



Runway 15



The Monthly Newsletter for Experimental Aircraft Association Chapter 1541, Lincoln, California

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On the Horizon: Calendar of Events

For the most up-to-date information, go to the chapter website: <http://eaa1541.org/>

Date	Topic
Note	On Thursday, March 12, 2020 the chapter Board voted to suspend face to face meetings for 30 days, in compliance with directions from public health offices in our region, to limit spread of the COVID-19 virus.
TBD	Airport Fun Day EAA hangar
May 2, 2020 (Tentative)	Young Eagles Rally

EAA CHAPTER 1541 INFORMATION

Meetings	Usually the third Wednesday of each month held at KLHM Hangar S-12. Details available on the website
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E-mail	eea1541@gmail.com
Website	http://eaa1541.org
Mailing Address	EAA chapter 1541, PO Box 1126, Lincoln, CA 95648
Chapter Hangar	Hangar S-12, Lincoln Airport
President	Darren Coomler
Vice President	Dan Masys
Secretary/Treasurer	Jim Hughes
Chapter Board of Directors	Cheryl Andrade John House Mike Lagomarsino Ray McNaught Bruce Robinson Randy Sharp Scott Thompson Scott Whelan
Webmaster	Dug Smith dug@dugbert.com
Newsletter and Tech Counselor	Dan Masys dmasys2@gmail.com
Membership	Chapter dues: \$20 per year for individuals; \$30 for families; \$300 for gold membership



President's Corner



Dear EAA
1541 Chapter
Members,

Wow! What a
week! Our
flight plan has
been diverted
this month with
the current

world pandemic.

As pilots, we are prepared for diversion due to situations out of our control, with that, we are accepting and changing our plans accordingly this month. Due to COVID-19's rapid change in conditions we (Chapter 1541) have postponed all person to person meetings within our chapter for approximately 30 days.

Currently we don't have enough information to make long term decisions to see what happens with this virus. Our mission is still to serve and inform others until conditions improve. In the meantime, the Board of Directors will meet via conference call to discuss when future events will be held.

During this diversion, in absence of meetings, this is a great time to invest in preparing to get to know each other more by the time we meet again. Your assignment is a one page bio of your experience in aviation or for the newer aviation enthusiasts your interests. When we come back after our break we will take pictures of each member and post around the hangar. Our goal is to get better acquainted and to build strong relationships within this chapter. Keep your eyes on emails and we will be updating you as conditions improve. Thank you for your understanding during this time and I am looking forward to seeing everyone soon!

To happiness and health,

Darren Coomler
President, EAA chapter 1541

"Cheryl's She-Said" Tid-Bits

Sorry to say, that due to the Coronavirus, "Airport Fun Day," scheduled on March 28th, has been postponed until a later date, which is TBD.

Young Eagles, at this time, is still planned for May 2, 2020. Pilots and volunteers: please go to <https://youngeaglesday.org/> for registration. This is required for the YE pilots.

Thanks to all who have already volunteered for these events. We still require a lot more help! More details to follow later.

Be safe, and see you soon.
Cheryl

Ray Scholarship Update



Chapter Members,
I am now at just over 26 hours, 4 of them cross country and 2 hours solo. Last Friday Randy and I had a great cross country flight to Red Bluff. In preparation for this flight we did ground school where I learned how to do a

flight plan using dead reckoning and then what markers to keep an eye out for using Pilotage.

On the way to Red Bluff, Randy had me experience wearing foggles and we worked on disorientation. I also got experience talking with NorCal. I've done an additional 6 hours of ground school preparing for my written test.

As you know most California schools are now closed. I will be using this time to get in as much flying as possible and preparing for the written test. I am hoping to get together with a group of others students, now that we are all on break, and we can all study for the written test. As I prepare for more cross countries, I am looking for suggestions for airports to visit in Northern California. While I can't afford the "Hundred-Dollar Hamburger, maybe I can find a \$10 grilled cheese.

Amy

Flight Simulator Now Operational



As part of its mission to attract more people, young and old, into aviation, our chapter launched a project to build a series of increasingly capable flight simulators for use

within the chapter's hangar and at events such as Young Eagle rallies and Airport Fun Days.

The project was the brainchild of one of our student members, Anthony Moreno (age 14) and he in turn invited friends Kevin and Hannah Treehan from his school and his younger brother Luc to the "Sim Team". Our vision is eventually to create a full motion simulator, for which as a first step we need a mobile simulator pod on a platform.

We found a well designed set of instructions for building a sim pod online at <http://www.diyflightsims.com/> and scheduled a series of workshop days for our four person team (ages 11 through 16) under the guidance of Tech Counselor Dan Masys. As shown in these photos, the build team started with an



inner frame of PVC pipe and wooden supports, and progressed through creating the outer shell, pod walls composed of Styrofoam insulation, painting the structure, and installing computer equipment and simulator controls.



A 4 x 6 ft. rolling platform on locking casters made the pod and its contents portable.



The Whelan family donated a large screen HDTV and Darren Coomler donated the flight

simulator controls. Roger Edwards of Yuba Sutter Aviation generously donated a pilot seat from a Beech King Air to complete the cockpit environment.



Three of our four team members are Young Eagles and EAA student members, and each has donated 30 hours of their time to the project. And their enthusiasm and interest in aviation has grown steadily along the way.

The completed pod is now operational and stored in the EAA hangar.



The Sim team is in the design phase for the second, more ambitious phase of the project – the structure of a computer-controlled full motion platform on which the pod will sit, and respond via linear actuators to the control inputs and inflight forces generated by the simulator software. The team has the ambitious goal of creating an open source engineering design and a software code base that other EAA chapters can modify and extend.

Dan Masys
Sim Team Tech Counselor

**Maintenance Corner:
Have You Preflighted Your Battery?**

With pilots flying with more electronics,



Jim Hughes

replacing ‘steam gauges’, and relying on them more, we are depending on the electrical system to keep all of this stuff alive. The ‘heart’ of the electrical system is the battery. Since most of us fly with a

12 volt, lead-acid battery, that’s what this article will cover.



Quick notes – an aircraft battery usually has a life of 3-5 years. If yours is older than that, it’s probably lost much of its amp-hr capacity, and may not be airworthy!

BTW -The lead acid battery was invented in 1859 by French physicist Gaston Planté . So it’s 161 year old technology, and still works well.!

Is your battery safe to fly?

There are 2 main tests for a battery – state of charge, and reserve capacity.

State of charge is the percentage of its stated amp-hour capacity, and is easily measured as it’s voltage. A fully charged ‘12 volt’ battery will measure 13.0 volts at 100% state of charge. A battery that has ‘0 %’ charge, will measure 12.0 volts or less.

A ‘rule of thumb is to use the ‘tenths’ part of the voltage to indicate the charge. So, at 12.7 volts, a battery is at about 70% state of charge. At 12.4 volts it’s 40%, and so on.

Measuring the battery voltage must be done with an ‘open circuit’, that is, with no load on the battery, and after 2-3 hours of being charged. You can’t just switch on the master and read the voltage on your panel, assuming that you have a voltmeter. The master contactor and panel instruments will put a few amps of load on the battery, and you’ll get an inaccurate, lower voltage reading. You’ll need to use a digital multimeter to measure the voltage. Inexpensive meters are available on Amazon or other stores. Use the DC volts, 20 volt setting. Get access to the battery and touch the meter probes to each battery terminal. If you get a reading of 12.7 volts or more, you’re good-to-go.



If the voltage is less than 12.7, the battery needs a charging. Connect a charger with 2 amp capacity and charge it until the voltage

reaches 14.5 volts. This could take 4 to 12 hours, depending on its state of charge.

Once you've checked the battery, after engine start, monitoring the battery/bus voltage is important to see that the battery is being recharged properly and that your alternator is supplying the loads ok. But, most certified aircraft don't have a volt meter. Most aircraft have an ammeter, or load meter, as on a Piper. The ammeter will show the rate of charge, but not the ultimate voltage when the ammeter needle returns to near '0' amps. If you don't have a voltmeter, you can buy a small digital meter that plugs into the 'cigar' lighter socket. If you don't have a 12 volt socket, you can easily install one, and plug in one of these small digital meters. I use one like this. [oops. 'low volts' shown!]



So, after engine start, you should see a positive charge rate on the ammeter, and the voltage climbing to 14.2-14.5 volts within a few seconds. If the voltage remains at about 12.5 volts, the alternator is off-line. If the voltage is 10-11 volts and the ammeter is showing a high charge rate, the battery has a shorted cell, a no-go condition.

The key to a maintaining a fully charged battery is the voltage regulator, which controls the alternator output voltage, but usually does not limit the maximum current.



It should be set to 14.2 to 14.5 volts, with the engine running at about 1,000 rpm and normal loads.

Most voltage regulators are adjustable and it only takes a few minutes to make the adjustment. But it takes 2 people to

safely do this safely. Note that many alternators used in experimental aircraft have the regulator internal to the alternator, and are not adjustable. If yours is not adjustable and you're not getting at least 14.0 volts, there may be other problems; the wiring, alternator, or the battery itself.

Reserve capacity is how many amp-hours your battery is capable of supplying to the loads. This requires an easy test, but you'll have to recharge the battery immediately after this test before you fly. Your battery has a stated amp-hour capacity, defined as the load current it will supply for 20 hours, to a point where the voltage is down to 10.0 volts. So, a 20 amp-hour battery will supply a 1 amp load for 20 hours. But because of internal resistance, higher currents will cause some of this energy to be lost as heating of the battery. So, a 10 amp load won't be sustained for 2 hours.

The test, without damaging the life of your battery.

For a new Concorde AGM battery [btw, this is all they sell now]:

1. After one-hour rest from initial charge per the instructions, will be 13.0 volts.
2. Check with landing light 100 watt, (10 amps) for 2 minutes.
3. With load in place: 12.4 volts.
4. After removing load: 12.8 volts.
5. After a 2 hour recovery: 12.9 volts.

If the voltage doesn't get back to at least 12.6 volts, the battery has lost enough capacity to not be airworthy.

What kills a battery ?

- A low state of charge. If a battery is left for days, with a voltage of less than 12.0 volts, it will sulfate and permanently lose capacity.

- Leaving the master on, or other load that discharges the battery below 12.0 volts.

Note - never jump start a dead battery, or hand prop the engine to start with a dead battery. [unless it's an emergency].

If you do a jumpstart, 3 bad things can happen:

- once the engine is running, the alternator will recharge the battery at its max capacity , 50-80 amps, which will overheat the battery and can cause the plates to warp and short a cell.
- The alternator is working at max load, trying to recharge the dead battery and supply all the loads too, so it can overheat and damage the diodes, or wiring.
- If you do fly with a dead battery and the alternator fails, the battery is at a very low state of charge and may only supply power for a few minutes. If you're flying a retractable gear aircraft, when you select the 'gear up', the battery has no capacity to supply the high current and the alternator won't either, so it may trip off, leaving you with a total loss of electrical power.

What to do?

Connect a battery charger designed for aircraft batteries, or one that will limit the charge to 10% of the rated capacity [2 amps for a 20 amp-hour battery], and let it recharge for 10 hours. Be sure that the charger will limit the voltage to 14.5 volts. Most cheap chargers can kill a battery with excessive voltage, over 15 volts. But if you monitor the voltage and keep it below 14.5 it'll be ok.

So, take care of your battery and you'll get a full, useful life from it, and it won't let you down when you need to rely on it, beyond cranking your engine to life!!

I'd be happy to answer any questions that you have on electrical issues and will help troubleshoot problems that you may have. Email me!

Jim Hughes
jim.hughes1@att.net

For more info, references.

<http://www.concordebattery.com/otherpdf/5-0324-rg-manual.pdf>

<http://www.avweb.com/news/features/Batteries-Dying-Young-223129-1.html>

Just for Laughs

Not many people know this, but Santa Claus holds a valid pilots license. Given his important mission, he is, of course, rated for Instruments and Multi-engine (12 plus Rudolf). Like all pilots, he is required to take a flight review every 24 months. Last fall, the FAA flight examiner showed up at the appointed time at the North Pole to administer Santa's flight review.

Santa was flabbergasted when the examiner showed up armed, holding a shot gun. Santa climbed into the sleigh on the left side and took the reins, and the examiner climbed in on the right, cradling the shot gun in his lap. Santa couldn't contain his curiosity anymore and asked about the shot gun. The examiner was coy, but said, "I don't know. Let's just say that you might lose one on take-off."



Sightings



So how exactly am I supposed to keep you in sight?