who fly under FAR Part 91. Your aircraft insurance carrier could care less whether your engine is past TBO. Your policy simply requires that your aircraft and its pilot be legal under the FARs

Lie #10: A factory Reman is better than a field overhaul, because only the factory offers a true "zero-timed" engine.

A Factory Reman does come with a zero-time Logbook. When an engine is overhauled, you essentially have the same engine with new parts where the old parts were no longer serviceable. In a Factory Reman, parts are picked at random from the factory. You are only assured that they are serviceable. In short, the "zero-time" logbook that comes with a factory rebuilt engine in no way implies that the engine is "newer" or "better" than a field overhaul

Click Here to read the entire article.

I wish I had an answer to that because I'm tired of answering that question.

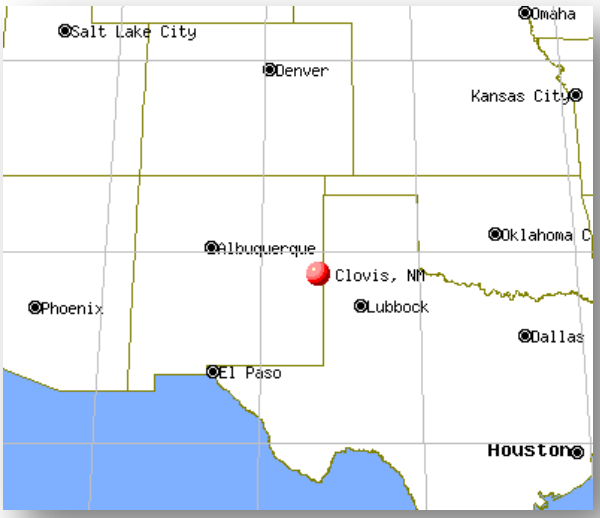
Confessions of a Pilot

Fly the Airplane, Not Vice Versa

by Greg Ellis

Flying can be a fun and rewarding endeavor as we all know. It can also present with its own set of unique challenges to any pilot, regardless of skill level.

Flying in instrument conditions is no exception and adds a higher level of risk, but also, in my opinion, a higher level of reward. Coupled with the growth in technology available to pilots and aircraft, this risk can increase exponentially if we do not seek out proper re-currency training to maintain a high level of proficiency.



In today's age of technology, there are quite a number of valuable tools available to pilots to help complete even the most extreme of instrument flights in some of the harshest conditions. However, I submit that while some of these advances are truly helpful, some can also be a hindrance and a distraction to even the most seasoned pilot. Some accident reports show that even a highly skilled aviator can find him or herself in a bad situation.

I have flown with friends who have some of these distractions on board. I include in these, XM radio, iPads, iPhones, large MFD's, CD or radio through the intercom, etc. While some of these devices are important to help carry out a flight, others can be a serious distraction. Even the autopilot can cause pilots to become complacent. I actually heard of a pilot who flew long cross country flights quite frequently. It was his modus operandi (MO) to depart, when he was at cruise altitude, he would turn on the autopilot. Then he would proceed to read a newspaper or magazine. This is not exactly what I would call flying an airplane. On the contrary, the airplane is flying him.

With this said, I would like to relate a story to you of something that happened to me a few years ago. It made me realize how important it was to keep my head in the game while flying and not to let other distractions get in the way.

My wife and I were flying out to Santa Fe, NM from Fort Worth, Texas on a nice Spring Day. Our ride was our 1963 Mooney M20C. We have made this trip before and were familiar with the terrain and the

challenges this flight can present. The plane was flying along just fine. The engine was purring away and never missed a beat.

We were at 10,000 feet MSL on an instrument flight plan in VMC but about to be IMC. While scanning my instruments I did a cursory scan of the engine instruments and noticed the CHT's rising quickly and the oil pressure was falling rapidly. I told my wife that we had to turn back to land and fortunately one of my procedures I do every flight is, to continue to evaluate where I would land if I should have an engine failure. Well, this was one of those times when that procedure came in very handy. We were 5 miles past Clovis, New Mexico and they have a very nice airport there. I actually said under my breath while passing Clovis, that it would be a great place to land of we really needed to. I told the controllers what was happening and we immediately turned back and limped into Clovis as the engine quit running just over the threshold. Tear down showed a lot of metal in the engine. Turns out the engine was hungry for a bearing and just decided to eat one.

Turns out the engine was hungry for a bearing and just decided to eat one.

Up until the point of being on final to the runway at Clovis, the engine ran and sounded just fine. Never skipped a beat until final when it started to run a little rough and then quit over the threshold. If it was not for the scanning of the engine instruments, it may have been too late to get to an airport once the engine actually told me that something was wrong. If I had been distracted and not paying attention to the task at hand, it may have been too late.

The airplane spent the next few months in Clovis getting a new engine. Fortunately, my wife and I were able to finish our trip by car which afforded us the opportunity to see things in Eastern New Mexico that we would have just flown over and never knew existed.

What I learned from this experience and what I would like to pass along is how important it is to continue to scan your instruments and make sure you include your engine instruments in your scanning and not just the 6-pack or, for the more technologically advanced aircraft, the big screen in front of you. If I had been distracted by music, or reading a magazine, or gazing out the window because the autopilot was flying me instead of me flying the airplane, we would have had an off airport landing or worse. Instead, we had a nice controlled landing at an airport. As some may already know, there is very little beyond Clovis, NM before you get to Santa Fe.

So include your engine instruments in your scan. Do not let distractions of any kind get in the way of the successful completion of a flight. Leave the XM-radio and the CD music for home or in your car. Enjoy your flying for what it is… One of the most amazing things we can do in life. And always remember to Aviate, Navigate, and Communicate….In that order.

We loved Greg's story. If you agree, please send us your story. We'll publish it so that we can all learn from each other. Just CLICK HERE to send us your story.

Learning to Fly

by Geoff Lee, CFII

The capability to fly an airplane provides access to one of the greatest freedoms that one can experience in life. The number of individuals on the earth that possess this skill is extremely minute.

These days, I only accept a few Private Pilot students each year. They must be totally enthusiastic students that are experiencing various difficulties with their previous instructors and training. They usually seek me out after abortive starts at the training process or subsequent to long periods of no progress. They do need the ability to commit the time and the expense it takes to get the task completed. One teaches for the satisfaction and the challenge, certainly not for the pitiful remuneration. Referrals are my usual source of students. Students must have the written test completed and own or have Carte Blanche access to a suitable aircraft. This all sounds kind of "choosey" I am sure, but I personally commit myself totally to only one certification student at a time. That student has all my time and attention until the task is done with no scheduling issues. The capability to fly at least twice a week is a necessity. I have found that "weekend only students" tend to drag out the process and they either quit for lack of funds or get discouraged by the slow progress of the training. Sporadic flight training is not productive and rarely successful.

The three private pilots that I have trained to certification this year have all purchased simple aircraft in which to learn. They then have sold or are in the process of selling the craft after receiving their certificates. One purchased a Mooney 252 after learning in a 1957 172. The financial benefits of owning as opposed to renting a plane will yield in the order of $6000 to $8000 in saved rental fees during the training process. All three of the aircraft were purchased for less than $20,000, but needed some level of radio upgrade. Depending upon the fervor and regularity with which the student engages in the training process a person will spend $3000-$4000 on the instructor, assuming the instructor has reasonable competency. The resulting pilot will have an airplane to fly at the end of the training process and not be bound to the expensive rental involvement in order to use the certificate for any flying purpose. The following is an example: This Cessna 175 was purchased for $18,000. It needed some radio work, a DG, PTT and an intercom. The 4 place plane has a 175 HP smooth 6 cylinder Continental engine with less than 2000TT and 500 SOH on the engine. It cruises at about 115 KTS on 8.5 GPH. It's not a Mooney for sure, but a perfectly safe and usable craft for a new pilot and 2-3 passengers. While a student, my new pilot flew this plane for about 60 hrs. He is currently searching for a machine with a little more speed and a useful load in excess of 1,100 lbs.

Finding the right instructor can be a hit and miss process as evidenced by the history of all three of the private students that I have trained this year. One of them had over 40 hours of instruction and had not soloed. The other two had given up after nearly 20 plus hours of dual and showing minimal progress. prior to engaging me, all had had more than one instructor. The individual circumstances were the result of inadequate overall guidance from the instructor and their own inability to allot the necessary time to the task. They are all intelligent, busy individuals that were not given

sufficient information relative to the mechanics of the “learn to fly” process by any instructor.
We all learn differently and at different rates, but the regularity and spacing of training periods is a major key to a successful outcome. The “occasional lesson” is not time or money well spent for initial flight training. The successful process has a rhythm and pace that makes it easier for both the instructor and the student to produce progress. It is the responsibility of the instructor to actively conduct and control that rhythm and pace by establishing effective rapport with the student. Revealing the learning style of the student is a major part of the instructor’s task. During the training process both parties experience a broad range of human emotions from joy and excitement to irritation, disappointment and sometimes anger. The pair will either become friends or in the worst case, spend useless time and money expending negative energy. In the latter the relationship should be terminated forthwith because it is non-productive.

The cockpit is an abominable classroom, particularly for the student; incredible visual distraction, too many things to do simultaneously, sometimes with two people talking directly in your ear both at the same time.

Most people can do two things at the same time, but the poor “would be pilot” is now required to do at least four things while trying to communicate in a cryptic style of speech or listen and understand some unfamiliar communication provided by a disembodied voice, speaking at twice the normal rate in same shorthand style. Welcome to multi-tasking and aviation communication. Mastering aviation speak is difficult for most people. It seems to take about 10 hours for the new student to get a decent grasp of the jargon and realize most aviation communication boils down to stating ” who you are, where you are, and making a request”.
Some students try to talk too rapidly, others stuff in as many words as possible to convey a message and most people are initially daunted by the fact that everyone else in the air and on the surface is listening to their clumsy style. It has the aspect of public speaking on a grand scale. I know that any controller can tell how long you have been flying just by your communication style. (*That insight is actually a blessing, because he knows when he needs to help and guide more than usual*)
I normally write down, on flash cards, what the controllers will say and what words the student should respond with for most situations; this I provide before any lesson that will involve communication with the tower or en route controllers.

Personality styles have always interested me. They range from the very nervous student who will barely turn his head and grips the yoke as if to squeeze water out of it; to the totally aggressive, no fear, go get ‘em person who wishes to hold the yoke with both hands and wrestles the plane as if taming a wild horse. In between the two extremes is the very reserved, very intelligent, introvert who is not going to let you know that he does not know what the heck this is all about. He has surmised that it cannot be much different than driving a car. I always look at the students’ hands on the yoke, the grip intensity gives the first clue to their tension level; my goal is to get the student to a two or three finger grip, even when doing stalls.
The use of accepted aviation terminology sometimes requires giving the student some guidance to the verbiage prior to a lesson involving flight maneuvers. I learned that lesson a long time ago when I was teaching a very intelligent and articulate lady. During a maneuvering lesson I casually requested a 90 degree right turn, and that is precisely what she proceeded to do, in a 90 degree bank! I am now careful when requesting turns. My right arm seems a little longer than my left. The extension occurred when teaching the fore mentioned lady how to land an aircraft. The lady would consistently flare the plane 15 feet above the ground and I would repeatedly request that she let the plane descend a little further prior to commencing the flare routine. It led us both to a tense interchange> After a long and minimally

productive session, I terminated the lesson. We approached for landing and I was determined to keep my teeth tightly clenched and observe. We descended below her usual flare altitude and I thought, 'at last she's got it'. Within about 3 feet and still nose down, my hand flew to the yoke and just barely managed to save the nose wheel from damaging the tarmac. Upon inquiring about her thought process, she informed me that she had determined to "let the damn thing land itself".

We discontinued our relationship from that point. The husband of this student later informed me that she was unable to drive a car and that she had similar communication difficulties with several driving instructors, including him. Also, that she had a depth perception issue. I learned a great deal from the whole experience.

Aviation does not invite people into the flying community. A person needs to have a specific curiosity, a strong desire, and a high level of endeavor, to want to become a pilot. Flight schools do not broadly advertise. They seem to have little interest in helping a prospective pilot understand the total training process. For the average small flight school it is more about renting aircraft than producing pilots. Trying to penetrate and follow the vague path to becoming a pilot requires a guide and mentor. We should all make an effort to encourage and assist interested individuals of any age, to follow this path to the great freedom that we enjoy.

SECTIONAL CHART - Any chart that ends 25 nm short of your destination

February 8: Sebring (SEF)

March 8: Fort Pierce (FRP)

April 12: Flagler (XFL)

April 5: A Vintage Mooney Group Fly-In, hosted by Mert Bean to beautiful **Laughlin, NV** (the Las Vegas on the Colorado River).

Fly-in for the weekend or just drop in on Saturday morning for some ramp camaraderie followed by a BBQ hosted by Landmark Aviation.

Go to http://www.vintagemooneygroup.com/VMGWest/index.htm to register for this free fly-in. All Mooneys are welcome.

February 7-9: **Mooney Summit** - Because of the generosity of Dr. Ron Dubin, we are holding the first Mooney Summit on Feb 7-9th in Panama City. The purpose is to help better the breed and a social event for Mooney pilots and their spouses. Wings credit seminars will take place along with scheduled IPC's or BFR's, shopping, dining, pampering and beach activities are available for the non flying partners. The cost of the event is free, but the space is limited. If you would like to participate, please send an email to sillyquestions@aviating.com. I look forward to seeing some of you! **Mike Eliott**

CLICK Here for details at TheMooneyFlyer.com

Send your questions for Tom to TheMooneyFlyer@gmail.com

Question 1: What parts of a Mooney wear out faster that other parts. This was asked because the owner felt he could keep an eye on these areas between Annuals.

Interesting question since we see as much as a 50 year spread of models each year. As the fleet gets older, we see new items of wear due to age and high flight hours. I will pick areas of high wear since there are many parts involved.

The first and most common to all models are the shock discs. While they can pass minimum tests, the best procedure is to jack the plane and see if you can move the gear fore and aft. If so, this shows that the "rubber" is getting hard and not expanding when the weight is off the discs. While not a real safety of flight issue, hard discs can result in harder landings, a rough taxi, transfer of shock throughout the airframe, possible cracks in the structure, maybe fuel leaks, etc.

There are several areas of high wear I want to highlight.

A. Nose gear mechanism: We do a lot of maintenance on nose gears. There are several rod ends, bushings, bolts and shims that all wear at the same time. The steering horn is the highest wear item. Next is the large pivot bolt and bushing; then the rod ends. Worn nose shock discs can add to these problems and this is why Mooney does not allow any wear gap on the nose. If you feel like the nose is squirrley, doesn't track straight, or maybe bounces too much, you should check the nose for "looseness".

B. Tail looseness: Many of you have seen Mark or myself walk up to the tail and lift up on the trailing edge of the rudder to check how much looseness there is at the tail attach point. The "book" way we do this is to put the plane on jacks so it is solid. Then we put a piece of masking tape across the nav lite lens or on the rudder. We then measure the movement up and down. Depending on the model, we are allowed .08 to . 10 movement. As a rule, the older models are .08 and the later are .10.
I'd like to stress that you should check the service manual for the year and serial number. You cannot assume that even the same model will be the same. I want to stop here to mention that in some places like the tail, shock discs,etc., Mooney gives specific limits we must observe on other places, like rod ends. It is a judgment call on the part of an A/P or IA.

Back to the tail: If a limit has been exceeded, we usually change the tail attach link, bolt, and bushing. This is the link that attaches the aircraft trim mechanism to the tail trim screw (jackscrew). The jackscrew itself may be worn and sometimes we remove it, replace the bearings and shim if they are worn. On occasion, we replace the jackscrew. The other tail wear area is the upper attach points. These are two small bolts and bushings. Sometimes, if worn, we have to replace the attach points. If you grab the outboard end of the horizontal stabilizer and try to move it fore and aft, you are allowed .25 inch movement. I have repaired one that moved over 1/2 inch. Very scary.

Finally, the next high wear area is in the flight control system; all the rods with rod end bearings. The ones most exposed get the most wear. After the aileron, rudder,and elevator attach points, the next is the rudder and elevator rod ends inside the tail. All rod ends are only lubricated with TRI-Flo, an excellent lubricant.

For all of the above, go to your lubricant chart in the service manual for the grease and lubes to use. In my opinion, once a year is not enough lubing. At least, buy a can of TRI-FLO and spray any rod end you can access about every three months and especially after flying through rain. Rod Ends have gotten very expensive and they are not easy to find.

Question 2: I hear about a "jackscrew" in the tail of a Mooney that can fail if not properly lubricated? Can you educate this Mooney owner on this issue?

Refer to the lubricant section of the Service Manual for the grease spec. The only way to access this is to remove the vertical panel under the horizontal stabilizer which will give you access to the boot that covers the jackscrew. Remove the screws needed to slide the boot back and extend the jackscrew as far as you can. Remove the old grease with a cloth and then apply new lube by hand. Move the jackscrew through a cycle and make sure that the screw has enough grease. Once a year should be good for this jackscrew.

Now I have told you how to reduce my income by extending the life of all those rod ends since we replace dozens and dozens every year.

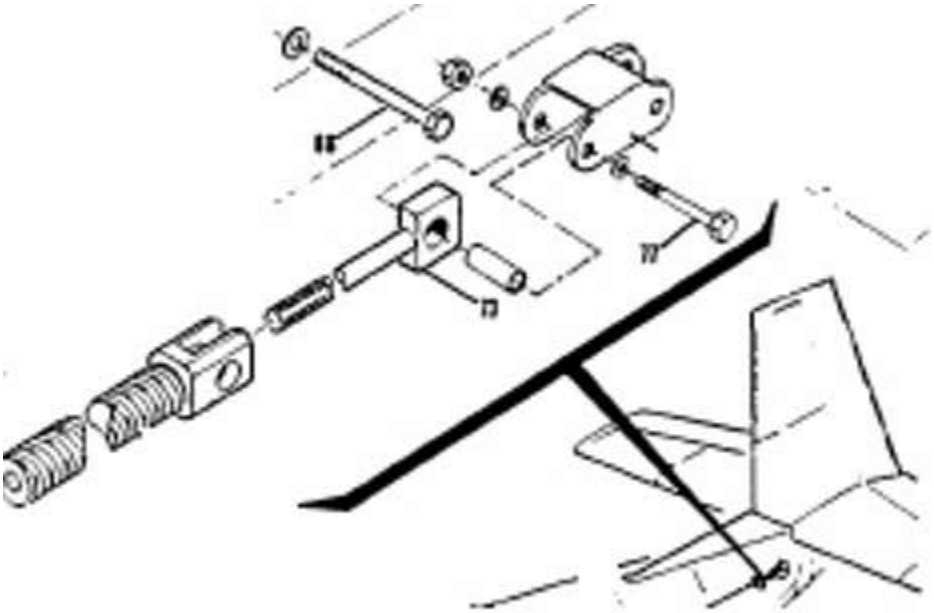
See you next month! Fly Safe!

Tom

Empennage Free Play

by Michael Riter (Service Manager at LASAR)

We see a lot of aircraft with excessive play in the empennage. The empennage free play inspection should be performed every annual. The most common area of play is up and down play at the rudder. First, solidly block the aircraft at the tail skid. Open the inspection panels on the tail of the aircraft and inspect the empennage attachment bolts. Make sure they are tight. If the bolts are loose, further inspection of the attaching hardware and attachment fittings should be done. You are looking for wear on the bolts, bushings, bolt holes and fittings. Worn parts should be replaced.



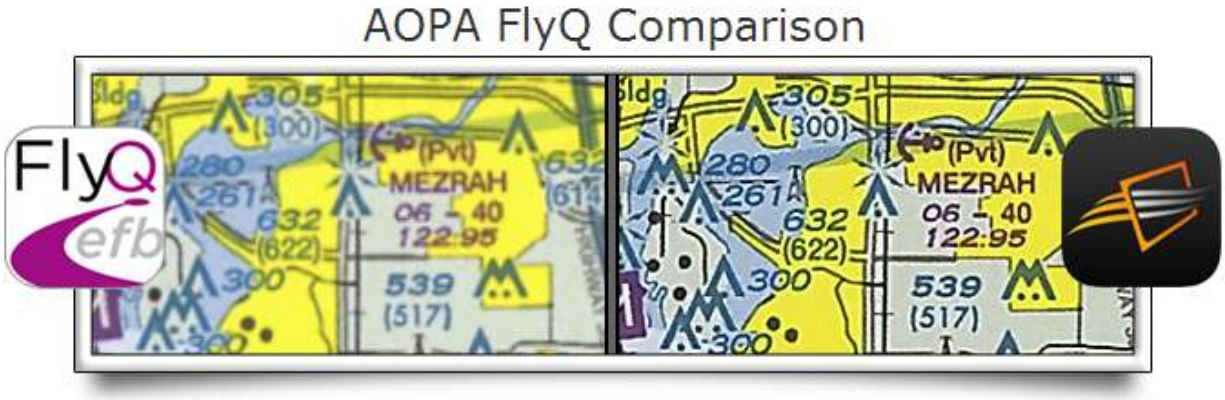
To check up and down play at the rudder, lift up on the bottom of the rudder or stinger and check for excessive movement. Movement over 5/16" is considered excessive. Lifting up on the elevator, while doing this check, relieves system pressure and requires less force to lift the empennage. This play is in the trim system, most commonly in the bolts, bushing and trim link (saddle fitting). Play can also come from the trim jackscrew. If you watch while someone lifts up and down, you can tell were the play is coming from. Play in the jackscrew is a lot more involved and it is recommended that a certified professional deal with this issue. More often than not, replacing the bolts, bushing and saddle fitting will bring the play within acceptable limits.

We also need to check the stabilizer for play. Fore and aft play at the stabilizer tip is checked by standing at the stabilizer tip and applying a forward force and rearward force. Excessive play can also be the result of sheared rivets on the forward upper stringer. Up and down play is checked by applying an up and down force at the stabilizer tip. If there is play here, it's usually in the bolts and bushings where the empennage attaches to the airframe and pivots.

The picture on the previous page shows the kind of wear the bolt takes. Any excessive movement should be investigated further and corrective action taken. We want your aircraft in good, safe condition for flight.

February, 2014

iFly GPS introduces Hi-def Charts



Adventure Pilot, manufacturer and developer the iFly GPS, shown at left, has introduced High-Definition VFR and IFR Charts on the company's iPad and Android products. Subscriptions start at $69.99; a fully loaded IFR option is available for $40 more.

READ MORE

NextGen Fund Will Help Finance Avionics through Federally Guaranteed Loans

The Aircraft Electronics Association (AEA) announced yesterday it has reached a partnership agreement with the NextGen GA Fund to help aircraft owners find "quick, affordable financial incentives" for upgrading their avionics. With the 2020 equipage deadline, there has been concern within the general aviation community over the cost to upgrade current aircraft to meet the ADS-B mandate. The NextGen GA Fund was established by Congress as a public-private partnership with the aerospace industry to finance NextGen avionics installations.
Read more at http://www.flyingmag.com/avionics-gear/nextgen-fund-will-help-finance-avionics#BgOeSr2EIvsPsBRq.99

FltPlan.com launches free iPad Go app

January 21, 2014 by General Aviation News Staff

FltPlan.com has officially released its new free iPad app, FltPlan Go.

The app adds many features for users of FltPlan.com, according to company officials.

The new app features include breadcrumbs that leave a trail on the screen to show where the user has flown; rubber-banding of routing in flight planning; ability to create and edit routes offline; and expanded FBO airport information including fuel prices.

In addition, features include a downloadable world map; both Clarity ADS-B and XM WX capabilities; free geo-referenced airport approach and taxi charts; and helicopter routes, TAC charts, SUAs for offline use. Users can also write notes on multiple approach charts and save those notes on the charts. All these features will work online and offline.

FltPlan's current legacy app will remain available for use and the company will continue to support and maintain it, company officials noted.

READ MORE HERE. For more information: FltPlan.com

AOPA Mobile Flight Risk Evaluator

Download the Air Safety Institute's Mobile Flight Risk Evaluator to clarify the gray areas of making a go/no-go decision. By taking into account your total flying experience, including recent flight hours, how much experience in a given aircraft, weather, terrain, and runway information, this app gives you an assessment of how much risk you may be undertaking for a particular flight—helping you to be more realistic about your skills and proficiency.

- It's free—to anyone!
- Great tool for students, instructors, and veteran aviators
- Offline and online access
- Store performance data for one or more aircraft
- Automatically download real-time airport weather and runway information
- Objective risks, safety recommendations, and explanations
- Helps craft your own personal minimums
- Make better, safer choices

Watch the video HERE

New Garmin Portable Transforms Pilot App into Backup Panel

The Garmin Pilot mobile app just got a whole lot better with the rollout of a portable Garmin ADS-B and WAAS GPS receiver with an integrated attitude sensor that greatly expands the

application's capabilities. Garmin says the new GDL 39 3D portable unit brings ADS-B traffic and weather information to the Garmin Pilot app while the GPS and attitude display transform it into a backup panel. The Garmin Pilot app is available for iOS and Android devices.
READ MORE

Savvy Aircraft Announces Nationwide Pre-Buy Program

Savvy Aircraft Maintenance Management, Inc. (Savvy) now offers a nationwide pre-buy management program that helps avoid the many pitfalls that can plague prospective buyers. "Aircraft sellers are typically represented by brokers, and Savvy's pre-buy program is designed to provide a similar level of professional advocacy for buyers," said Savvy's founder and CEO, Mike Busch. For a fixed fee, Savvy provides professional management through all stages of an aircraft pre-buy. The service includes logbook review, selection of a qualified and impartial maintenance facility with expertise in make and model, arranging a test flight to verify aircraft and systems are functioning properly, specific guidance on the scope and detail of the pre-buy examination, review of the pre-buy and test flight findings, and coaching the buyer through the final negotiations with the seller. "Most aircraft buyers understand it's essential to conduct as much due diligence as possible when making a major purchase," said Busch. "But they often run into problems like being unable to find a competent and unbiased shop, overpaying for the examination, and lacking a source of professional and objective advice throughout the process." READ MORE HERE

Unleaded Aviation Fuel Initiative Gets Funding Boost

Congress passed a $1.1 trillion government spending bill which includes money for the Piston Aviation Fuels Initiative (PAFI), an FAA plan to start the transition to high-octane unleaded piston aviation fuel by 2018.
READ MORE

"It is the loose ends with which men hang themselves."

-- Zelda Fitzgerald, American writer

Product Review: **BatteryMINDers**

Aircraft batteries are a pilot's best friend, but can also "ground" your Mooney if you don't give your battery tender loving care. That's where the BatteryMINDer comes in.

BatteryMinder 12V and 24V models are designed specifically for use on all types and sizes of Aviation-specific batteries. All of the BatteryMinders are designed for use with either Sealed batteries (AGM-non liquid) or Flooded batteries (liquid with filler caps) as manufactured by Concorde, Gill, and EnerSys' Odyssey and Hawker for use on non-commercial aircraft.

An aviation-specific battery is different than auto or marine types. To maximize the cranking amps and reserve capacity while trying to minimize weight and size, aviation battery manufacturers use a higher specific gravity (SG) electrolyte in their aviation batteries. This "hotter mix" (more H2SO4 [sulfuric acid], less H2O [water]) means it will be overcharged whenever a non-aviation charger is used. Automotive chargers are set at a higher output voltage (typically 13.8 -14.6 volts). That's more than aviation batteries can handle. The voltage settings and charge rates for aviation BatteryMINDer® models were chosen after conferring with aviation battery makers in the U.S. If you own a Concorde battery, it's nice to know that BatteryMINDer is Condord's only approved maintenance charger.

BatteryMINDer® aviation specific models incorporate a Plug 'n Run feature, and includes full-time, fully automatic pulsed desulfation circuitry (not high voltage), designed to safely dissolve sulfation build-up on the battery's storage plates. This restores lost cranking power, and extends battery life. They also feature a temperature compensating sensor to ensure that batteries can be safely charged and maintained for extended periods of time in extreme temperatures. Without this type of temperature sensing, batteries will be under-charged in colder temperatures, and over-charged in high temperatures.

Whether you use a battery maintenance charger or not, never use a non-aviation battery charger for your Mooney (see above). Here at The Mooney Flyer, we plug our batteries into BatteryMINDers when we don't plan to use the plane for a while. Remember, that after it has restored your battery to a full charge, it goes into a "maintenance mode", which desulfates the battery as well. You CANNOT leave it plugged in too long… It cannot damage your battery.

The Concorde 24V battery in my Eagle was installed in January of 2003. We started using the BatteryMINDer five years ago when we purchased her. We have averaged slightly less than 90 hours per year over that period. In our sample of 1, the BatteryMINDer pays for itself.

Mooney Instructors Around The Country

California

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

Don Kaye (Maser CFI) located in Palo Alto, CA, (408)-249-7626, Website: www.DonKaye.com

Florida

Mike Elliott (CFII) located in Tarpon Springs, FL, Contact 317-371-4161, Email mike@aviating.com
Quality instrument & commercial instruction, transition training, ownership assistance, plane ferrying

Georgia

Jim Stevens, USAF, Col, (ret), CFII. Atlanta, Ga area. 404-277-4123. Instrument, commercial, IPC, BFR, transition training. 20 year owner of 1968 M20F.

South Carolina

Wallace Moran – Charleston SC, 843 822 9725, Email wallace.moran@gmail.com
A NAFI Master CFI with extensive Mooney experience. He is also an FAA Designated Pilot Examiner and has been awarded the FAA Wright Brothers Master Pilot Award. Wallace is a retired airline pilot and Mooney owner.

Texas

Austin T. Walden, Lubbock & Abilene, Texas 432-788-0216, Email AustinWalden@gmail.com
PhD, Specializing in Models C thru J, www.WaldenAviation.com