



George Stephenson, John Graham, and Harland Espeset's newly painted RV7A

# EAA Chapter 691 Newsletter December 2022

On the Web @ [www.eaa691.org](http://www.eaa691.org)

EAA 691 is:

President: Will Fox

Vice President: John George

Secretary: Pierre Levy

Treasurer: David Young

Newsletter Editor: April Fox

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Please check your email the night before the party to ensure The location of the party has not changed (currently it's at David and America Young's home).

Just to clarify for the Elephant; gifts are fun, if you someone where the

*Chapter 691 Party*

**10AM**

**Elephant**

**POSTPONED**

*by David and America Young  
819 Gonzales Rd  
Santa Fe, NM 87501*



**Experimental Aircraft Association  
Green Chile Chapter 691  
Meeting: January 21, 2023, 10:00 am  
Location: Santa Fe Airport, Jet Center**

**Speakers: Mike Mullane,  
former Astronaut**



**For questions or additional information: email  
Marc at [mbonem7@gmail.com](mailto:mbonem7@gmail.com). All are  
welcome.**

**Title: The Spaceflight Experience**

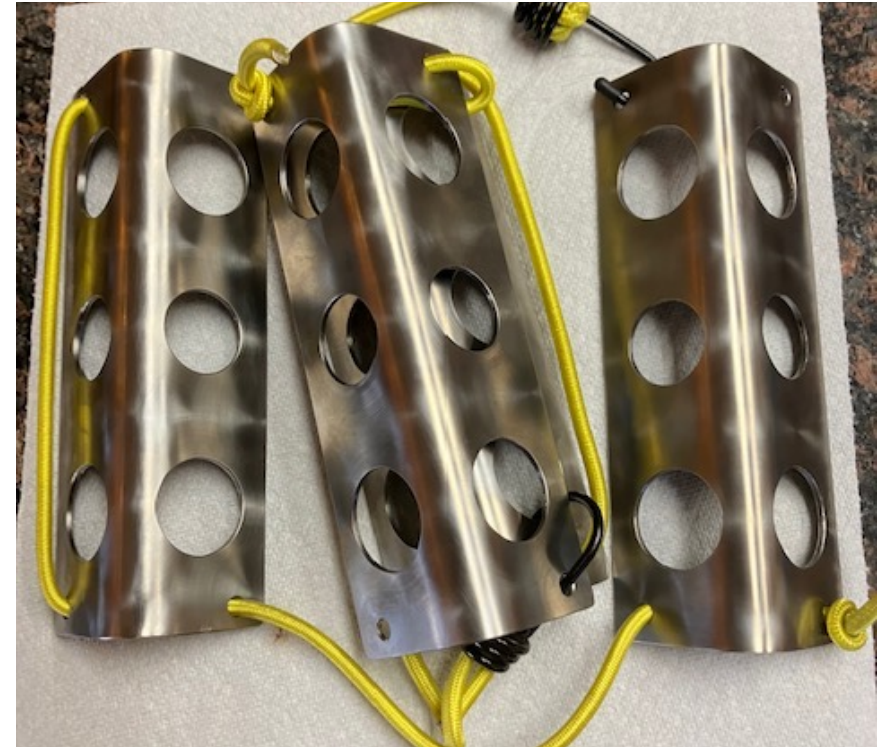
**Description:** Mullane will deliver an insightful, humorous, and inspiring story on his unlikely life journey into the cockpit of a Space Shuttle. With supporting photos and NASA videos, he will bring the audience along for a space shuttle launch, orbit operations and reentry/landing. His insight into the reality of living and working in space will answer many of the most popular questions asked of astronauts: the challenges of eating, sleeping, using the toilet and other habitability activity in weightlessness. And, of course, the most popular question will be answered...has Mullane seen any aliens!

# Letter from the editor

by April Fox



Hi Folks, please note that the Christmas party has been postponed. Keep an eye out for the new date coming sometime in January. If good company, good food, and fun games isn't enough to get you inspired, maybe winning these titanium travel chocks will get you to the party!



## Chapter 691 Accomplished A Lot In 2022

*"You can accomplish a lot with dedicated people who work hard and want to make a difference"*



# President's 2022 Report

by Will Fox



It has been a pretty exciting year for Chapter 691. One of our major goals this year was to grow our membership and bring new people into our Chapter, and that we did by increasing our membership by almost 100%. We also wanted to start a STEM program and get young folks interested in aviation, and the result was the Electric Dragonfly project. During the summer we often had several Chapter members, both young and old, show up for our Saturday Dragonfly work sessions. We also had a number of kids tour the Dragonfly Project, and one is even building an RC model of the Electric Dragonfly. And we had a number of kids show up for our Building Skills session on riveting.



Teaching kids how to build airplane parts.

Our desire was to get our community more involved in airport activities and aviation this year. We didn't fly many Young Eagles during the pandemic, so it was time to change that; we did so in spades by flying over fifty kids in two rallies, one in Espanola and the other in Los Alamos. We got a lot of positive feedback from parents and kids from these events. We also cohosted an open house with the Civil Air Patrol at the Los Alamos airport and had our airplanes and the Dragonfly project on display. It was attended by over 300 people and was very well received.



Happy flyers at the Espanola Young Eagles rally.

We have had five aircraft in various forms donated to us this year to support our activities. Hangar space was donated for our use, without which we could not do all things we are doing. These donations are extremely important to us, and I can't thank our donors enough for their generosity. We are in the process of applying for a tax exempt status with the IRS as a 501(c)3 nonprofit corporation, so that we can offer donors a tax exemption on their donations. This will offer a financial incentive for future donors.

There is so much more that happened this year. We had several great presentations this year at our meetings. We had a Fly-out to Questa, and we gave rides to members without airplanes at a Fly-around in Los Alamos. All in all we have had a very good year for Chapter 691, and it simply would have happened if not for our members and their participation and support of these activities. I especially want to thank our board members and advisors, our Young Eagle coordinators, pilots, and ground crews, airplane movers, and our STEM teachers, for their help. Without volunteers like you, our Chapter would not exist.



The Christmas party was scheduled for December 17<sup>th</sup> at David and America's house in Santa Fe. Unfortunately we are going to have to postpone it because our hosts have the flu. Besides the flu, covid, and RSV are making a lot of people sick right now and New Mexico hospitals are running out of beds so we don't want to add to that problem. We plan to reschedule the Christmas/New Years party for January and will let you know when we have a firm date. In the mean time lets hope David and America get better soon.



# Member Happenings

George Stephenson and John Graham flew their RV7A to Wickenburg AZ back in October to get her a new dress. She's a beaut!





# Flight Simulators 2022

By Marc Bonem



The original (Microsoft) Flight Simulator came out in 1982, three years before Windows! Since then, the technology has improved by fits and starts with a big leap forward in the last 5 years. Now, simulators are quite sophisticated with astonishing graphics and realism. They include every airport and different weather environments. You can simulate all kinds of system failures. You can go online and fly with friends. You can enlist real-time air traffic control. Capabilities include IFR, GPS, and a glass cockpit. You can even integrate your electronic flight bag into the simulation. Simulators feature many different planes including general aviation, commercial, military, and antiques. Simulators can be a top-notch training tool or a game or any combination of the two. This is super enhanced chair flying.

For this little article, my focus is on flight simulators primarily as a training/proficiency tool for students, though the technology is just as equally good for all kinds of gaming. I'm looking at "home" systems that would be affordable for most of us. There are semi-professional and professional quality systems as well, but of course you pay for what you get.



A home flight simulator can be great for practicing:

- Mental memory/proficiency/procedures;
- Navigation, maneuvers, drills;
- EFB and GPS integration;
- ATC/Radio communications;
- Anything IFR; and
- Route, airspace and airport familiarization prior to an actual flight.

Other advantages of a home simulator are:

- Simulators will save you money. Flight time is free, once you've bought the system.
- Simulators will "Fly" no matter what the weather is like outside. However, you can simulate any type of weather within the system, including the actual weather; and
- Simulators are always available (if it's your system). You don't have schedule weeks in advance or even schedule at all. Also, there is no commute.



Flight simulators are not perfect. Obviously, they don't simulate inertial forces, changes of attitude, or the thrill and chill of looking out the window and seeing the ground way down below. There is no smell of avgas (yet). Simulators won't match your aircraft perfectly, and if you fly experimental, it may not represent your aircraft at all. They won't provide perfect simulation for all situations (such as cross-wind landings). They won't count for the log book, unless you go fairly high end and work with a CFI. One local school even prohibits students from using a simulator to practice landings.

Lets' say you want to do this. How do you get set up? Though slightly older software, such as MS Flight Simulator X, will run on a recently manufactured laptop, it doesn't provide the modern features and sophistication. The newer high-tech software requires high-tech hardware. It's just like you need a decent Wi-Fi speed to watch Netflix.

There was a time (remember disco) when you could just buy a disk and load it into your PC and start flying. Not anymore. The day of build-your-own is over, unless you are an IT/gaming enthusiast. Nowadays, you should buy a manufactured CPU. Locally your only choice seems to be Best Buy. Capital Computer and GameStop didn't seem to be interested. (Was it my breath?) Remember that adage that nothing about flying is cheap? For all of the components, there are price/quality levels of adequate, good and very good

PC Supreme for \$1,680. There are also companies that custom build CPUs specifically for flight simulators: two are Jetline Systems, (the Gravity GT2 for \$2,700) and X Force (the Budget Flight Sim Gaming System for \$1,370). If you are on a strict budget, there may be sales or you can try buying a used one on Craig's List or E-Bay.

The exception to the pricing rule is the software, which is quite reasonably priced. There are three main suppliers. The first two are recommended for beginners. The new (2020) version of MS Flight Simulator is famous for its great graphics. Then there is X Plane 12, which is expandable and is good for general aviation. Finally, Prepared3D is known for high fidelity airliners, military and commercial planes. The basic packages all cost around \$60.00. Some people buy all three. You can preview these on line. The Flight Simulator Association's Beginners Guide has a side-by-side comparison. I suspect all three have owner's groups that provide support and opinions.

You will also need pedals, a yoke/joystick, and a throttle. You can buy them individually or in a combination package. (Can you say K.I.S.S.?) One yoke, throttle, and pedals bundle from My Pilot Store lists for \$329. Sporty's has one for \$360 but the \$600 package may be worth it. I have to admit, the Honeycomb Alpha Yoke looks pretty nice. Be sure to check to make sure what you buy will work with Microsoft, Apple, XBox or whatever hardware/software you happen to be running.

You should buy a good display screen with high resolution and refresh rate. The LG Ultra HD 27" (\$300 at BestBuy) will work. Some people get one for the front and two for side views for greater realism.

At this point you might want to think about a one-year membership in BestBuy's Geek Squad for support and debugging for \$200. (Who knows, it may all work right out of the box.....Wanna bet?) On the other hand, you might have access to one of those 12-year-old geniuses, that will make it all work for Cheetos.

Total cost: \$2,660 plus or minus. By all means check the reviews, check your mission requirements, and shop around.

For greater realism and capabilities, there are lots of add-ons. According to the Flight Simulator Association, the most critical is on-line ATC. The FSA holds that this is key for the total immersion effect. These services are often staffed by actual retired and working controllers, so they are pretty accurate. There are two choices. Pilotedge has a subscription price of \$35/month, and is available 15 hrs./day, 7 days/week and covers the Western US. Vatsim is free, but is staffed by volunteers, so it is available on an Ad Hoc basis. However, it also covers the entire globe.

Other add-ons include a headset adaptor for the computer (\$100), training courses, Nav/Com stacks, joysticks, and almost anything you can imagine or make.

Though the software packages may include their own tutorials, and training courses are available from vendors, the EAA offers its own Virtual Flight Academy flight training course. This is a free course for EAA members. The course looks pretty sophisticated. The EAA version can only run on the older MS Flight Simulator X (which runs on cheap PCs), but newer versions are available from Take Flight Interactive. The EAA is in the process of updating its offerings. There is a (slightly dated) webinar on it at: [EAA Virtual Flight Academy Resource Center](#). I highly recommend viewing this.

Flight simulators are another aspect to aviation that are probably here to stay. They can provide an outstanding training or proficiency tool. And if you look, you'll see they're a whole universe unto themselves.



## References:

EAA: [Webinar- Home Flight Simulation for Private Pilot Training and Proficiency Webinar- Home Flight Simulation for Private Pilot Training and Proficiency \(eaa.org\)](#)

[Flight Simulation Association \(Look for Beginner's Guides\)](#)

Sporty's Flight Sim Update: [Flight Simulator Buyers Guide 2022: Flight Sim Update](#)

Sporty's Flight Sim Update: [Comparing Microsoft Flight Simulator and X-Plane \(part 1\): Flight Sim Update](#)

Yoke comparisons: [Honeycomb Alpha Yoke, Logitech Yoke, CH Yoke, and Logitech Extreme 3D Joystick Review and Comparison - YouTube](#)

Microsoft Flight Simulator <https://www.flightsimulator.com/>

Flight courses: [TakeFlightInteractive.com](#)

# Tech Corner

by Will Fox



## Ingenuity Update

The little helicopter that could, just finished its 34<sup>th</sup> flight on the planet Mars. The original mission plan for the out-of-this-world flying machine was for only 5 flights over a 30 day period, provided it didn't crash first. Ingenuity surprised many of its critics by completing those 5 flights and meeting or exceeding the flight objectives. NASA decided that level of performance merited a change in its mission from a technology demonstration to an operational demonstration. That is NASA speak for lets see if Ingenuity can do more than just fly around on Mars. Could it, in fact, help the Mars rover called Perseverance by [scouting and mapping](#) the places it would travel? Turns out it could by providing pictures of the local terrain to help the rover find the best path to take to its objective. In the process, Ingenuity has had to survive navigation failures, dust storms, and the incredibly cold Martian winter. It was even able to crank up its rotor speed and power output so it could fly in the thinner air of the Martian summer. Something, that was never in the original mission plan. It has been more than 567 Sols (Martian days) since its first flight and like the Energizer Bunny, this feisty little copter just keeps going and going.

The achievements of Ingenuity have been even more amazing in light of the fact that it wasn't even in the original 2014 budget for NASA's 2020 Mars Mission. You see, there were a lot of folks, scientists, engineers, and managers, that thought the helicopter was a waste of time and that it would take resources away from the science mission. But the Ingenuity team didn't give up on the idea and with hard work, perseverance, and a little luck, it was finally included in the 2018 budget for the 2020 Mission, albeit with a very limited operational window. Many thought it would never complete 5 flights before crashing. However the little guy did not crash and in fact flew a



The little helicopter called Ingenuity has completed 34 flights over the surface of Mars to date. Somehow it manages to keep going even when the solar cells are partly covered with Martian dust.

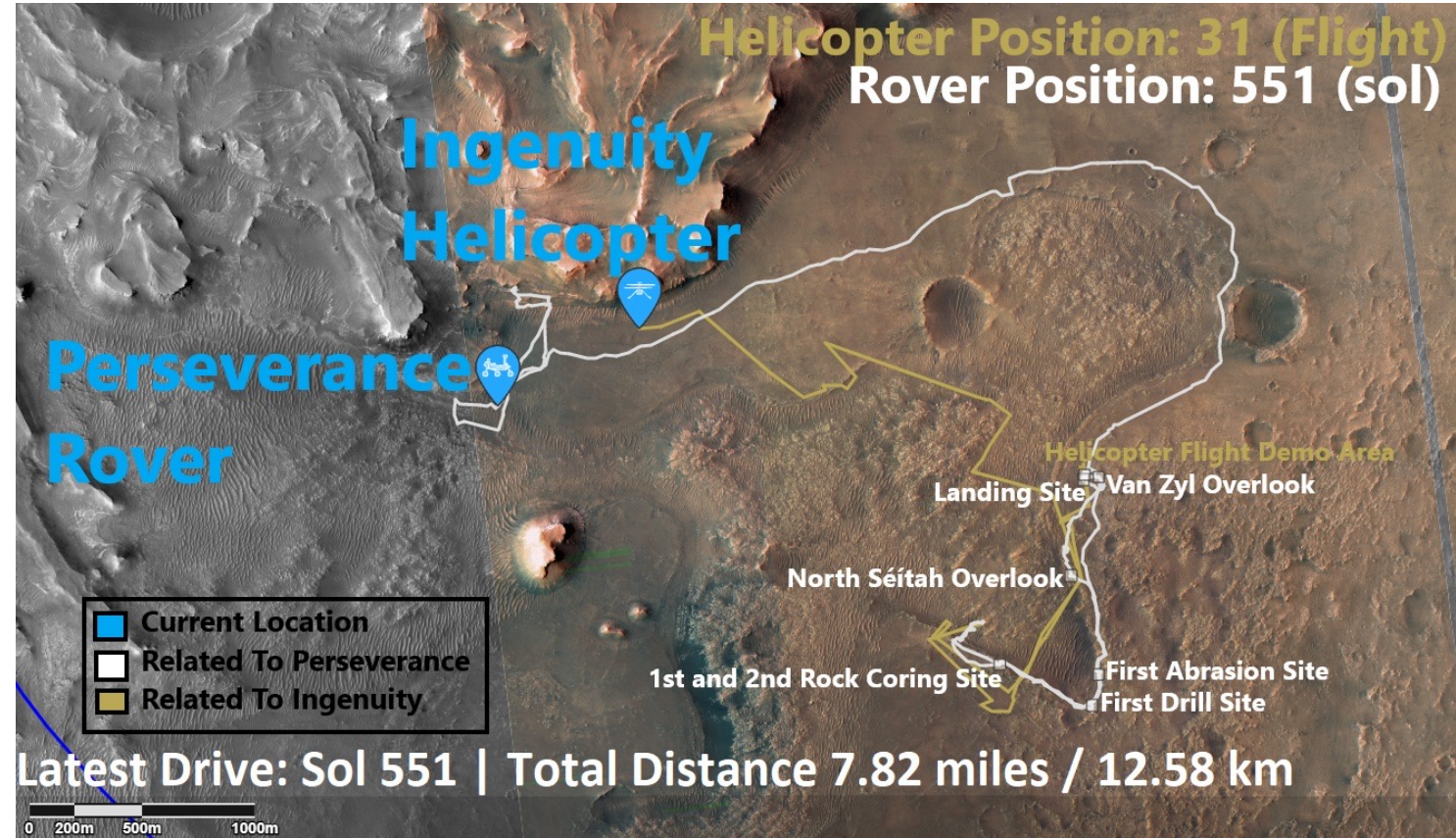
lot better than most people expected. So its mission time frame was expanded indefinitely and NASA has said that what they are learning from operating Ingenuity far exceeds the additional cost of operation.

Mars though has been tough on the little copter. It was a surprise to many that it survived the Martian winter with temperatures that were as low as -124 F at night. In addition, the winter dust storms and short days made charging the batteries to full power difficult. At one point Ingenuity lost communication with the rover (its communication link to NASA) due to a low state of charge on the batteries. It also sat idle for months during the Solar Conjunction (when the Sun sits between Earth and Mars) when NASA stops operations because of poor communications. In June of this year its inclinometer which is used to determine the orientation of the helicopter on start up failed but the Ingenuity team found a workaround to get it flying again.

Ingenuity has overcome all of these challenges and continues to fly with its 34<sup>th</sup> flight taking place on November 23, 2022. On that flight it took off, climbed up to 5m and hovered to test its fourth software upgrade that will allow it to fly over the steep terrain in the Jezero River Delta so it can help the rover map out its next route.

Ingenuity has shown what is possible when a team of truly innovative and dedicated people come together to do the impossible. In recognition of that, the team won the 2021 Robert J. Collier Trophy for "... the first powered, controlled flight of an aircraft on another planet, thereby opening the skies of Mars and other worlds for future scientific discovery and exploration."

Well done Ingenuity.



The NASA helicopter called Ingenuity has made 34 flights over the surface of Mars. More recently it has been scouting routes for the rover called Perseverance. In the map above, you can see that the little helicopter has flown over terrain that is too rough for Perseverance to travel in the Jezero Crater.



# 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 Name: \_\_\_\_\_

EAA #: \_\_\_\_\_ Expiration Date (MM/YY) \_\_\_\_ / \_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

E-mail: \_\_\_\_\_

Home phone: \_\_\_\_\_

Work phone: \_\_\_\_\_

Cell phone: \_\_\_\_\_

Please list your currently flying A/C and any finished or in-progress projects: