



EAA Chapter 691 Newsletter February 2024

James and Allison Shinas' Pegazair enjoying the Northern Lights (Check out their video in the "Clickbait" section)

On the Web @ eaachapter691.org

EAA 691 is:

President: Will Fox

Vice President: John George

Secretary: Pierre Levy

**Treasurer: David Young** 

Web Editor: Marilyn Phillips

Newsletter Editor: April Fox

Young Eagle Coordinator: April Fox

#### Table Of Contents:

- Upcoming Events **pp. 3**
- This month's meeting **pp. 4**
- Letter from the Editor **pp. 5**
- President's Report **pp.6**
- Pilot Story pp. 7
- Member Happenings **pp. 12**
- What's new in Aviation **pp. 9**
- Tech Corner pp. 10
- Build and Fly Show and Tell **pp. 12**
- Clickbait **pp. 14**
- Electric Dragonfly Update pp. 20
- Jumble **pp.25**
- EAA Chapter Renewal **pp. 26**



# Upcoming Events

Meetings Schedule (unless otherwise noted)

9:30am - social time

10:00am - business meeting

10:30am - speaker/workshop/training

# **Upcoming Events**

Check out our Chapter Website at <u>https://www.eaachapter691.org</u> for more information about upcoming activities.

**Saturday February 17** @ Santa Fe Jet Center Jeff Gilkey presents "Obscure and Scenic New Mexico"

A reminder that the EAA Chapter 691 February meeting will be held next Saturday, February 17 in the Pilot's Lounge at the Santa Fe Jet Center. As usual we will have coffee and donuts at 9:30, a short business meeting at 10:00, and the featured presentation at 10:30.

This month's presentation is by Jeff Gilkey, well known for his aerial exploration and videography of our region. He flies a trike and now employs spherical image capture to enable an immersive experience.



#### **Over New Mexico and the Southwest**

#### Jeff Gilkey

Experimental Aircraft Association: Green Chile Chapter 691 Saturday, February 17, 2024 Santa Fe Airport, SF Jet Center Pilot's Lounge Donuts and Coffee at 9:30am; Business meeting 10:00; Presentation 10:30

> Questions? Visit EAAchapter691.org or write John.altaera@gmail.com

Jeff flew hang gliders in the 80's and 90's (cheapest way to fly), took 10 years off, then started flying trikes on December 30, 2003 (just had his 20th anniversary flight). He has accumulated over 2400 hours in his Aerotrike Cobra, which is on its 3rd wing and 3rd engine. He is currently the NMPA Secretary and has been on the NMPA Board of directors for 5 years. He writes a column for the NMPA newsletter called "Obscure and Scenic New Mexico" which highlights some of interesting places to explore from the air over New Mexico and southwest. https://youtube.com/user/jefftrike



# Letter from the editor

### by April Fox



#### Hi folks!

I'm excited for a new year as Chapter 691 continues to develop STEM workshops for the youth in our communities as well as an EAA Build and Fly RC airplane project. Walt will be giving a brief synopsis of what the chapter needs in terms of volunteers for the upcoming Build and Fly. **Please consider volunteering to become a mentor.** 

April



# President's Report

### by Will Fox



#### 2024 Schedule Is Looking Great!

John Lorenz gave a great presentation at our January meeting on how to fly basic aerodynamic maneuvers and what can happen if you screw them up:-). John also showed a video of a <u>Ford Trimotor</u> doing all three of the basic maneuvers he discussed. That was was incredible to watch. I would not have guessed that could be done in the Trimotor. I hope to have the video of his talk up on our Chapter YouTube channel by the time you read this.

Our February 17<sup>th</sup> meeting will be held at the Jet Center in Santa Fe. Jeff Gilkey will be our guest speaker. Jeff is an avid trike flyer, secretary of the New Mexico Pilots Association, and an accomplished aerial photographer and videographer. His talk is titled Over New Mexico and the Southwest. His presentation starts 10:30 am after the business meeting.

Speaking of the business meeting, at 10:00 am Walt Atchison will be showing and telling about our upcoming Build And Fly STEM project. The goal of the project is to teach kids how to build and fly electric Remote Control (RC) model aircraft. It looks like a really fun project for adults as well as kids. As usual, we will have donuts and coffee at 9:30 am.

There is something pretty exciting happening in the world of Light Sport Aircraft (LSA) right now that will have a major impact on its future. The FAA is completing the process of rewriting the regulations that define what an LSA is and its performance envelope. If you remember, an LSA was defined as a two place aircraft that had to weigh less than 1320 lbs, have a stall speed under 45 knots, and a maximum speed of less than 120 knots. It also could not have more than one motor, a retractable landing gear, or an inflight adjustable propeller. It did have one very important advantage though, and that was it could be flown by someone with a Sport Pilot certificate and a valid drivers license. It did not require a Private Pilot certificate or an FAA medical certificate.

The really good news is that the new proposed rule know as <u>MOSAIC</u> is going to change all that and not only expand the performance envelope of LSAs but also allow the development of LSAs using electric propulsion. The world of Light Sport Aviation is about to change, big time my friends. Stay tuned.







Jeff Gilkey explores the wonders of the Southwest in his trike and documents them with beautiful photographs and videos.

# Pilot Story

### by the Editorial Staff



### **Contaminated Fuel**



Always sump your fuel before ever flight and do it for every drain. Use a clear container where the color of the fuel can be clearly seen. Smell the fuel, it will help you differentiate between water, avgas, and jet A. If you find water in the fuel, keep sumping and rocking the tank until the water is completely gone.

One time I sumped the fuel from my Mooney left wing tank and it only had a tinge of blue color and the smell of avgas was very faint. I poured it out on the ground and noticed that it did not evaporate very fast. It was all water. I sumped a pint of water out before I began to see Avgas in the water. After another pint of sumping, the water was gone, and the sample had a good blue tint and there were no globules of water in the sample.

Turned out the the FBO hadn't put the plane in a hangar as requested and there had been a powerful rainstorm that night. The O-ring on the flush fuel cap was cracked and let in more than a pint of water. There was no water at all in the right wing tank. The O-ring in its cap was good.

# Member Happenings

By Dan Holden



I am building a Mitchell U2 Superwing motorglider. It is a single seat flying wing in the pusher configuration. Original plans called for a 22 horsepower engine, but I plan to fit a 20 kW electric motor. The flight controls and surfaces are done with many of the control rods in carbon fiber. I plan to cover it with Oratex light. The main design goal is to have two hours endurance at 50 knots and remain under the part 103 (electric) empty weight limit of 284 lbs. I have built a mold for a carbon fiber seat and am experimenting with Raspberry Pi based flight instruments. The original plans called for folding wings, but my current thinking is to not build it that way to save weight and complexity. The overall wingspan is 37 feet. Options I am considering are retractable landing gear and multiple motors and propellers. The theoretical power requirements in cruise are about 4 kW depending upon propeller efficiency, which will necessitate about 10 kW-hr battery capacity.

# What's New in Aviation

### by the Editorial Staff



The JMB VL-3 is a two place, high performance, turbocharged sport aircraft out of Europe that will cruise at 200 knots and climb at over 2000 feet per minute.

#### The Upcoming LSA Speedsters

The FAA is rewriting the rules (MOSIAC) for the Light Sport Aircraft (LSA) category that will dramatically change the variety of LSAs that are available. One area that is attracting a lot of interest is the development of fast high performance two place aircraft. If you can picture a turbocharged LSA that cruises at 200 knots and climbs at over 2000 fpm with retractable gear and a constant speed prop, you know what I am talking about.

Two of them are pictured here, the side-byside JL-3 on the left, and the tandem seat Taragon on the right. Both of these models were developed in Europe where the LSA regulations allow the development of higher performance LSA aircraft than in the US. As a result the market for these aircraft has been dominated by the Europeans. The US has some catching up to do if we want to compete in that market.





The Taragon is a tandem seat, high performance, sport aircraft that could meet the new LSA regulations coming out of MOSIAC.

These type of aircraft typically incorporate carbon composite airframes, advanced avionics, and ballistic recovery systems to go along with their futuristic looks and high performance. Price tags range from \$250k to \$350k . Under MOSIAC they could be operated with just a Sport Pilot License, although some advanced flight training is highly recommended given their complexity and performance.

# Tech Corner

### by Will Fox



#### Well Done Ingenuity

The Mars helicopter known as Ingenuity made its last flight on Mars on January 18, 2024. Flight number 72 was supposed to be a quick popup for a systems check, but during the descent Ingenuity lost contact with the Mars Rover, Perseverance. Upon reestablishing communications, it was determined that the helicopter's rotor blades had been damaged, making further flight impossible. NASA engineers believe that the blades were damaged when Ingenuity <u>lost its</u> <u>situational awareness due to the uniformity of the sandy</u> <u>terrain surrounding it</u>. It landed at an angle that caused the blades to strike the ground. The helicopter managed to remain upright, but the damaged blades would create too much vibration in the rotor system to allow it to fly again.

In a last ditch effort to get the helicopter flying again, NASA contacted Martian authorities to see if they could help with the repair of the damaged helicopter. It was agreed that they could, and new rotor blades are on order from NASA. However, supply chain issues make it difficult to get replacements in a timely manner because the next launch window is two years away. Once the blades do arrive, installing them will be challenging. Ingenuity uses metric fasteners, but the Martians use tools based on the Sol standard, so they won't fit the Earth fasteners. To compound the problem, Earth tools do not accommodate Martian physiology (three digits instead of five), so the tools will need to be modified to work. However, Martian A&Ps, like their counterparts on Earth, are used to modifying tools to fix aircraft, so these problems will no doubt be overcome.

A bigger problem is the 24 volt electrical system that powers Ingenuity. Martians use fusion power systems that don't require electricity. The Martian union of United Solar Workers





Ingenuity photographed this picture of one of its blades showing the damage to the tip of the blade.



Martian technicians in bio -hazard suits headed out to inspect damage to Ingenuity. (USW) has raised concerns about the possibility of an electrical shock causing a Martian to spontaneously combust. It turns out that Martian blood contains lithium rather than iron, as is the case with humans. The USW points to the problems that Earthlings seem to have with their lithium battery powered EVs bursting into flame, as a cause for their concern. The USW goes on to point out that the potential for biological contamination is another source of concern for their workers. NASA insiders indicate that multiple renditions of the "War of the Worlds" movie has led to conspiracy theories on Mars. Some Martians believe immigrants from Earth will unleash deadly microbes on the planet and destroy all Martian life. In any case, Martian mechanics working on Ingenuity will be required to wear electrically insulated, bio-hazard suits while repairing the aircraft.

Life on Mars began millions of years before life on Earth. As a result Martians are considerably more evolved than humans. Some Martian leaders have indicated a certain level of intolerance when it comes to Earthlings. Our physical features and intelligence are often the butt of their jokes. A common xenophobic joke goes like this, "If the Creator wanted Earthlings to have cold fusion, he would have given them the brains to invent it". Martians of course, developed cold fusion energy sources ages ago, but their export control of advanced technology to Earth has prevented us from acquiring the technology. Hackers on Earth believe that they will ultimately be successful in circumventing the export controls once they understand why 1+1 = c in Martian mathematics.

OK, I made up the part about the Martians, but the part about Ingenuity not being able to fly again is true. Ingenuity has been a <u>tremendous success</u>. Originally designed as a demonstrator with only 5 planned flights, it ended up flying 72 missions as an aerial rover assisting Perseverance with route planning and helping scientists to learn more about the Mars landscape. Its success has inspired NASA to include <u>aerial rovers</u> for sample recovery in future missions. Kudos to JPL, NASA, and America for designing, building, and operating the first aircraft on another planet. The investment of national treasure in science and technology has been one of our nation's greatest trademarks. It has and will continue to be one of the things that makes this Country great. Well done Ingenuity.





Ingenuity in flight over Mars, "The little helicopter that could".

Will Fox is a flight instructor and homebuilder. He also serves as a Technical Counselor and Flight Advisor for the EAA. In his spare time he enjoys working on and flying his two homebuilt aircraft, a Pegazair P-180 and a Questair Venture. He is also fascinated with solar power and electric vehicles, so his next airplane will be electric. Please feel free to contact him at tailspinfox@gmail.com if you have questions or comments.



EAA Chapter 691 Build and Fly 2024



# **Show And Tell**







# Where are we with Build and Fly



#### YOUNG EAGLES BUILD AND FLY PROGRAM CHECKLIST

The following is a checklist to understand how to prepare to host the Young Eagles Build and Fly program. Our EAA chapters department will assist you with this program.

 Chapter identifies and creates a relationship with a local AMA club for direct participation in the program.



II. Form a Build and Fly program committee. Small team dedicated to the planning and execution of a Young Eagles Build and Fly program. Will help keep event planning on track, as well as creating a group that reports directly to the chapter board on planning and program progress.

- → A. The planning committee should include local members of the AMA club alongside EAA chapter members.
- B. The planning committee should state the goals of the Young Eagles Build and Fly program and work to accomplish those goals. Examples of goals are:

1. To successfully engage 6-10+ kids in the Young Eagles Build and Fly program.

2. To provide camaraderie within the chapter to foster an opportunity to grow aviation at the local level.

3. To mentor kids in any aspect of aviation that interests them during the kit build process.

4. To integrate the program within existing youth programming including Young Eagles rallies.

5. Select chapter build facility — chapter hangar or building, airport facility, school, or AMA club

III. A suitable location is required to build the RC kit where the kit can remain in place throughout the duration of the build. Space is also needed to create an additional activities area such as a youth ground school or other hands-on activities — ensure there is ample activity for the kids. Plan to have dedicated volunteers available to support the program.

IV. Chapter contacts the EAA chapters department to participate in the Build and Fly program.

A. A request should be made at least six weeks prior to the scheduled start of the program.

V. Chapter purchases EAA RC LT-40 eKadet and components through the EAA chapters office.

VI. Chapter markets to and enrolls kids into the program.

VII. Develop a curriculum that involves additional related activities.

A. Ground school-style curriculum for kids.

B. Include other modeling activities like rubber band or paper airplanes.

C. Include RealFlight 9 simulator.

VIII. Include indoor flights of included Vapor RTF aircraft.

A. An assortment of aviation informational materials will be helpful to ensure continued involvement and education in the program.

IX. Regularly schedule build sessions to keep youth and their parents engaged.





# Clickbait

For those who might not have seen it, this <u>article</u> shows how to put a widget for <u>aviationweather.gov</u> on your mobile or desktop so it acts like an app. Pretty handy.

An interesting video on survivability based on your emergency landing medium (i.e. roads, fields, water, trees...) <u>https://www.youtube.com/watch?v=lxP-RZ77Les&t=4s</u>

The wrong fire extinguisher can destroy your airplane

https://m.youtube.com/watch?v=gaBYIZccktl&feature=youtu.b

# **Electric Dragonfly Update**

Our goals are:

- Build an electric experimental aircraft to race in the Pulitzer Electric Aircraft Race.
- Attract and introduce young people to aviation.
- Integrate a Science, Technology, Engineering, and Math (STEM) program into the project.





## **The Pulitzer Electric Aircraft Race**

- It is organized by the National Aeronautical Association and is the first ever Electric Aircraft cross country race.
- A race will be from Omaha, Nebraska to Kittyhawk, North Carolina in May 2023.
- It is a 1000 mile nautical race where the fastest air time wins.
- You have 4 days to complete the race.



# **Electric Dragonfly Description**

- Description
  - Tandem wing design
    - Canard
    - Wing
  - Gross weight-1200 lbs
  - Empty weight 530 lbs (w/o battery)
    - 35 kw-hr battery weight 450 lbs
    - 17.5 kw-hr battery weight 225 lbs
  - Maximum speed 180 mph @ 75kw
  - Cruise speed 135 mph@30 kw
  - Stall speed 65 mph
  - Maximum Range 150 miles
  - Service ceiling 20,000 ft



### Pilots Experienced in Building Aircraft are Leading this Project

## We are off to a great start

- We have some hangar space in Los Alamos, a Dragonfly airframe for development, and some experts on building experimental airplanes to kick this project off.
- We are attracting young people and students that want to learn about aviation, airplanes, and how to construct them





### Science, Technology, Engineering, and Math Activities

- Build a wind tunnel to evaluate the Dragonfly aerodynamics.
- Model the aerodynamic performance of the Dragonfly with Computational Fluid Dynamics software.
- Build an RC model of the Dragonfly and measure its performance.
- Build a flight simulator for the Dragonfly.
- Create a spreadsheet for the racing crew to use to build a flight plan for each leg of the race.
- Design some fairings and cooling ducts for the Dragonfly

and build them with a 3D printer.



# What Students Will Learn And Experience

- Aeronautical engineering and aircraft performance.
- How to build aircraft structures.
- Electric propelled aircraft.
- Building fixtures and test apparatus.
- Aircraft systems like propulsion, avionics, and controls.
- Work on an experimental aircraft that uses electric propulsion.
- Get a free aircraft free ride with our mentor pilots!



## Why An Electric Airplane

- Electric aircraft are the planes of the future.
- They will be more environmentally friendly, produce less green house gases, will be quieter, and produce less environmental waste.
- They will have better performance than current General Aviation aircraft.
- They offer propulsion efficiencies that ICE engines can't.
- They offer aerodynamic improvements that current aircraft can't.
- They will be more reliable and require less maintenance than current aircraft.



## Why You May Want to Participate

- Educating kids in Science, Technology, Engineering, and Math is extremely important if America wants to maintain its technological superiority in the world.
- Getting young people involved in aviation is the future of America's aviation industry.
- This Project is promoting a greener world.
- For more information contact: Will Fox (<u>tailspinfox@gmail.com</u>) or Dan Holden (tail\_wheel@hotmail.com)





# Sponsors Are Key To The Success Of The Project.

- ACME Hangar Space.
- Wes Baker Airframe parts.
- Chris Trapp Viking Dragonfly.
- Skip Egdorf, John George, Jim Shinas, David Young, Mark Peters, Walt Atchison, Roger Smith – Time and materials.







# EAA Chapter 691 Membership Application/Renewal Form

Please mail this form along with \$25 to our Chapter Treasurer, Checks can be made out to EAA Chapter 691:

David Young 819 Gonzales Rd Santa Fe, NM 87501

Name:				
Spouse/partner's Nam	ne:			
EAA #:	Expiration Date (MM/YY) / _			
Address:		City:	State:	ZIP:
E-mail:				
Home phone:				
Work phone:				
Cell phone:				
Please list your curren	tly flying A/C and any finished or in-pro	ogress projects:		

