



THE GRAPEVINE



There is a very fine line between "hobby" and "mental illness."

Vol. XXX,



No. 5, May 2011

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May Meeting And Program

NOTICE: Our May meeting will take place at 7:30 P.M. on the 5th of May. The meeting will be at the terminal - KLVK.

Calendar:

Month	Date	Speaker	Topic
Mar	3	Chris Lower	100LL & Additives
Apr	7	Paul Milner	AvGas & MoGas
May	5		

Our May Program will feature Craig Catto. Catto Propellers has been in the business of design, analysis and manufacturing of composite propellers for the Long EZ, Cozy, Velocity, RV-4, RV-6, RV-7, RV-8, RV-9, Lancair and many other homebuilt aircraft for many years. With a history of proven reliability, almost 1000 propellers have been made for applications from a 1hp electric motor up to a turbo charged 350hp IO-540. Several world recognized speed and altitude records have been set and still stand with Catto Propellers.

For those of you that have not seen one of the Catto Composite Propellers, they are far more than just a wood core propeller with fiberglass on the outside. Craig has built some of the most unusual propellers in the world. Bar-non. His props have been on some of the most unusual planes in the world as well. From the some of the smallest aircraft to some of the highest-flying propeller driven planes ever flown as well.

His story of building experimental propellers over the years will be one of the most interesting stories you will hear in a long time. He has provided propeller for many of the planes flown by members of our chapter and I'm sure that those that have his propellers look forward to hearing Craig.

It would be great if members that have Catto propellers **bring their planes to the meeting on the 5th** to show the appreciation to a true craftsman of the aviation community.



Mailbag:

DUES:

Mark Palajac will be accepting checks for renewing membership. Checks should be made out to EAA 663. You can give them to Mark at the meeting or mail them to his home at:
25 Jacaranda Drive, Fremont CA 94539.

Chapter Airplane Survey:

60 Members responded
 5 former members responded
 3 have missing medical's.
 26 builds in progress
 62 flying aircraft
 21 of the flying aircraft are GA (Cessna's, Pipers etc)
 18 of the flying aircraft are RV's
 9 are renting to fly
 3 Sonex flying
 2 LongEZ flying (another recently sold)
 2 Lancair's flying

Builders:

- 9 RV's
- 3 Q200's
- 2 Glasair's
- 2 Velocities
- 2 BD-5's
- 1 P-51 Replica
- 1 Bokow Jr
- 1 Delta Dyke
- 1 Lancair
- 1 DR-109
- 1 Personal Cruiser
- 1 CR3-LSA
- 1 Murphy Renegade Spirit

I will continue to gather data, so if you have not responded to the survey, take a few minutes and send it in and the totals will be updated in a future newsletter. - Jeffrey

April 2011 Minutes

GENERAL MEETING, EAA 663,

4/7/2011 Livermore Terminal

Called to order 7:31 PM by President Ralph Cloud.

Other Board Members in attendance were Dave Dent, Vice President, Mark Palajac, Treasurer and Kirk Knight, Secretary.

GUESTS: Frank Mitchell joined us. He's from Hayward, but can claim to have built the first and second experimental homebuilt aircraft in Canada.

Ronald LaPell has a hangar at LVK now, and was past president of EAA 62 in San Jose. Welcome Ron! Tim Uphouse is a glider pilot from Oakdale who is seemed to be excited to be surrounded by people with engines in their planes.

FIRST FLIGHT: Alan Supan logged his successful first flight of N527X, his Sonex 3300, on April 4. He reported a 30 minute flight with gentle turns, a nice landing and minor squawks. Alan sported the Sonex Smile (tm?) in recounting his flight experience and noting that it's very easy to land.

TREASURER'S REPORT: Mark announced we have 75 members. The balance prior to start of the meeting was \$4,919.87. Report moved and accepted.

MINUTES: Minutes from last month had inflated our membership to 700, rather than 70. Also requiring correction was that the contest allows 2 incorrect guesses. Minutes, with corrections, were moved and accepted.

YOUNG EAGLES: Trina and Dave Anderson had a family tragedy with two deaths in the family. April Young Eagles event will be scrubbed. Sully Sullenberger was unable to fly Young Eagles at LVK on March 26th. Check the Chapter website to enter names.

TOOLS: Bob Farnam announced that the bead blaster now has new medium grit glass in supply.

WEBSITE: If you're a member but don't have access email Brad for username and password to web@eaa663.org. To send pictures to pictures@eaa663.org

NEWSLETTER – Jeffrey Larson announced this month's mystery plane is a Marine Solner 505 with 2 winners. A drawing awarded Spruce LED flashlight to Bob Farnam. Jeffrey is working to get a possible FBO sponsor for a SPOT locator.

ANNOUNCEMENTS: April 21st Board Meeting at Ralph's house in Livermore. May 5 Chapter meeting.

CHAPTER ANNOUNCEMENTS:

Chapter BBQs will be May 15, June 1, July 9, August 9 (decided at board meeting) and September 17.

Minter Field will have annual fly in event on May 14 themed "Salute to Veterans." Before Memorial Day in late May Beale will have an open house.

EAA 663 is now a member in good standing with California Pilots Association.

FAA line examiners are very active, looking more closely at experimentals. They report higher percentage of problems with experimentals than GA. Check Guy Minor's report on safety comparison. We'll try to locate this.

Ralph also reminded pilots of the danger of runway safety incursions. Don't trust what the tower says. San Jose, per Ronald Lapell, has had a WINGS program for safety. We may want to do a FAAST event with Gene Wheeler.

Dave Dent is following up on the observation platform updates. The recommended new deck material is called ASAK not TREX. It's much stronger, will support 18" centers.

AviationFuelClub.org is exploring placing 91 octane fuel depots around the country without ethanol. Meetings at Reid Hillview.

MAY MEETING SPEAKER will be Craig Catto of Catto Propellers. Bring your Catto powered plane before the meeting to the terminal and we'll take photos with Craig.

MEMBERS FORUM:

Frank Mitchell is joining the chapter. He wants to participate in Young Eagles. He's helped several past Young Eagles to become A&Ps. He's proposing to work with vice principal at Castro Valley High to set up an independent studies program. He flies kids out of San Lorenzo schools, too.

Ray and Chuck have finished their starboard wing and will be starting on the port wing. There will be a wing-mounting party for a Lancair 4P on Friday at hangar 234 about 11am.

Jack Burke has been making progress on his scale P-51 design. He's deep into controls, building ailerons, elevators and flaps. He discovered the aileron controls for P-51 are unique. He brought a scale model he'd built of the unique controls for ailerons in a P-51 assembled onto a mock spar. The details are fantastic.

Kirk Knight mentioned that members seeking a machine shop of their own should check out www.Techshop.ws. TechShop is a 10,000 sq ft facility in Menlo Park where you pay \$125 a month in membership to access dozens of sophisticated machine tools. They have 3D stereo printers, welders, 4 axis CNC, computer controlled plasma cutting tools,

etc. There's a new one opening in San Francisco. It might be an idea to get one located in Livermore.

SAFETY TALK: Dave Dent transition training

Just because you fly a 182 don't think you are ready to fly an RV. And just because you fly a canard airplane don't think you're ready to fly a Velocity.

I encountered this recently. I did a pre-purchase inspection for the buyer of a Velocity. He thought because he had been flying a LongEz for 6 years with 500 hours, he could handle a Velocity with no problems. I told the buyer to go to the factory and get a checkout. But he didn't.

So he takes off, goes around the pattern to do his first landing and drops it in from about 10 feet above the runway. He broke the gear but didn't know that he had broken it. He went around a couple more times and the fourth time he finally decides that a factory checkout would be a good idea. By this time he's caused \$4-5,000 in damage to the airplane.

I say this as a flight safety issue. Get checked out. Get someone who is an instructor in the airplane, not merely an owner or experienced. I don't do this anymore and recommend the factory because they know their aircraft.

When you get to buying a new airplane think many times before getting in the plane and flying it without transition training. It doesn't matter if you've flown another tail dragger before, or canard, or fast glass or hot aluminum.

Safety, safety, safety. Think again and again.

Ronald Lapell reiterated Dave's safety emphasis. Ronald has been a flight advisor for EAA 62. He advised that when you are flying an airplane for the first time to think like a test pilot. When he is checking pilots out on a new aircraft he expects pilots to be as disciplined as a test pilot at all times. Don't be a Howard Hughes – you won't be that lucky! Ronald would gladly provide test plans before you buy or fly any airplane that is new to you.

Ralph brought up Dick Van Grunsven's efforts on safety. There is EAA commission looking at transition training headed by Mike Seeger. Pilots who have had transition training have 10% of the normal accident rate than without transition training. We also have 663 flight advisor Barry Weber for flight test pilot discussion and seminars.

Break at 8:14 Back at 8:27

THIS MONTH'S GUEST:

Paul Milner, spoke about future aviation fuel. Paul has flown a Cardinal for 36 years. He works for a major petroleum company with expertise on aviation fuel as manager of business development. He was at Sun 'n Fun and gave a first person account of the damage from tornado to 70 aircraft including 3 Zenith and a new Cessna Caravan. See details on his aviation fuel presentation in newsletter.

MEETING ADJOURNED 9:49PM

Minutes respectfully submitted by Kirk Knight,
Chapter Secretary

Minutes

BOARD MEETING, EAA 663,
4/21/2011 Cloud International Terminal
Called to order 7:46 PM by President Ralph Cloud.

Present Ralph Cloud, Mark Palajac, Dave Dent, Bruce Cruikshank, Bob Farnam, Brad Oliver, Kirk Knight, John Goldsmith

TREASURER'S REPORT: \$5,000.31. Net of \$131.40 for webserver. We have 78 members. We may need to set aside money from Craig Catto to fly in on May 5. Survey concerning dinner. We've had 23-24 responses and were pretty positive that we're doing well.

AIRPORT OBSERVATION DECK PROJECT: Dave Dent is working on getting bid and material specs. LVK will pay for materials.

LEARN TO FLY DAY: May 21st, do we want to host activities? Adult focus orientation flights distinct from Young Eagles. Dave notes it's more expensive to fly now than in the past. Ralph suggests we need to start in February to get timing and PR. John suggests we promote homebuilding with projects in process. Show people how to rivet or fiberglass or rib-stitching to get people hands-on experience. Show the process of experimental. No we are not a bunch of wackos building untested aircraft. We are wacko building tested aircraft (yes this is joke).

FAA SAFETY MEETINGS: Email from FAAST team Paul Peterson and Guy Minor. Paul has a 40 slide presentation for LSA incident accidents. Key issues are transition training. Also distinct from experimental transition training. Runway incursion issues are more frequent and seeking ways to reduce. Potential future FAA event with space bigger than LVK terminal for pilots distinct from BBQs and other events. Dave has heard that FAA is laying off staff and will no longer have as many field trainers for safety seminars. Dave suggests joint event with Livermore Valley Airman's Association. Ahart and Attitude have had these in the past, too, but limited space.

YOUNG EAGLES: Trina could not attend. Contact Trina if you are available to fly.

TOOLS: Continuing discussion of how to turn on lights in compressor room. Suggestion for battery powered, motion-activated LED lights. Bob Farnam has put in night lights. Difficulty when walking in from Bob Buckthal's hangar. We need a night light in the hangar. There are 2 switches to activate the compressor. Turn on floor switch in power strip and top switch. Gary Prost is offering to put lights on the trailer.

NEWSLETTER: No updates

BBQ: 2011 BBQ Dates: 5/14 4PM, 6/18 4PM. 7/9 5PM, 8/20 5PM, 9/17 5PM

CHAPTER DINNER: Seeking permission to submit Lloyd Childress's January 2011 dinner presentation as a video to EAA "Timeless Voices." Next year's dinner January 21, 2012 at Presbyterian Church in Livermore.

PROGRAMS.

May – Craig Catto of Catto Propellers.

June - possibly John Delfratti of EAA. He previously oversaw Edwards UAV. He has a history of Edwards AFB- NASA operations.

Next Board Meeting is May 19 at the Cloud International Terminal in Livermore.

MEETING ADJOURNED at 8:35 PM for pie.

Minutes respectfully submitted by Chapter Secretary Kirk Knight
Changes or corrections welcome.

Feedback/Questions/Suggestions

Any and all feedback is welcome. Please take a few minutes to send suggestions, tips, corrections or any other feedback to: jeffrylite@comcast.net.

Mailbag: - Transcription from our guest speaker last month as per Kirk.

Paul Milner

What avgas is in our future?

Paul Milner has flown a Cessna Cardinal for 36 years. He works for a major petroleum company with expertise on aviation fuel as manager of business development.

(Editor Note: This is not a precise transcript of Paul's talk, but it is intended to include his comments to help educate the EAA reader on the issues.)

What is AVgas?

Let's start with petroleum. At the refinery crude oil is distilled into 8-10 fractions based upon the temperature at which they boil off. Then each of those is further refined in 2-3 steps to modify the molecules to make the products people want to buy. So we crack them, we hydrotreat them, we alkylate them, we reform them.

Each of those steps is intended to improve the product for example, improving environmental factors by taking the sulfur and nitrogen out, modifying the aromatics and olefins that

make more smog when they burn, modifying the vapor pressure, improving fuel performance to affect the octane, improve stability, or add heat content. This latter is because people don't want a fuel that gets less mileage.

A typical refinery produces 10-15 gasoline components from this array of processes. We have about 70 plants at the refinery that are needed to perform the various steps necessary. In the '40s and '50s we actually ran the gas that came directly from the catalytic cracker and it wasn't such good stuff, so today we run it through 1-2 more steps to improve it.

Of all those 10-15 components, only 4 are suitable for avgas, and even those need additional processing before they become Avgas. So it's hard to make, needs careful handling and control and all that is reflected in the price.

OCTANE

There's lot of jumbled info about octane ratings on the Internet. A specific isooctane molecule is as it sounds, 8 carbon atoms hooked together with hydrogen. If you like drawing molecules it's 2, 2, 4- trimethylpentane. This has been the 100 octane benchmark since '20s and '30s.

But not always. An isooctane molecule that is used in a water cooled, fast-turning engine may test poorly in a slow-turning, hot, air-cooled engine. The same isooctane molecule in a car may test at 103 octane, but in an airplane engine it could test at 98 octane.

The common nomenclature, named after a guy whose name starts with "F," there is F1, F2, F3, F4 octanes. What will you see is Research and Motor octane, where F1 is Research and F2 is Motor. At the gas station pump for your 92 or 87 octane fuel you'll see (R+M)/2. Which means the octane is the average of Research and Motor octane.

In aviation we have a different test engine and that measures F3 and F4 octanes. The F2 and F3 are almost the same number, and generally it is computed from the F2 engine, we don't run an F3 engine. The F4 test engine is a super rich, turbo-charged engine, temperatures are really high and that's where the old 130 octane rating came about for our 100/130 avgas.

Aviation is 80/87, 91/96 or 100/130, 115/145. Read that as Lean/Rich performance.

ALERT! THIS WILL CLEAR UP COMMON CONFUSION ABOUT OCTANE!

Aviation octane is roughly the motor octane +5. It's equal to about (R+M)/2. Our 100 octane avgas is about 105 octane mogas.

Contrarily, 91UL mogas is only about 86 octane avgas. This means those O-360s that run fine on 91 octane avgas will not run fine on 91UL mogas because it's only 86 octane rating as avgas. You have to do things to prevent detonation that will very quickly destroy the engine under load.

These are special reference engines made in Waukesha Wisconsin. They are big, heavy, 3,000 pound engines designed as octane test beds with adjustable compression ratio heads that screw in and out.

Reference testing begins with a reference fuel made from a mixture of trimethylpentane at 100 octane, plus heptane, which is rated zero octane. These are mixed in proportion and run in the engine at the target fuel octane. A 98 octane test fuel would be 98 parts trimethylpentane and 2 parts heptane. When this is calibrated the target fuel is run and compared to the reference fuel.

The engineers run the engine, then the automatic controls adjust the heads until they get a certain intensity of knock. The engines have to be rebuilt every week to clean out carbon deposits that would throw off calibration.

In the US we had lots of development of avgas by just about every oil company before and during WWII, but today there are only 2 aviation engine test facilities: the FAA Atlantic City, NJ and GAMI in Ada, Oklahoma.

The Waukesha engine is water cooled and they are limited in ability to model high temperatures of air cooled engine. It was fine 70 years ago preparing fuels for WWII, but today we can measure more precisely. GAMI has discovered the old specs and conversion models don't correlate as closely as we can measure today.
Back to the '60s

Back in 1960 about 5-10% of the total gasoline consumption was avgas, we had 4 grades. 80/87, 91/98, (now 90/96) 100/130, 115/145. They varied from 0.5 to 8 grams of lead per gallon. Mogas at the time as 2-4 grams of lead per gallon.

In 1960 there were about 1,000 refineries and about 80% of them made avgas because there was big demand. All gas was leaded.

Jump to 2011.

Post 2008 we have had the biggest drop in mogas demand since the Great Depression, and avgas use has dropped even more. (Remember this fact when people talk about oil demand in US.) Avgas is now less than 0.1% of gas consumption in US. Only 1 grade of avgas, 100 LL. Less than 2 grams lead per gallon. Of 167 refineries, only 10 make avgas.

Avgas is the only leaded fuel made which creates big problems. It's illegal to blend it. Due to lead content it has to be treated as hazardous waste.

Avgas handling is very sensitive. Tanks aren't steel like mogas, they're steel with porcelain lining, and that's expensive. We have to clean them every few years to prevent contamination and dirt, yet the fuel can sit there for years waiting to be used.

There's only 1 refinery on west coast that makes avgas – that's in Richmond, California. They supply gas to Alaska, for example, which has to be hauled in barges during the summer and sits there for an entire year, or more, until it's used and replacement fuel arrives. You don't want sludge in the storage tank. Avgas is stable, but the light ends such as butane are about 4-5% for the high vapor pressure. These eventually weather off, making it a hard-starting material in the cold. The octane of the light ends is designed to be less than the rest.

Lead issues.

There is a big lead smelter in El Paso, Texas that ships their lead to become our avgas. There's only one manufacturer of tetraethyl Lead and that's Octel near Liverpool, England. If that plant has a problem, avgas has a big problem.

Lead is not particularly toxic in avgas. EPA lead phase out of mogas was driven by the simple economic math. There was a motivation to mix cheaper leaded fuel with more expensive unleaded fuel, and the unintended consequences were costly for car owners. Two tankfuls of leaded fuel would destroy your very expensive catalytic converter. Those converters were the best solution to smog prevention.

So lead fuel handling is costly because we can't use the same tanks, pipes and equipment used for unleaded. Phillips has a little pipeline in Texas, but that's the only one.

Some misperceptions about lead in avgas. First, it can damage your sensitive oxygen sensors in short order. There is a common misperception that lead is an engine lubricant – it's not. The early transition problems with unleaded fuels and cars that ran on them was that valves failed and people attributed it to lead. The reason wasn't lubrication, it was without lead we had lower octane and detonation or running rough. The premium spec was 93-94 leaded. We called that extra 1-2 octane "give away" over the spec. The higher expense of unleaded meant tighter spec and "give away" was a mere 0.1-0.2 octane over spec.

Lead is not a lubricant in today's engines. The FAA ran a study of leaded / unleaded and with identical octane in a twin. O-360. 91/96 octane. After teardown from 500 hours they couldn't tell difference in engine wear. Lycoming and Continental transitioned to hardened valve seats about 1973.

The 80/87 engines went to mogas. In fact, during the last decade of 80/87 avgas fuel it was made without any lead because it was easy to make. It has a 0.5 gram lead spec, but that was max, not minimum.

Engine Alternatives

Cessna tried diesels. The business case isn't closed. They're hard on props due to power pulse. Or add a reduction unit which adds weight and fails instead of the prop. They have to be water cooled and that means you need more cooling and more cooling drag to get from 400+ degree cylinder head to a 220 degree water jacket.

What about turbines? They're expensive and have high specific fuel consumption. 0.38 lbs/gas/hp for typical Lycoming while a decent turbine is nearly double.

Conundrum

70% of airplane fleet can use mogas. But 30% of airplanes that require high octane avgas use 70% of all avgas. They have higher utilization, bigger engines, higher horsepower, more fuel consumption. The cost to airports for two grades of fuel makes it uneconomical. FADEC and other tools don't reduce octane demand more than a 1-2 octane. Lycoming knows they can't reduce octane and make a reliable engine that will avoid detonation.

EPA has been prodded by Friends of the Earth to deal with lead toxicity. From 300 picograms/cubic meter before to about 100 today. This uncertainty has a chilling effect on avgas innovation or mere investment in maintenance of old systems that eventually fail.

CRC aviation fuel committee, what reports to ASTM, has spent 21 years working on 100UL solution. We've had reliable avgas spec from WWII, who would want to modify it?

Fuel Alternatives

BP favorite is triptane (2,2,3-trimethylbutane). It's a chemical feedstock for plastics. If you mix it with any other avgas it has negative octane 100T +100LL = 93 octane.

Texaco, part of Chevron, is promoting nitrotoluene. 1-2% added to avgas makes good octane. But has problems. It's efficient but it stinks enough to make you throw up involuntarily. Some of the petro engineers aren't aware that pilots and ground crews come into physical contact with our avgas. It will burn your skin on contact! It's not stable.

Chevron proposed to half the lead. This doesn't solve the Octel tetraethyl lead elimination problem. World inventory of lead is 1-2 years in process. If Octel goes out of business, avgas has a big problem.

Exxon Mobile and Conoco Phillips proposed super alkylate, but it has problems. It's an iso-octane. They have 5 cents a gallon for royalty in mogas, 50 cents a gallon for avgas.

Before Lindberg flew to Europe, he did a lot of fuel testing. He would run an engine at night and see how red the cylinders would become. Following testing he chose fuel from Richmond refinery with lots of naphthalene.

Best we can do with existing unleaded avgas is 93-95. Continental wasn't successful with their tests on 6 cylinder Bonanza. A \$10K FADEC ignition will help, but not enough to monitor the peak pressure in the cylinder which is the key problem to avoiding detonation.

Lycoming TSIO-540 J2BD is the bad boy of engines used on Navajos. Certified back in '80s with a high spec avgas from Amoco. Engines would detonate to destruction very quickly if not adjusted perfectly.

What class of engines would work with 95 UL without detonation danger? Believe it or not the less efficient engines do better. The IO-360-B&D are parallel valve engines and they aren't as efficient at breathing that keeps cylinders cooler. The -A and angle valve engines are more efficient breathing, get hotter and when pushed without octane, and will detonate quickly to destruction. Compression ratio isn't the only factor as the difference is 8.5 Vs 8.7. Angle valve breathes better, but heats up more. Your margin from detonation is much reduced.

If we don't like that answer, let's move the goal posts. Heavy aromatic components can offer sufficient octane. Xylenes and trimethylbenzene is the Swift fuels solution, made from switchgrass.

Problems here are weight per gallon of avgas 6 lbs per gallon, and distillation constraints of having carbon form when rich. These are being tested on Waukesha engines, not aviation engines.

Paul gave a lot of credit to EAA and AOPA to guide FAA to a solution for our needs.

GAMI PRISM. the PRISM system continuously monitors and controls the cylinder combustion pressures, and the system does monitor peak pressure, but is not being pushed as support from Honeywell has ebbed.

Swiftfuel has proposed bio sourcing trimethylbenzene (1,2,4-Trimethylbenzene) from renewables. Switchgrass cost requires a new \$100 million plant that has to be amortized across building costs, plus operating costs. Bottom line is perhaps \$10 a gallon as biofuel. Indy cars used to run on this fuel, but 2 years ago Indy cars went to ethanol. It's a great

scientific idea, but a tough business model to justify. Doesn't work as well during cold weather in carbureted engines.

GAMI has tried several unleaded fuels on real aviation engines and learned the data didn't correlate to Waukesha engines. GAMI is raising money from private investors and venture capitalists. They applied for an STC to try a fuel on 1,000 turbo-charged Bonanza and Cirrus, for example, for a couple years. They'll then tear down engines and check the wear and performance data from which they can specify future fuel.

G100 is their fuel name, which is flying in Cirrus, Cessna 150, and others. These are experimental aircraft. Senator Inhofe is running it in his RV. It's 6.2 pounds per gallon, which is outside of current fuel specification of 6 pounds per gallon and has raised other issues. G100 could move through pipelines, but batches are too small. It could simplify storage and tank trucks, though.

The challenge is for FAA to grant this STC to be tested. This testing is being supported by EAA and AOPA. We'll get enough data to make good decisions. We may need to iterate on the fuel, but it will be in response to data and it is a process that can be managed safely.

The spec will go to ASTM panel, with required changes to existing fuel specification. These are not big changes for petroleum industry, but they are for FAA. Then industry will make economic decision.

Ethanol shrinks gasoline supply.

The vapor pressure changes when we mix ethanol with gasoline. If you add 7 psi VP gas to 7 psi VP ethanol you get 8 psi VP mix. The EPA and CA want VP low to prevent volatilizing to atmosphere. We have to shrink amount of gasoline in the mix by about 5% to reduce the amount of iso pentanes and pentanes that now produces less energy. This shrinks supply. It actually makes gasoline supply smaller. It gets more confusing as promotion of ethanol to reduce use of petroleum but we use more.

Some response to Q&A:

Is there foreign influence? He sees this is as US aviation industry problem and solution, with minimal influence from outside countries. We are the dominant player and we have to find our own solution, which others will follow.

Is there a risk of detonation in our low compression engines? Not for the 70%. You'll lose a bit of performance in a IO-360 parallel valve. But the angle valve won't be happy on 95 octane. Your CHT has to be under 400 degrees because it will detonate. Many Mooneys will need 430 degrees to get out of the pattern.

Should I overhaul? If you want to overhaul and upgrade, you should do so. This will be solved in foreseeable future, perhaps 5-6 years.

Thanks to Paul for a most compelling and detailed description of the problems and possible solutions to avgas issue.

Cool video's found on the internet.

[What the FAA requires these days?](#)

[These two guys must be talking airplanes.](#)

[Communicating with animals?](#)

What is it? From last month

Sponsored by:



Last month several people correctly identified the Morane Saulnier MS.505. Our winner was Bob Farnam. Multiple people earned points towards the year end prize.

Thanks to those that called Aircraft Spruce and mentioned this contest in the newsletter as they have agreed to continue their sponsorship.

Prizes are available thanks to them. Please give them a call with your next order and tell them how much you appreciate their generous donation to our monthly newsletter.

Submit your answer to the newsletter editor to be eligible for a prize to be awarded at the regular chapter meeting.



You must be present to win.

Winning entries will be decided by the email that is received with the earliest time stamp and the correct naming of the make/model of the pictured airplane. Winners that correctly identified the winning make/model that do NOT attend the meeting will forfeit the prize to the next available submission.

What is it?
Sponsored by:



It is uncommon but sometimes in aviation maintenance, the pen is mightier than the wrench.



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