



Wing Flap

**Newsletter of EAA Chapter 52
Sacramento, CA**

The Right Seat,

By Jim Heffelfinger

In last month's issue I asked a few questions to gather pilot information and a pulse in forming a flight club with aircraft(s). This what I got.

I am not quite sure what that means – Is there no interest? No one read the newsletter?, No one thought about responding ? I do know there are pilots who are current.



The chapter has a chance to have a club aircraft available – if there is enough interest. See Owen's contribution

Membership; Is down this year from 2019 and bringing it back up is paramount to the life of the chapter. It takes effort to recruit and retain. A little from many or a lot from a few. Be part of the many.

Invite a friend.....

AV21 - Were you there ?.

Not there but noted some great photos? Share your favorite 2 photos from AV21. send to jimheffelfinger@gmail.com for the September edition of Wing Flap.

General Meeting on Zoom

<https://us02web.zoom.us/j/86295420288?pwd=ZzFxeXNRU0NZZWRRL0pmbHBfYjJXQT09>

Meeting ID: 862 9542 0288

Password: EAA52

CONGRATULATIONS!!!!
Isai Villanueva who just passed
his PPL check ride to become
EAA Chapter 52's third NEW
PILOT!!!!

About the New Wing Flap Editor

Hello my name is Nicholas Theodorovic and I am taking over the editing of the monthly Wing Flap. I am 15 and attending Pleasant Grove High School as a rising Sophomore. I am truly excited to be the new editor along with starting my flying journey with EAA. Two things about me are I love to bake and I play competitive lacrosse!

Please e-mail me at nicktheodorovic@gmail.com with any articles, questions, or concerns.

It is with great sadness to report that Alice Willerton wife of Dennis has gone west. Alice is with Dennis in the RV-12 as our header photo this month.

EAA Chapter 52 Flying Club or Educational Foundation?!

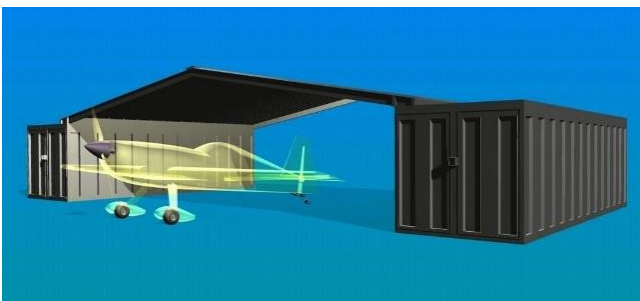
-Owen Hughes

In the last year EAA Chapter 52 has received donations of two aircraft projects: a GlasAir I and Piper Colt. We again thank Roger Hoffman for donation of the Piper Colt and Dwayne Burns for donation of the GlasAir project.



Initially, I hoped that perhaps the EAA Chapter 52 could use these airplane projects to start a "Chapter Build" project. But difficulties including the Covid pandemic made turning these projects into concrete the easiest option. What?!? Both projects were sold, raising \$14,000 of funds for the chapter! Whoo Hooo!!!!

Current plans call for using these funds to pour concrete. The hope is to extend the apron west from the Chapter's Yolo hanger, laying the ground work for a new container based hanger.



Five years ago, in a dramatic reversal of previous policy, EAA National began a new program to strongly encouraging chapters to set up and operate flying clubs to promote aviation education. While the program is relatively new, and there is ongoing discomfort with potential liability issues, EAA recognizes the need to make aviation more accessible and affordable, and bring practical aviation education to a broader audience. However, the ongoing concern with potential liability issues continues a policy of prohibiting EAA Chapters from directly operating aircraft. *"A chapter can build/restore aircraft or take donations of aircraft, but these assets must be transferred to a separate entity before they are flown. Chapter members, however, are encourage to from a separate non-profit flying club to improve the affordability and accessibility to aviation at their local airport."* Information on

EAA National's support program for Chapter associated flying clubs/associations/foundations can be found in EAA.org's Flying Club Resource Center:

<https://www.eaa.org/eeaa/pilots/flying-club>.

I have begun the process of forming a 501C3 organization focused on practical aviation education. The new Chapter 52 associated organization will operate aircraft for educational purposes including Young Eagle Flights, experimental aviation concepts and practicalities education, and flight training. Challenges in creating and running this new organization include the delightful paperwork of creating and maintaining 501C3 registration, CA incorporation, aircraft registration, maintenance, and insurance, etc. etc. But the benefits to EAA Chapter 52 will be a relatively low cost (and very inspiring) opportunity to fly Young Eagles and Eagle Flights. The first aircraft to be operated by this organization was deliberately chosen because of: 1) its inspiring (almost science fiction like) looks, 2) its confounding (and thus educationally provocative) principals of design and flight, and 3) the central role it and its designer - Burt Rutan - have played in the development of experimental aviation. I introduce you to our new Long EZ:



I believe this new Chapter 52 associated practical aviation educational organization is an excellent and synergistic continuation of EAA Chapter 52's remarkably successful Ray Aviation Scholarship program and Jim's amazing high school based aviation outreach program.



This Long EZ is an excellent example of the mold-less foam/composite construction pioneered by Burt Rutan in the 1980's. N81LE is powered by a Lycoming O-290D which should push it along faster than 160mph! Built by Roger Loftus of Redding CA, N81LE received its airworthiness certificate in 2009. Unfortunately, Roger had already lost his medical certificate and never got to fly his beautiful creation. Roger wants this LongEZ to inspire future generations of EAA'ers - and will be donating it to the new Chapter 52 associated organization.

Exact details and costs involved have yet to be worked out – but plans are currently trending to a non-equity 501C3 organization with no equity buy-in costs but with Pilot-In-Command requirements for non-owned insurance, transition training, membership and both yearly fixed and operational costs contribution requirements. So, while there will be substantial costs involved, the hourly costs should be significantly lower than the \$100 TO \$200/hr rental rates now common in our area. In addition to setting up the 501C3, I am currently working on re-registering the N81LE and getting its Phase I test area modified from the Redding area to the YOLO airport area, and bringing the plane back to airworthy status.

In our next Wing Flap, I will introduce you to EAA Chapter 52's *fourth* \$10,000 Ray Flight Training Scholar. Additionally, you can see the Long EZ at the October EAA Chapter 52 Pancake breakfast (I will be in Alaska in September).

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Shocking Potential - FAA

Most of us don't invest much time in learning about things that don't directly impact our lives or hold a significant interest to us. This can present a problem when new technology makes familiar spaces feel strange. You hear terms that don't fit into anything you know. The good news is that you don't need an advanced degree to become familiar with — even comfortable with — the concepts and the language of a new technology. Electric aircraft offer a great example. Let me introduce you to the basics of this fast-developing arena.

Electric and combustion propulsion systems do the same thing: they transform potential energy into the kinetic energy needed to fly. Now let's talk terms.



The watt is a unit of power that signifies a selected amount of energy transfer over a specific amount of time. One watt equals one joule of energy transferred per second. In most uses, we talk about kilowatts (kW) which is 1,000 watts. In transportation, power, (particularly engine power), is usually expressed in horsepower (hp). Since both are derived units, they can be easily converted ($1 \text{ hp} = 0.7457 \text{ kW}$). You can apply either unit to any engine. A 100 hp engine would roughly equate to a 75 kW engine regardless of power source.



The next unit to consider is the kilowatt hour (kWh), which you know as the major component of your electric bill. One kWh is the energy of one kW (flowing) for an hour. The kWh is the unit of measure for an electric vehicle's "fuel tank," making it the counterpart of the gallon or liter for an internal combustion engine (ICE). A 10 kWh battery could supply 1 kW for 10 hours or 10 kW for one hour assuming the motor and systems attached to it could draw that amount of power. This hypothetical system also doesn't account for transformation losses in the system, but we'll talk about efficiency later.

The eFlyer 2 prototype takes flight to continue its certification program. Photo courtesy of Bye Aerospace

Reactions of Another Kind

Electrification trades one chemical reaction for another. Like most tradeoffs, there are pros and cons. On the positive side, baseline efficiency is better than ICE. Electric motors are generally 75–95% efficient. With ICE engines usually in the 30–40% range, airplane engines aren't exactly on the leading edge of efficiency. So, electric motors could possibly triple the per unit efficiency of "fuel," with no direct emissions. Electric motors are also lighter and mechanically simpler with fewer moving parts. Slam, dunk. Electric is the way to go, right?

Not so fast. All methods of transportation use chemistry to transform potential energy into kinetic energy. This points toward the primary challenge of electrification, specific energy.

We discussed specific energy in detail in [a previous article](#), but here's the recap. Batteries store far less energy per unit of either volume or mass than fossil

fuels. Avgas (100LL) has a specific energy of about 12 kWh per kilogram (KG). The best batteries currently available (in terms of specific energy) are lithium ion (Li-ion) batteries with a specific energy around 0.25 kWh/KG. Even assuming 100% motor efficiency, the battery would manage only 0.25 kWh/KG while an ICE with 25% efficiency would net 3 kWh/KG — about 12 times more energy. In energy intensive operations like aviation, that matters.

The Darker Side of Green

Another challenge to electrification is the use of certain resources. Most of the cobalt needed for



batteries comes from the Democratic Republic of the Congo, where conflict and regulatory structure raise ethical and environment issues.

Lithium (Li), a key component of a Li-ion battery, must be processed from compounds. Hard rock mining has been the dominant source for Li but processes now enable extraction from salt brine deposits primarily in South America. Researchers are working on methods to extract Li from seawater (where it occurs naturally at 0.1 parts per million), but right now Li ore mining involves the kind of environmental impacts associated with open pit and mountain top removal mining. Brine extraction has

less impact but can consume massive amounts of water — a problem in very arid regions.

Does that mean that Li-ion batteries are bad? Not exactly. All forms of energy have negative externalities. Thinking of batteries as a “zero impact” solution to environmental concerns is incorrect, but batteries clearly have a role to play in our energy future. How that evolves will depend on how technology advances.



In this photo, we see the difference between Level 1 and Level 2 automotive Electric Vehicle Supply Equipment (EVSE), commonly referred to as chargers, and the different outlets they use.

While electric motors are simpler and less maintenance intensive than their ICE counterparts, batteries are far more expensive and complicated. The actual chargers for most electric vehicles (EVs) are built into the vehicle, enabling installation of “chargers” in homes and public places without compatibility issues. Regardless of where the actual charger resides, there are different levels of charging. How this will be applied to aircraft remains to be seen, but the EV world offers a few choices. Level 1 alternating current (AC) charging (120V/up to 16 amps (A)) is a standard household electrical outlet. Level 2 AC charging is 240V (usually about 50A) and is typically similar to an electric clothes dryer. The higher the voltage and amperage of the circuit, the more electricity it can provide to the vehicle. A typical Level 1 charger can only supply less than 2 kW, while a Level 2 charger typically provides around 7–11 kW. Using basic math, a 20 kWh battery would take about 10 hours to charge on Level 1 but only 2–3 hours on Level 2. Losses in charging make it a tad more complicated, though: Level 2 is close to 90% efficient while Level 1 is less than 84%.

For aviation, Level 1 might seem too slow, but its low cost and ready availability are advantages. Some hangars already have electricity, so adding a 120V outlet isn’t a big deal. For an airplane that spends most of its time in the hangar, extra charging speed probably isn’t worth the cost. Even a large spec 92 kWh battery would be charged in about three days from empty off of a standard outlet. You could fly, roll your airplane back in the hangar, plug it in, and go home. When you return a few days later, your airplane is “refueled” for less than \$20 of electricity. But what about those times when you don’t have time?



While both Level 1 and 2 use the same J-1772 connector, note the difference in cord gauge of the Level 2 connection on top. The 240V 32A EVSE requires a much heavier cord.

AC/DC

If time is an issue, you might need DC Fast Charging. Often called Level 3 charging, DC Fast Charging is a very different technology. The electrical grid provides power in alternating current (AC), but batteries store it in direct current (DC). AC works very well for most applications. To store that energy in a battery, though, you need an inverter to transform it into DC. DC Fast Charging eliminates that step by going directly into the battery and at a much higher voltage and amperages. DC Fast Charging can provide over 300 kW of charge if your vehicle can accept that much. While still not quite as fast as a visit from the fuel truck, it’s getting much closer.

The downside is that it creates a lot of heat and requires heavy gauge cables. It’s also hard on the battery to be charged that rapidly. So using DC Fast Charging a lot could potentially reduce battery performance and life faster over time than less aggressive charging. It’s also important to remember that regardless of the level, charging varies with conditions and state of charge (SOC). This is why you often see charging times listed at 5–80% rather than 0–100%. Charging will slow dramatically above 80% in most applications. Level 1 and 2 will be less impacted by virtue of their lower base charging rate

The Sky Ahead

So does an electric future lie ahead? Will we see electric aircraft become a factor in GA?

A 350 kW DC Fast Charger. Note the heavy cord and CCS connector. Photo courtesy of Electrify America

I believe the answer is yes, but it's not going to be a quick revolution or even possibly a complete one.

Because electrification — at least for now — is harder for bigger and more powerful aircraft, we are likely to see GA lead the way. The initial training market looks to be the most ripe for conversion. Electric aircraft now available or soon to be available can cover most required tasks. They can benefit from significantly reduced fuel costs and the reduced noise signature from switching. The picture for general purpose GA use is a little more challenging but could become a reality in the coming years. This is especially true if you operate from a hot or high airport. Since the electric motor doesn't depend on atmospheric oxygen, density altitude won't compromise EV motor performance in the same way it affects ICE.

It's an exciting time to be in aviation, and it will be fun to watch the electric airplane fleet develop.

Get the Lead Out! FAA

There's nothing better than the smell of avgas in the morning! Well, maybe the "sound of freedom" as a fighter jet soars by overhead may be better.

Nevertheless, sampling aviation gas — avgas for short — is a ritual every general aviation pilot does during preflight. Part of the rationale is making sure you have the right

grade of fuel, the one with the blue tinge. The other part is making sure there is no water in the tanks. Even though you may love that fuel smell, inhaling toxic lead particles is not the best decision for your health.

'TEL' Me More

Yes, lead. It's the same lead you have to read about when you buy an old house or rent an apartment.

EMBRACING
THE
ENVIRONMENT



Eating paint chips in today's world may be a safer bet. (*Please don't eat paint chips.*) Burning leaded fuel in piston-engine aircraft is one of the last remnants of 20th century flight. Pumped at 3,000 airports across the country, avgas is the only remaining lead-containing transportation fuel.

The FAA shares the [Environmental Protection](#)



[Agency's \(EPA\)](#) concerns about lead emissions from small aircraft. More than 167,000 piston-engine aircraft operating in the United States rely on avgas. Lead is a toxic substance that can be inhaled or absorbed in the bloodstream, and emissions from avgas have become the largest contributor to the relatively low levels of lead emissions produced in this country.

There's a reason for the lead in avgas though. The additive used, tetraethyl lead (TEL) prevents damaging engine knock, or detonation, that can result in a sudden engine failure. The TEL byproducts after combustion also provide some benefits to exhaust valves by preventing them from recessing into the cylinder head and burning.

Searching for Alternates

Leaded gasoline for cars and trucks was fully phased out in 1996 with the passage of the [Clean Air Act](#). At that time, piston-engine airplanes and helicopters were only responsible for around 5% of all emissions in the country. The advances in automobile engines created a new market for unleaded fuel, but there were no alternative fuels for piston engines.

The market for avgas is small, with jet fuel, which does not require lead, accounting for approximately 86% of aviation's fuel needs. However, piston-engine aircraft are the staple of GA flying. Two-thirds of GA flying occurs for business purposes, which includes carrying millions of passengers annually, serving as the primary training ground for most commercial airline pilots, and aircraft used for

firefighting, law enforcement, and search and rescue, among others. New aircraft just aren't bought and sold like new vehicles, and no one wants to see an older piston engine aircraft lose value simply because it's incompatible with a new avgas.

Given the drawbacks of lead, in 2013 the FAA and EPA launched a research and development program to find an alternative unleaded fuel for piston aircraft. To help "get the lead out," the FAA is supporting the research of alternate fuels at its William J. Hughes Technical Center in Atlantic City. Through the [Piston Aviation Fuels Initiative \(PAFI\)](#), the FAA is working with aircraft and engine manufacturers, fuel producers, the EPA, and industry associations to overcome technical and logistical challenges to developing and deploying a new, unleaded fuel.

Knock, Knock! - The focus of the PAFI is qualification and authorization of an acceptable unleaded fuel and the safe transition to a more

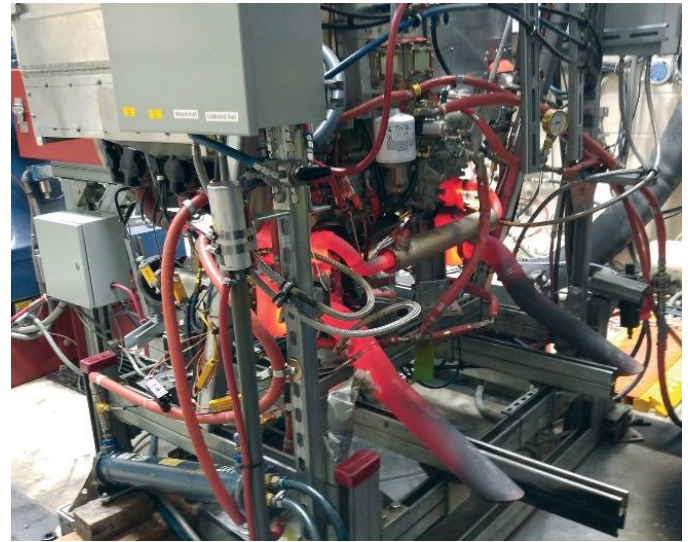


environmentally-friendly aviation fuel, which includes four key elements.

- Fleet-wide Authorization Qualification Test Program
- New Alternative Fuel Proposals and Certification
- Establishment of FAA Safety Standards
- Safe Deployment and Transition to a New Fuel

Testing, which has been ongoing since late 2014, was recently delayed due to the COVID-19 public health emergency. The FAA, fuel suppliers, and aerospace manufacturers continue to develop high octane, unleaded fuel formulations. The FAA

requires the fuel producers to complete pre-screening tests prior to a candidate fuel formulation entering into more extensive testing through the PAFI. These tests include completion of a 150 hour



engine endurance test on a turbocharged engine, an engine detonation screening test, and material compatibility tests using the PAFI test protocols or other procedures coordinated with the FAA.

Alternative fuel being tested by the FAA.

Development and pre-screening testing is taking place at both private and public testing facilities across the country. The FAA's William J. Hughes Technical Center is providing engine-testing services with individual fuel companies. The FAA also continues to support other fuel applicants who have decided to pursue engine and airframe approvals that would allow the use of their fuel formulations through traditional certification processes.

In the big scheme of things, avgas for our GA aircraft is a very small portion of our country's fuel needs. This last remnant of the high-octane needs for our "arsenal of democracy" 75 years ago is still fueling our need to fly. It's time to get the lead out for good.

Prop Wash

In the short-term, lead exposure at airports can be reduced by increasing the distance between run-up areas and public areas. If existing run-up areas typically cause propeller wash to be directed off airport property or into areas where the public can be exposed, an airport operator should consider shifting either the location or orientation of run-up

activities to locations where the emissions can be better contained to non-public areas of the airport. In cases where it is not immediately feasible to reduce lead emissions, minimize the public's outdoor air exposure to lead emissions by either shifting fences to increase the distance between run-up areas and public observation areas and/or posting signs to discourage loitering by the public in those areas where there may be potential and unnecessary exposure to lead from piston engine aircraft emissions.

With valuable input from industry, the FAA is taking important steps in advancing general aviation forward to a cleaner future. So next time you smell avgas in the morning, know that change is in the air.

INSPIRATIONAL PILOT JESSICA COX PURSUING THIRD CLASS MEDICAL AND FOUR-SEAT AIRCRAFT

ARMLESS PILOT ANNOUNCES FOOT-CONTROLLED RV-10 BUILD PROJECT

Photos by David Tulis



August 2, 2021 By David Tulis - AOPA

Armless sport pilot Jessica Cox, who has inspired scores of aviators and others, announced during EAA AirVenture that she intends to pursue a third class medical certificate and then move up from an adapted two-seat Ercoupe to a foot-controlled four-seat Van's Aircraft RV-10 homebuilt aircraft.

Inspirational speaker and sport pilot Jessica Cox announces that she will pursue a third class medical and a four-seat aircraft during a seminar on the AOPA campus..

Cox and her husband Patrick Chamberlain said that building an airplane from the ground up to



address her special needs would "dial down the difficulty of flying" and help pave the way for others with physical limitations.

Cox, who was born without arms but tirelessly pursued aviation, told attendees at a seminar on the AOPA campus that her "next chapter is an exciting one. I'm going to go the route of a third class medical." She said she "just received word that I could apply for a statement of demonstrated ability." If granted, the SODA would allow Cox to fly other aircraft with similar modifications.

Cox and Chamberlain predicted that the aircraft build project could "serve as a role model for other pilots with disabilities to explore or inspire new ideas." Two universities are challenging their students to come up with designs for flight and engine controls that could be implemented. Chamberlain said a team of professional engineers has also committed to helping Cox ensure the safety of any modifications.

Cox's current aircraft platform was designed in the 1940s and is adequate for brief flights before she tires because she manipulates the Ercoupe's conventional "pretzel" yoke and throttle solely with her feet and toes. "She has to hold her legs crisscrossed up in the air in an already cramped cockpit in order to reach the controls," Chamberlain explained. She can safely hold that position for 30 to 45 minutes and would like to fly farther in a general aviation aircraft so she can continue to inspire others with her story of perseverance.

Pilot Jessica Cox, who was born without arms and flies an Ercoupe with integrated aileron and rudder controls, demonstrates her technique for flying the

aircraft with her toes during a stop at AOPA headquarters in Frederick, Maryland in 2020.

In 2020, Cox and Chamberlain drew attention to the thirtieth anniversary of the Americans with Disabilities Act by bringing the Ercoupe east for demonstration flights near Washington, D.C. It took a professional ferry pilot four days to fly the small aircraft from Tucson, Arizona, to Frederick, Maryland. She flew retired Sen. Tom Harkin (D-Iowa), who celebrated his landmark bill with “the most fun” event during a weekend of celebrations, AOPA previously reported.

“A quick, IFR airplane like an RV-10 could complete a trip like that in a much shorter period of time and allow Jessica to visit multiple locations in rapid succession,” Chamberlain explained.

A more capable aircraft could also open the door for Cox to fly herself from her home base at Ryan Field in Tucson for inspirational talks via Rightfooted Foundation International, the nonprofit that supports her speeches, appearances, and encouragement to others facing physical challenges.

Cox was optimistic that that her accomplishments as a pilot and as an advocate for others who are physically challenged can be “turned into a megaphone to articulate the ongoing issues and struggles of the disability community.”

<https://www.jessicacox.com/foundation/>

Movie: Documentary

<https://www.youtube.com/watch?v=Tk7d6EhoCRk>

For Sale:

KUNTZLEMAN ELECTRONICS, DOUBLE DUAL MAGNUM – SYSTEM 12 volt Model with Driver and Two STANDARD STREAMLINE Heads - \$153 New in box.

<https://kestrobes.com/product/double-dual-magnum-standard-12-volt-model/> -

Email: jimheffelfinger@gmail.com

Bendix_King Av8or - In box used. Make offer - Jim Heffelfinger

Free - AVMAP IIIc GPS jim Heffelfinger

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Chapter outreach – Pleasant Grove High School - Elk Grove school district – Jim Heffelfinger

Fall 2019 had the chapter starting to work with Pleasant Grove High School as part of their IDEA program which is a variation of STEM. Unfortunately 2020 put an end to on campus visits but I was able to do zoom aviation awareness programs throughout the 2020 school year reaching over 300 students.

Now fall 2021 we are back on campus with the following events September 2nd I will be on campus for promotion of an aviation club with a booth out in the quad during lunch for Club Rush which is an exhibition for various clubs that are going to be available on campus. Currently there are 15 people that have signed up in advanced interest - so that's a great start.

September 7th I will be presenting aviation awareness within the IDEA program similar to the zoom programs I did last year. We are aiming at the 13th for the first club meeting - initially meeting one day a week for about an hour. We may extend that beyond the 60 minute time frame at some point based on activities. I've also talked with the program director about doing multidisciplinary special projects wrapping around aviation as a focus - bringing in english, history, math and other science elements for special group projects to work on. IDEA program staff are really excited to be adding another element to the career awareness programs they already have with their industry partners.

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FAAST Blast — Week of August 09 – August 15, 2021

Biweekly FAA Safety Briefing News Update

Tune in on Aug 17 to Hear About NOTAM Modernization

On Aug. 17, at 2 p.m. EDT, the FAA will host the fourth session of its multi-part series of virtual safety forums regarding critical safety issues in the nation's airspace. In this next session, the FAA's Jim Linney will provide an update on Notice to

Airmen (NOTAM) modernization efforts and how they will benefit general aviation pilots. The session will include a discussion on the agency's efforts to optimize accuracy, timeliness, and relevancy with NOTAMs. For more information on this initiative, see the NOTAM Modernization page at www.faa.gov/about/initiatives/notam.

Future Summer Safety forums include a runway safety session (Aug. 31) and a general live Q&A session (Sep. 14). See the schedule here: www.faa.gov/news/conferences_events/2021_summer_safety_series. The events will be livestreamed on the FAA's YouTube channel at www.youtube.com/user/FAAnews — no registration is required. You can also catch previous sessions recorded here on this playlist: www.youtube.com/playlist?list=PL5vHkqHi51DS7lrx-gyn2xQ9XgIIFoXZ1.

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FlySafe — How to Make the Best Use of Weather Information

Today's pilots enjoy an abundance of weather information sources, but having weather information available is only part of the weather decision-making equation. Knowing how to acquire, interpret, and make operational decisions based on weather information is essential to safe flying. See our latest FlySafe fact sheet at <https://bit.ly/3fFaORY> to learn how to make better-informed weather decisions. Also check out our 57 Seconds to Safer Flying video on using weather information [here](#), as well as a new video on predicting [icing conditions](#).

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Oh Say Can You See ...with LEDs

Across the board, both large and small airports are transitioning to light emitting diodes, or LEDs, to the point where LED-based lighting has largely replaced incandescent technology on runways and taxiways. The switch to LEDs has not only proven to be safe and effective, but testing and analysis has convincingly shown that in all weather conditions, a pilot will see and recognize LED lights before incandescents. Pilots are reportedly beaming over the improved clarity, resolution, and the ability to better distinguish colors on the airfield. Come see how LED lights affect a pilot's visibility

and perception, its compatibility with night vision goggles, and learn when LEDs will replace traditional bulbs in approach lighting systems when you take a look at the article "Changing the Light Bulbs, LED Technology is the New Beacon in Aviation Safety" at <https://medium.com/faa/changing-the-light-bulbs-e316e9367a86>. You'll find more on ways to "fly green" through new technology in our environmentally-themed issue at www.faa.gov/news/safety_briefing

Private Certificate – SEL

Isai Villaneva

My training in Single Engine Land aircraft began in January of 2020 when I took a ground school through the Flying Panthers Flight School. After completing this ground school, I took my written exam in June and passed with an 87%. I started my flight training on November 7, 2020 out of McClellan airport with the Flying Panthers. Developing the skills of flying an aircraft with power came relatively quickly thanks to my previous experience in gliders. I was able to solo in a Cessna 152 on January 17th, 2021. At this point, all I had to do was prepare for my planned checkride on July 25th, 2021, which was also the day of my 17th birthday.

Unfortunately, when that day came I failed to qualify because my passport had expired. My most recent instructor and I got together and started searching for DPEs that could take me for my checkride within the next month. Thankfully, we were to find the spot at Lincoln Regional Airport at 1400 on August 24th, 2021.

Throughout my flight training, I had trained in two different kinds of aircraft and went through three instructors. Originally, I started my training in a Cessna 150. Things changed when I was endorsed to do my very first solo cross country. I had planned the trip the night before and was looking forward to flying according to my flight plan all by myself. I took off the next morning at around 0900 hours. Cruising at 2300 RPM and about 50 nautical miles into my first leg, I suddenly lost about 900 RPM at 4,500 feet MSL. At first, I thought that it was a response to having too lean of a mixture, so I put it

into full rich position. The rpm went up temporarily, but

shortly afterward, the RPM dropped down again. To resolve the issue, I put in full throttle which caused my engine to run normally again. I flew the rest of my cross country that day since I did not experience any other issues. After I finished the flight, the Cessna 150 was grounded for 3 weeks. To this day, I have not been told what happened with the airplane, but it was certainly a surprise for me as I was not expecting this to happen on my first cross country.

With my PPL for SEL, I will continue to advance my training through earning ratings. I would like to thank EAA Chapter 52 for making my dream of learning how to fly come true. I am forever grateful for the support that I have been provided with.

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[The president's column is usually a lead article, but the newsletter had already been laid out without it. – Editor]

The Left Seat - Gill Wright chapter president

This summer has gone by in a flash, and we are now 30 days from Fall Equinox in September. Our chapter has been very busy on a number of different fronts, most notably in how our third Ray Scholar Isai Villanova obtained his Private Pilots Certificate on August 24th.

It has been quite amazing to see his progress over the last few years from when the chapter sent him to aviation camp 3 years ago. His steady persistence, diligence, and inner determination, has been supported by his family, and many people in the extended family of Chapter 52. All of us have been the wind under his budding wings that will carry him very far in the years to come.

During July a number of people took the pilgrimage to AirVentures and we look forward to hearing their stories at our General meeting, which will be a ZOOM, Tuesday, August 31st at 7:00 PM. The meeting details will be sent in a separate email. It will be good to hear the perspectives from our recent Ray Scholar, and
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our long standing members who took the journey, as to how Oshkosh felt after a year's absence from our lives. I'm curious to hear about what new aeronautical technologies they saw.

Two items of note, at our July pancake breakfast, we bid a farewell to Carson Ballou, who departed for Embry-Riddle in Prescott, AZ to further his life's journey to a flight deck. His energy and contributions to the Chapter's life will be missed. His crafting the Chapter news letter will continue with one of his fellow students from Pleasant Grove High School, Nicholas Theodorovic. Nick has a similar passion and interest in aviation, and we look forward to his participation in the chapter's life as the new Wing Flap editor. He has already asked about the possibility of having an airplane wash at our next pancake breakfast on September 12th. Time will tell if he, and Isai, chose to do so. I will encourage anyone who would like to help our youth in this endeavor to let Nick know you would be willing to support such an airplane wash.

Finally, something rather curious happened as I was replacing the hangar kitchen sink early in August. First the wings of the Glass Air project departed on Saturday, August 7th and completed the Boards goal selling various donated aircraft to help further the Chapter's educational support goals. It was nice to see the open space in the hangar from the 4 projects we have found new homes for in the past 9 months. But nature abhors an open space, yet to be filled. After our pancake breakfast on August 8th a new bird landed in our hangar, namely a completed Long Easy, ready for its first 40 hours of flight. Once again, Owen Hughes has been busy to help the chapters goal of eventually developing a flight club. His enclose article makes for some very good reading.

The power of an idea who's time has come is moving this chapter forward in many healthy ways. We have an amazing community of dedicated people, who are passionate about

aviation, and share that passion. Together we are building a future for the years to come. We will visit more on these details at our General meeting, on August 31st at 19:00hr.

Safe travels until then,

Gill Wright

President EAA Chapter 52

On the internet.....

- Sonex factory tour – 2021.
<https://www.youtube.com/watch?v=VxWqo0OfEM8>
- Electric GA – Leading the Way.
<https://medium.com/faa/shocking-potential-d1c4ed3c565c>
- FAA- LEADED fuel – report...
<https://medium.com/faa/get-the-lead-out-b8dbb9694ea4>
- Fabulous photo gallery for AV21... in case you missed it...
<https://www.flickr.com/photos/eaairventureoshkosh/sets/72157719705128132/>
- **Sonex** – Announces the development of a **high wing** design – due 2023.
<https://www.sonexaircraft.com/news-archive/>
- **Vans Aircraft** Announce new aircraft – **RV-15 HIGH WING !!!**
https://www.youtube.com/watch?v=z7TT_8eys4

Highlights...

2021 Membership \$30

EAA Chapter 52

PO Box 15743

Sacramento, CA 95852-5743

EVENTS

September Pancake Sept 12

Board Meeting – Sept 14 Zoom

Membership meeting Sept 28 7:00

expect Zoom

Cal Capitol Air Show - 24-25-26

<https://californiacapitalairshow.com>

limited attendance

California Capitol Airshow Service



September Air Show is coming and those who are wanting to be marshals for fly In parking need to complete the King course.

<https://www.kingschools.com/understanding-aircraft-marshalling> Certificate needs to be shown on site.

September 25-26 work days.

EAA Chapter 52

<https://www.facebook.com/EAA-Chapter-52-Sacramento-150966778295803>

Near daily updates and inclusions

Autopsy of an EarthX Battery Continued from July edition

Jim Heffelfinger

1. Cutting the case open with a hot knife -
2. Case removed – BMS on top of the 2 12v cell bundles
3. with all the foam padding removed the entire pack and board can fit in ½ the case.
4. Cell pack bulging signs of failure of packs
5. Alternative Battery pack - High current – [200amps] 8 AH
6. Another alternative pack – lower max current but 25 AH compared with AGM U-1 battery

