



EAA Chapter 691 Newsletter
June 2022

On the Web @ www.eaa691.org

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Paramotor
Demo!
Saturday
June 18th
@8:00AM
E14

Upcoming Events

- **Paramotor Demo Saturday, June 18 @ Ohkey Owingeh (Española) Airport E14: 8:00AM sharp.**
- **Dragonfly Work Sessions** every Wednesday and Saturday @ 2:00pm @ KLAM. Contact Will Fox for more information
- **July Meeting** will be a cookout at KLAM

Letter from the editor

by April Fox



Traditions

With Oshkosh on the horizon, I am reminded of my childhood going to Sun n' Fun and Oshkosh with my dad. I remember being overly excited to go anywhere that wasn't New Mexico- regardless of where that might be. I figured the prospects of the beach, camping, or Disney World sounded much more fun to me than some fly-in out in the middle of nowhere so, if that's what I had to endure to get some sun, then so be it. What I learned, however, is that there's no cure for the aviation bug.

(Symptoms include but are not limited to 1) looking up in the sky whenever you hear an airplane 2) calling out every aircraft you see by name like a 3 year old 3) spending far too much time and money tinkering around with airplanes).

Now with a family of my own, I want to keep the aviation tradition alive. Thankfully, both of my kids show signs of being bit by the aviation bug... how severe it will be is hard to say. What I can say is that if bribing my kids with a camping trip at an airfield, a day at the beach, or perhaps a day trip to Disney World will get them to one of the best aviation experiences out there, then it's worth it.

What are your aviation traditions?



President's Report

by Will Fox



Summer Is Finally Here

"Once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return." Leonardo Da Vinci

I'm really glad that summer has finally arrived. To be honest the first five months of this year were not all that encouraging. We had the Omicron surge, the supply line shortages, a war in Ukraine, record breaking wildfires in New Mexico, inflation, a stock market crash, and to top it off, the construction crew repaving our street dug up and broke our internet service line and also the phone line, twice! The only place to go from here is up, and by up I mean its time to get out and go flying!

Along those lines, this coming Saturday morning, June 18th at 8:00 am, Andy Mcmath and his brother Ben will be flying into the Espanola airport in their paramotors for our meeting to tell us all about the sport of paramotoring. For those of you not familiar with the sport, it involves flying a parachute around using a small motor and propeller that is attached to your back. Your legs and feet serve as the landing gear. The FAA calls it an ultralight and as such it does not require a pilot's license to fly. Engine failures are a nonissue because your are already attached to a parachute. It looks like a heck of a lot of fun and has been growing in popularity. We are starting early to take advantage of the light winds, so at 7:30am we will have hot coffee, hot chocolate, and donuts on hand. We will have someone at the gate to let you in and you can park in the parking lot next to the ramp (see map).

In July we will have our meeting at the Los Alamos airport on July 16th at 10:00am followed by a cookout for lunch. This will a special occasion because Chris Trapp will be joining us to talk about his illustrious career as a fighter pilot and aviator. We will also be presenting Chris with a Certificate of Appreciation for his recent donation to the Chapter of his Dragonfly experimental aircraft. Chris' Dragonfly will become part of our Electric Dragonfly Project and we plan to use it for transition training, as a chase plane, and a backup airframe for the Electric Dragonfly. It should be a really fun meeting.



Ben Mcmath out for a flight in his paramotor.



Fire Season and Aircraft

Fire season as we all know is upon us, and worse than ever due to a historically warm, dry climate and dense forests (among many other factors). Remember to check TFR's before you fly- Remember; **#IfYouFlyWeCant** and **#NoDronesInFireZones**



Member Happenings

Jack Ranweiler recently got checked out in a Great Lakes biplane in Chandler AZ in preparation to test fly his Hatz Bantam. Thanks for the update Jack!

From the Vault...



John Graham Leaf Peeping in the RV-7A



Will Fox's Questair Venture in Flight



Sunset with the RV7-A



Paul Price flying over the Hoover Dam



Jim Shinas and the Sonex



Guess That Cockpit!



Thank you for joining us for a new installment called: ***Guess That Cockpit!*** From the clever mind of our treasurer David Young.

*Answer will appear in next month's newsletter

Tech Corner

by Will Fox



Poor Judgment

“Failure is not a single cataclysmic event. You don’t fail overnight. Instead, failure is a few errors in judgment repeated every day.” – Jim Rohn

BAM! Something hit me in the mouth so hard it rocked me back on my heels, and I saw stars. I caught my balance and shook my head and saw blood fly thru the air. I reached up and felt my mouth and nose and my hands came away full of blood. I had hurt myself seriously. I grabbed a rag, covered my mouth and got into the car and drove to the Urgent Care Center a few miles away. Blood was dripping on my shirt and lap. There is always a lot of blood with a head injury.

Everybody was wearing masks at the Urgent Care Center, and I was wearing a bloody rag. By the time they got me in one of the rooms, I had started to get the shakes, adrenalin, I guess. The doctor asked me if I was going to pass out, and I told him I didn’t plan to, so he started to work on me. An hour later he had stitched up my lip and chin and sent me off with a prescription for something to prevent infection and a suggestion that I see my dentist for the damaged teeth. I was really lucky because I could easily have been killed by the pound and a half of titanium that went flying thru air and hit me.

It all started like this. While doing some transition training in my Pegazair for another, soon-to-be Pegazair pilot, I managed to let a landing get a little too exciting and the result was that the tailwheel smacked the pavement pretty hard. These things happen sometimes when an instructor is trying to let a student correct a problem. Instead of correcting it he makes it worse, and the instructor doesn’t respond quick enough to save the day. Long story short, the titanium tailspring that I built for my Pegazair got bent where it was not supposed to be bent, and I needed to fix it.

The tailspring didn’t look too badly bent. Since we needed to finish up the transition training, and it would take too long to get another piece of titanium, machine it, and bend it, I decided to try to bend the tailspring back to its original shape. I knew there were limits to how much you could bend titanium without heat treating it, but I estimated that it still had sufficient ductility to allow this. When I pulled the tailspring off the



A human being is always at the center of a Poor Judgment Chain.



plane, I saw that there were scuff marks on the bottom of the rudder. There is almost 13 inches between the top of the tailwheel and the bottom of the rudder. That was twice the deflection that I had designed the tailspring for, and it was amazing that it had only bent slightly and not broken. Titanium 6-4 is amazingly strong stuff and twice as springy as steel, but once it yields you don't have far to go before it breaks.

In an effort to save time, I decided to use a press brake that I had recently ordered instead of using my original tooling to make the bends. So I put the spring in the 40 ton press, and using the press brake, bent it back to close to its original geometry. In the process the punch made a slight indentation where it pushed on the spring. My original tooling was designed to produce a very large gentle bend to maintain as much ductility as possible and avoid stress concentrations. I wondered if the indentation might have caused a stress concentration, but figured that it was not much of a dent, so it wasn't much of a stress concentration either. Besides, I didn't have enough time to build another tailspring. Then I mounted the spring back on the plane and did some drop tests to load test it and make sure it worked properly. It did, except that I noticed that it seemed like it had sagged a bit, and the castor wasn't quite right, so I pulled it off the plane and put it back into the press to bend it a little more. As I was pumping the hydraulic jack on the press to bend the spring just a bit more, it failed catastrophically.



It takes a lot of force to permanently deform a piece of titanium that is 17 inches long, two inches wide, and a half inch thick. When it breaks it has a lot of stored energy. That stored energy was released in momentum in the two pieces of titanium that went flying. Fortunately, the piece that hit me had bounced off the press first, lost much of its energy, and hit me a glancing blow. Also I luckily got hit by the rounded, machined end instead of the razor sharp end that was formed when it fractured. Had I been hit by that end instead, I might not be writing this article today or ever again. I was just plain lucky that things didn't come out much worse.



So what is the lesson to be learned here? We find in aviation that accidents rarely occur because of a single event but rather result from a series of of poor judgments that form a chain with an ever increasing probability of a negative out come. We call that a Poor Judgment Chain. That is what happened to me. I let time pressure and a commitment to cause me to attempt a questionable repair to a damaged tailspring instead of building a new one. Then I chose to use inferior tooling to expedite the repair which produced an inferior result. Finally, I did not acknowledge after load testing the tailspring, that it was not

The fixture in the 40 ton press (top), is designed to make large radius bend in titanium. Press brake (bottom), has a punch with a small radius that can create stress concentration in a part.

behaving as expected, and that any further bending could cause it to fail. This belies another characteristic of a Poor Judgment Chain, and that is that one poor judgment can create a mindset which can increase the probability of further poor judgments.

In my flying I try to remain cognizant of the possibility of forming a Poor Judgment Chain. One of the techniques I use is the Two Strikes Rule. Whenever something unusual happens, or a flight isn't going as planned, I call it a Strike. For example, if I am planning an early flight because of weather, but didn't manage to get the plane fueled the night before and had to spend time fueling it in the morning, that would be Strike 1. If the weather forecast turns out to be inaccurate and the weather is taking a turn for the worse quicker than expected, that would be Strike 2. That is when it is time for change in plans, and just like a batter will pause and step out of the box on an 0 and 2 count to think about the next pitch, I will go to plan B or land and figure out what I should do next. I don't wait for Strike 3. I have found this to be an effective tool for me to break a Poor Judgment Chain.

If I had used the Two Strikes Rule with the tailspring repair, I would not have gotten hurt. Instead, I would have paused to rethink my plan after I saw the dent in the tailspring and gone to plan B, which would have been to get the transition training done another way and build a new tailspring. That is what happened in the end anyway, because of my injuries I was in no condition to fly for a while. In a couple of weeks the dentist will finish the repair to my teeth, and like the Pegazair with its newly built tailspring, I will be happily flying again 😊

Be careful out there, whether you are flying or building.



This is the titanium tailspring that broke when I was trying to bend it back into shape. The break occurred at a stress concentration that resulted from using a press brake with a punch that had too small of a radius. The piece on the left side hit me in the face after bouncing off the press. Luckily I got away with only bruises, stiches, and chipped teeth.

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: