



THE GRAPEVINE



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

Vol. XXX,



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Officers

President Ralph Cloud 449-1048
Vice President **Dave Dent** 447-8055
Trea\$Urer Mark Palajac 510-557-4020
Secretary Kirk Knight 510-390-0840
Program Co-Ord Don Smith 785-5824
Tech Counselor Dave Dent 447-8055
Tech Counselor Gordon Jones 447-1549
Tech Counselor Bob Sinclair 935-7465
News Letter Emeritus John Meyer
News Letter Editor Jeffry Larson 209-608-5981
Flight Advisor Barry Weber 963-0824
Flight Advisor Bob Farnam 449-1513
Young Eagles Trina Anderson 209-832-1162
Librarian Alan Thayer 582-7274
Web Editor Brad Olson 866-9289



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.

Editor note: 2011 email list is in use this month. 2010 members that have not paid for 2011 will get a complimentary email via a separate email for this Newsletter. Please renew your membership, it helps plan for chapter events and tools.

Board Of Directors

Bruce Cruikshank 510-886-6897
 John Goldsmith 925-447-7362
 Brad Oliver 925-443-1135
 Bob Farnam 449-1513
 Dick Jennings 862-2345
 Bob Cowan 373 0555



April Meeting And Program

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

Calendar:

Month	Date	Speaker	Topic
Feb	3	John Shirley	Aerial history of LVK
Mar	3	Chris Lower	100LL & Additives
Apr	7	Paul Milner	AvGas & MoGas

Our April Program will feature a discussion by Paul Milner from Chevron and will discuss AvGas and MoGas as our program. With 100LL now at or above \$5 a gallon, this should be interesting for just about everyone although us Jabiru Jockeys are still breathing slightly easier than those Lycoming and Continental feeders. If you are thinking about selling and riding a horse, it should be noted that alfalfa went from \$9 a bale last year to \$14-19 a bale for 2011. Be sure and join us.

March 2011 Minutes

GENERAL MEETING, EAA 663,

3/3/2011 Livermore Terminal

Called to order 7:33 PM by President Ralph Cloud.

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

GUESTS: Special guest Don Toeppen who is a long-time friend of EAA Founder Paul Poberezny. Don recently moved from Chicago to be close to family in the area. We also have Greg Galliardi, who flies a 172 and 182, announced he is thinking of building, setting off lobbying between the fast glass and RV cohorts. Our other guest is speaker Chris Lowery, more on him later.

TREASURER'S REPORT: Mark announced we have 700. The balance prior to start of the meeting was \$5,020.87. He anticipates another \$700-800 from

additional memberships before year end. Report moved and accepted.

MINUTES: Minutes from last month were moved and accepted.

YOUNG EAGLES: Trina has some certificates for Brad. Sully Sullenberger plans to fly Young Eagles at LVK on March 26th. Again, this year's first Young Eagles will be in April. Check the Chapter website to enter names.

TOOLS: Barry Weber reports we now have trailer with a license plate ready for service at no charge to members. The trailer is 7' x 16' body, with 20' from tongue to tail to easily accommodate an RV-8.

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

NEWSLETTER – Jeffrey Larson announced this month's mystery plane is a Sukhoi Su-26 correctly identified first by Marc Goroff. Remember, for 2011 we'll have a **new point system**. You get a point for correct guesses. You get 3 wrong guesses a month. Jeffrey notes we still need a sponsor for the year end reward.

ANNOUNCEMENTS: March 17th Board Meeting at Ralph's house in Livermore. April 7 Chapter meeting.

CHAPTER ANNOUNCEMENTS:

Chapter BBQs will be May 15, June 1, July 9, August (tbd) and September 17.

Rancho Murrieta is having a Young Eagle event. Minter Field will have annual fly in event on May 14. The Calaveras Air Fair will be April 16. Booneville will also host a fly in on April 16. Before Memorial Day in late May Beale will have an open house.

MEMBERS FORUM:

Dave Dent previously proposed a chapter project to build picnic tables near the observation deck. He then spoke with the LVK airport manager who noted plans

for new terminal with playground, and more critical need for repairs to the observation deck. Among suggested upgrades is an awning or perhaps a lattice to reduce sun exposure. We should also get permission for EAA plaque to be attached.

Larry Fish previously managed construction of the observation deck about 10-12 years ago. He offered to oversee repairs if city will provide for materials.

There are a couple Quikie 2's up for sale.

Larry Fish also announced he has a Husky for sale with 180 hp 0-360 engine.

Doug Frazier is seeking a partnership in an RV project or just offering to help another member on the weekend in the interim.

Trina Anderson provided an update on the development project adjacent to TCY and the March 24 meeting at 5:00 PM of the Airport Land Use Commission at 555 Webber in Stockton. The developer wants to use 1996 planning approval, but the ALUC is requiring compliance with 2008-9 law that restricts uses near airport.

Break for cookies at 8:05 Back at 8:20

THIS MONTH'S GUEST:

Chris Lowery spoke about alternatives to 100LL. See details.

MEETING ADJOURNED 9:15PM

Minutes respectfully submitted by Kirk Knight, Chapter Secretary

MINUTES: BOARD OF DIRECTORS MEETING, EAA CHAPTER 663, 3/17/11, 7:36 PM, RALPH'S PLACE.

Ralph Cloud, Dick Jennings, Bob Farnam, John Goldsmith, Bob Cowan, Bruce Cruikshank, Barry Weber, Trina and Dave Anderson and Dave Dent were present.

Treasurer Mark Palajac reported \$5,021.71 in chapter funds. 74 members have paid their dues for 2011.

Business: Dave Dent reported on the chapter's airport enhancement project. If we supply a bill of materials, the airport will foot the bill. The current plan is to replace the decking with some form of synthetic wood decking, and construct a trellis for protection from the sun, and to hold a drape during events such as Airport Day. The chapter will supply the labor.

Trina announced plans for the first young Eagles Rally of the year on March 26th.

Tools: Bob Farnam had some questions about replacing the media in the chapter's sand blaster. Ralph has successfully obtained a license plate for the chapter trailer.

Ralph had received a request from web master Brad Olsen for \$131.40 for another year with the current web host. It was agreed to pay the fee.

The current schedule for chapter barbeques this summer is (still) 5/14, 6/18, 7/2 or 7/9, 8/20 and 9/17

Ralph said that Paul Milner from Chevron will discuss AvGas and MoGas as program for our April meeting. It should be interesting as, with the exception of Geoff Rutledge, we all depend on this stuff for all our flying.

Announcements: Next meeting is 4/7 with the Board of Directors meeting on 4/21.

Forum issue: Trina reported yet another meeting concerning the development off the end of runway 30 at Tracy.

Meeting adjourned for pie.

Respectfully submitted, Bruce Cruikshank for Kirk Knight Secretary.

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.

Chris Lowery

Auto fuel use in aircraft, alternative aviation fuels and use of 100 LL

Chris led off by noting that the EPA requirement to phase out 100LL puts piston engine aircraft under threat. The higher performance engines with higher compression ratios are threatened the most and therefore the aircraft that are designed to use those engines is also threatened.

Chris owns a Glastar he hangars at Tracy.

Certified aircraft are not allowed to use auto fuel unless they have STC, such as from Petersen Aviation, or were certified with that fuel. However, even that STC does not allow the use of auto fuel containing ethanol. ALL auto fuel in California contains ethanol with varying percentages typically 10% today with plans for up to 15%. Other states have similar requirements. The petroleum feedstock results in variations to the ethanol percentage as well.

Chris thinks it's tragic that we're producing ethanol from corn, the same corn that is used as food. In effect we're taking food, turning it into fuel and producing 5% less power. In effect this causes us to burn even more oil to produce the food than we're getting as energy in our fuel. "It's crazy," was how he summed it up.

Ethanol absorbs water in the fuel. The partition coefficient of ethanol is such that it will preferentially absorb any moisture in the fuel and separate out as an ethanol/water phase.

It's only economical because of a 45 cent per gallon U.S. subsidy and an even higher tariff on imported Brazilian ethanol.

If you do use auto fuel in aircraft he highly recommends you get a vapor pressure tester from Petersen Aviation (autofuelstc.com) and test the vapor pressure before flight to avoid vapor lock. Vapor lock is dependent upon atmospheric pressure and temperature. (ed: and will vary with your altitude and meteorology!) Sump the tank and test. If it says no, don't take off!

As of today there is no approved replacement for 100LL. There are many proposed substitutes, however. In his

view the best alternative is BioButinol, but it has been set aside by DuPont and BP.

Another option 100LL without the lead. But...it has less power because it has lower octane. Any high compression engine will find the antiknock value of the fuel is lower, causing detonation, and therefore to protect the engine lower power is produced. The energy value of the fuel is unchanged, however, so low compression engines won't suffer any power loss. In his view the cutoff is 8.5:1 compression. Below is OK, above will suffer detonation under normal circumstances.

What about the 2ppm lead in the fuel to protect the valves? Chris noted he's not the expert on engine design, but thinks this can be addressed by other means.

Swiftfuel is a group of professors from Purdue – another crazy idea in his view. First they start with corn, and make acetone. Then they trimerize the acetone to make another molecule which is deadly poison and use that. It met the performance of 100LL but the economics were lunatic. He wrote in a publication, "I will buy all the acetone you can make for \$5 a gallon, because the commercial value is more than \$5 a gallon." Now they say it can be made from switchgrass. He sees no economic hope.

There's only one fuel in his view that shows promise that's 100 ultra low lead, (100 ULL). Take out some of the lead, perhaps to 25-50% of normal 100LL as a compromise. The high compression engines would need to be rebuilt with lower compression. Continental says it works in their engines. There is only one manufacturer of tetraethyl lead, and that is in Europe.

GAMI has been getting grants but not conclusive answers.

Chris notes that removing lead is a positive action because the lead is a problem throughout the supply chain and removing it would result in lower costs from simplified production, transport and use. For example, tank trucks that carry 100LL can't be used for other fuels.

There is no way to remove ethanol from gasoline to make the gasoline usable. Chris noted that you could literally "wash the ethanol" with water, and the ethanol/water mix would separate out as a sticky, goeey emulsion that is nearly impossible to remove.

What kind of problems does lead cause inside engines? When leaded fuel burns we have lead oxide in the engine. On a cold engine it condenses inside the engine on plugs, cylinder head, rings, piston skirts. This is one reason we do a run-up to melt off the lead build up.

There is a poor-man's lead scavenger – ethylene bromide. But that is only partially effective and has too low a melting point. With leaded fuel you have to remove lead deposits.

There's a bigger problem with that lead getting into the oil and settling out in the crankcase. Certified Rotax engines require synthetic oil, which is unable to suspend oxides of lead and the lead oxide settles in the crankcase and turns into a kind of grinding paste. A stripped down Rotax running 100LL is really beat up. It's a reason he developed his additive.

General Atomics makes the Predator MQ-1 type drones which use turbo-charged Rotax 914 engine. They tested his additive on separate engines, each of which ran over 1000 hours before tear-down. His pictures supplied by GA showed 2 crankshafts with and without his additive. No additive engine bearings were severely scored. With additive the bearing showed no fretting.

Regular TCP doesn't solve this problem. Another ingredient is needed to micronize the lead, especially for extending bearing life. He showed Mike Eichenberger's engine photos. Lead deposits in combustion chamber.

Summary:

- NO approved alternative to 100LL.
- We should actively lobby against ethanol in fuel.
- This is a political issue, not a logic or engineering issue. The lead contribution to the environment from 100LL is miniscule.
- You can use autogas safely if you check vapor pressure with every flight.
- Ethanol is hazardous to epoxy fuel tanks and elastomeric seals not formulated for it.

80% of 100LL use is in big bore engines such as IO 540/550s in larger aircraft.

His special gas additive is available for aviation community. In June it will be available for other engines and diesel. It's proven to work in the engine, but doesn't help the fuel tank or fuel system issue. Diesel engines

have carbon deposits, erosion of valve seats and stems. Polyether amine to clean injectors and remove combustion deposits over time. Only fuel additive he knows that can demonstrate proven aviation improvement. It also provides lubrication for fuel injector pump – especially for California which has low sulfur diesel.

What is price per gallon half ounce per 20 gallons. \$29 a quart for aviation community, \$19.50 per pint from Aircraft Spruce and WagAero. These are not approved for certified aircraft engines.

Three components in his additive: Carrier solvent is 2-butoxyethanol. Active ingredient is polyetheramine similar to Techron from Chevron, a small amount of tricresyl phosphate, abbreviated TCP. All engines gradually accumulate deposits in injectors, combustion chamber, and scavenges lead. The additive improves efficiency and cleans engine. Formulation is different for aviation, cars, snowmobiles, etc.

During taxi and low idle RPM the lead builds up in engine and during engine runup is removed.

Interesting facts:

Key difference in retail auto fuel from BP, Chevron, Shell, etc. is the “package,” a 1 quart additive in 8,000 gallon tank truck. At most 1 part per 32,000.

In the 1970s, Herbert Needleman found that higher blood levels in children were correlated with decreased school performance.

A 1994 study indicated that the concentration of lead in the blood of the U.S. population had dropped 78% from 1976 to 1991.

Also in the U.S., a statistically significant correlation has been found between the use of TEL and violent crime: taking into account a 22-year time lag, the violent crime curve virtually tracks the lead exposure curve.[6] After the ban on TEL, blood lead levels in U.S. children dramatically decreased.[6] See charts on pages 69 and 70. <http://www3.amherst.edu/~jwreyes/papers/LeadCrimeNBERWP13097.pdf>

Cool video's found on the internet.

[Let's go for a ride on Lake Havasu – Thanks Bruce.](#)

[Getting more than you paid for.](#)

[Another Tsunami video](#)

[Duck and I don't mean the one from Aflac.](#)

What is it? From last month
Sponsored by:



Last month several people correctly identified the Sukhoi SU-26. Our winner for the second month in a row is Marc Goroff. 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.

The correct, first answer that attends the monthly meeting will be declared the winner. You will be notified of the winning entry at the monthly meeting. The winning entry that DOES attend the meeting will receive his/her prize at that time.

What is it?
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It is interesting to note: most young pilots strive to fly more complex equipment; many older pilots strive to return to the joy of flying simpler equipment.



16610 Von Sosten Road
Tracy, CA 95304
jeffrylite@comcast.net or
President@eaa663.org