Howard 500 @ KSAF

EAA Chapter 691 Newsletter
December 2024

On the Web @ eaachapter691.org

EAA 691 is:

President: Will Fox

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Secretary: Pierre Levy

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Upcoming Events

- **Meetings Schedule (unless otherwise noted)**

9:30am - social time

10:00am - business meeting

10:30am - speaker/workshop/training

Upcoming Events

Letter from the editor

by April Fox

Hello aviation enthusiasts, happy holidays to you all and your families. We had a great turn out at November's meeting, Keith did an amazing job on his tech talk about RADAR. Thanks Keith!

I am grateful to be a part of this dynamic chapter and look forward to seeing how we evolve in the coming year!

President's Report

by Will Fox

Check out our Chapter YouTube channel at https://www.youtube.com/@eaachapter691 for the latest videos. For upcoming events, go to the Chapter website at https://www.eaachapter691.org/upcoming-events

Christmas Flying

Hi Folks, it is the holiday season and Christmas is rapidly approaching. This is a great time of year to take family and friends flying if the weather cooperates. It can be cold but often the sun is shining, the skies are clear, and the air is clean. If you get a chance take somebody for a ride. It is a great Christmas gift.

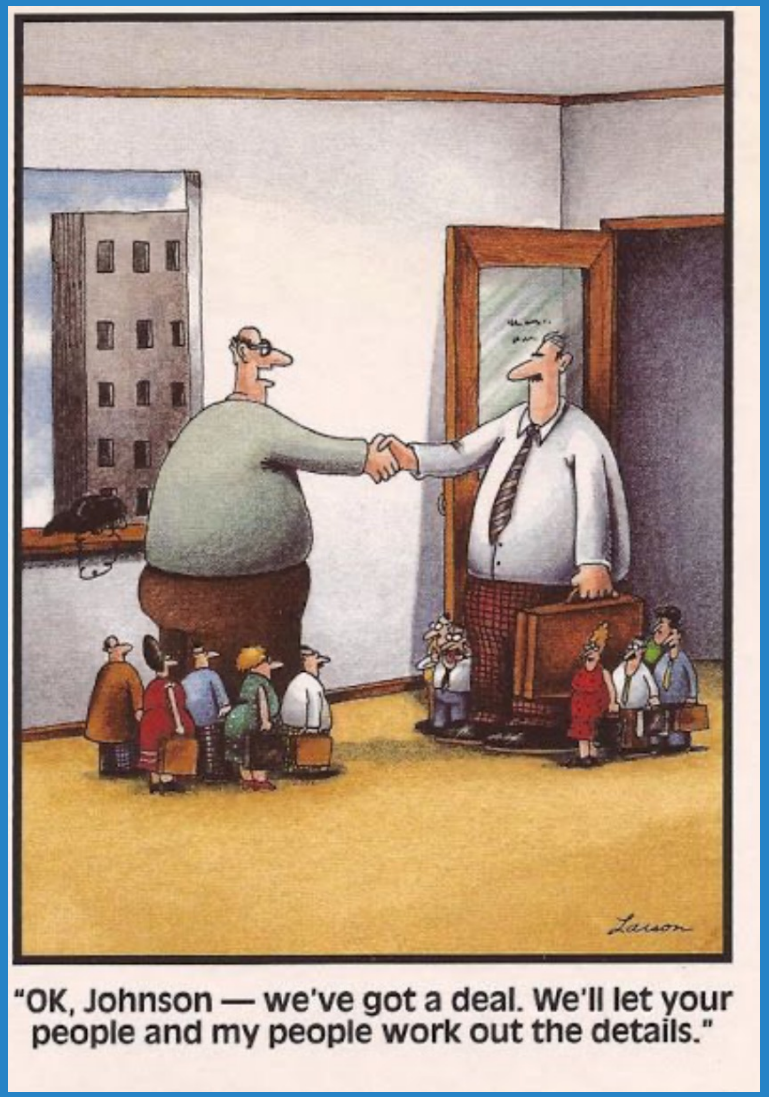
Speaking of Christmas, Santa Claus is going to fly into the Los Alamos airport on Saturday, December 21st, 2024 at 2:00 PM to spread some Christmas cheer and take gift requests from the local kids. Gary Goddard, who is our new airport manager, and his elfin helpers are going all out to decorate the terminal building, hand out treats, and make this a really fun time for the parents and kids.

Our Donation Drive lead by our treasurer David Young has been going amazingly well. We really appreciate everyone who has contributed to it and the funds are really going to help us in the coming year with our STEM program, including the Electric Dragonfly project, and our public outreach activities. The anonymous donor is still matching any donations made, two for one thru December 24th so if you can get your chapter dues to David before then it would be great.

Recently I heard from two airplane owner friends that they were about to give up and sell their airplanes because they just can't get a maintenance problem addressed properly. In both cases the problem has been plaguing them for many many months. More than once it seemed the problem had been "fixed" only to crop up again. It is easy to blame the mechanic when this happens, and sometimes that is deserved, but I think it goes deeper than that. I don't think the new crop of mechanics are trained very well in how to diagnose a problem. The result is they throw parts at the problem until hopefully they find one that fixes it. The only advice I can give to the owners is hang in there, don't give up, and reach out for help because we have a lot of knowledgeable people in our chapter and airport community that can help.

Gary Goddard and "Stubbs", his trusty Tripacer, flying home to Espanola after work. Gary is the new Los Alamos Airport Manager.

From the Treasurer's Desk



"OK, Johnson — we've got a deal. We'll let your people and my people work out the details."

Cheers Aviation Enthusiasts

An anonymous donor has offered a $10,000 2:1 matching gift.

Any donation received on or before December 25, 2024, will be matched with twice the amount and the amount donated will be tax deductible.

This offer ends December 25, 2024, so if you have any loose change, send it or hand it to me or Will Fox on or before Dec 25th. Make out checks to EAA Chapter 691 and put donation in the memo.

David Young

Treasurer EAA Chapter 691

819 Gonzales Rd, Santa Fe, NM, 87501

Tech Corner

by Will Fox

Ultralight Coaxial Helicopter

It was a cold morning in northern New Mexico and I was glad I had worn my heated vest under my coat. A December cold front had passed through the day before and shoved the pollen and dust laden autumn air into west Texas, and it was exceptionally clear. Visibility was somewhere near 100 miles, but I didn't need it that good to see the amazing aircraft sitting on the ramp just a few yards away that was being readied for its first high altitude test flight. It was a bit fragile looking with an assembly of triangulated tubes supporting the engine with a belted speed reduction unit, two aluminum fuel tanks, and a mast with two large rotors, one on top of the other, above all that.

Slung below this Rubeish Goldberg design was a keel that held the pilot's seat, controls, and instrument panel. A three tube empennage protruded out the back that supported two rather smallish looking fins to presumably keep the thing flying straight. The pilot had an unobstructed view of the action as he sat totally exposed to the elements and rotor wash in a blue plastic seat with a safety belt and a shoulder harness to provide some sense of securement to the aircraft.

In many ways I was reminded of my early days of flying ultralight aircraft, when getting into the air with an aircraft that weighed less than 254 pounds trumped everything else, including safety. My Eagle ultralight seat looked like something off a child's swing set and behaved like one as you swung to and fro and side to side to control the motorized hang glider. The machine I was looking at however, was much more sophisticated than any ultralight that I had seen before and in many ways was a marvel of engineering.

Mark Rumsey flight testing the Ultralight SCH-2A which is a single place coaxial helicopter that meets the requirements of Part 103 Ultralights. It does not require a pilots license or medical to fly. Mark also owns a SCH-2A Ultralight helicopter.

Let me count the ways. 1) First and foremost it is capable of vertical takeoff and landing using a coaxial rotor system that is quite compact with its two rotors spanning a mere 16 feet. 2) It is more efficient than a conventional helicopter, in that the two rotors counter rotate eliminating the need for a tail rotor. 3) The bottom rotor serves to straighten the down flow coming from the top rotor, converting horsepower into thrust more efficiently. 4) Controls are sophisticated and conventional for a helicopter where vertical thrust is achieved by collective blade pitch control of both rotors and cyclic blade pitch is used for directional control. Yaw control uses rudder pedals to pivot the two tailfins side to side to direct the downwash. 5) The 60 hp, two stroke engine has an electric starter, generator, and dual ignition and at 66 pounds manages a horsepower to weight ratio of 1 to 1. 7) The 10 to 1 belt driven reduction drive uses a slip clutch, so that the helicopter can autorotate if engine power is lost. 8) What is truly amazing about all this is that the total package weighs a mere 249 pounds, coming in 5 pounds under the maximum empty weight allowed for ultralight aircraft.

Ultralight aircraft are governed by the rules outlined in Part 103 of the FAA regulations. Along with a maximum empty weight of 254 pounds, they are limited to a maximum speed of 63 mph in straight and level flight and can carry no more than 5 gallons of fuel. The power off stall speed must be less than 28 mph. The pilot of the single place aircraft is not required to have a license or medical. You gotta love America, where a person with no training and questionable health can jump into a flying machine and try not to kill themselves before they learn how to fly it.

OK, back to my story about the test flight. The test pilot was ready to go so he strapped into the machine and fired up the engine. After a brief warm up, he spun the rotors up to a speed which caused me to unconsciously begin backing away from the little shrieking beast. Then he gingerly lifted off the ground into a remarkably stable hover as a cold blast of angry air from the rotor wash hit me in the face. He gently exercised the controls, as he

John George conducting tethered flight testing of his SCH-2A at Espanola Airport.

hovered just a few feet off the ground to get a feel for the machine. Deciding they needed some adjustment he touched back down and killed the engine to twist some tensioners on the control cables. Ready once again, he fired up the engine, lifted off, hovered for a moment and then transitioned to forward flight and then back to a hover a couple of times. Once again he landed to make some adjustments, this time to the blade pitch of one of the rotors. It was clear that this wasn't his first rodeo when it came to tuning up this diminutive rotating beast. He continued this process over and over, lifting off, flying around and then landing to manipulate some mystical mechanism in the arcane control system. At one point, as he began to lift off, the little beast yawed abruptly 90 degrees clockwise before he could set it back down. With a quizzical look at the ground crew, he tried again, more carefully this time, and just as the rotors began to take the weight of the aircraft it began to yaw again, but less abruptly this time. The rotation stopped as he put the weight of the machine back on the skids so he shut the engine down and unstrapped to get out of the seat and inspect the helicopter. The inspection quickly revealed that one of the belts on a rotor pulley had started to slip when the lock nut on the tensioner loosened. Some speculation ensued as to the cause of this, but in typical ultralight testing protocol, the tension was reset and the locknut was tighten to a point just short of failure, and the testing continued. After a few more iterations, the test pilot felt comfortable enough to take the little beast for a spin around the field. Lifting off confidently and climbing rapidly away from the ground, the pilot leveled out a few hundred feet above the ground and transitioned to cruise. Flying to one end of the strip he turned aggressively and headed for the other end flying at a speed that seemed appropriate for a Screaming Banshee. Turning back at the other end, he then demonstrated that the little helicopter was quite stable and maneuverable at speed and climbed and descended with ease. Finally, he came back and touched down gently exactly where he took off. He slowed the engine to let it cool down and after a moment shut the little beast off.

Miro Crv showing the SCH-2A that he designed at Oshkosh 2022.

Climbing out of the seat and taking his helmet off, he said that the vibration was a little higher than he liked, and that the cyclic needed a little trim in the hover because some pressure on the stick was required to keep the machine from going aft and to the left. He said he would like to consult with the helicopter designer to see how best to address those issues. Besides, the wind had come up and he had a plane to catch, so further testing would have to wait for another day. It had been a very good day though, and much progress had been made. The test pilot also noted that the little beast had set a new operational altitude record for its type, since it had never been flown out of a high altitude airport like Espanola where the field elevation is 5790 feet MSL.

The SCH-2A that is described in this story belongs to John George, a member of EAA Chapter 691 and a patent holder for an advanced rotorcraft that he is designing. Mark Rumsey was the test pilot and is also the owner of Rototreck LLC, a USA distributor for the aircraft. Miro Crv is the designer and builder of the SCH-2A and his company, Microcopter, is based in Slovenia.

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.

One of two flying Howard 500’s stopped at KSAF for fuel earlier this month. John Graham caught some beautiful sunset photos.


FOR
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505-747-0700
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November's cockpit: B-1

EAA Chapter 691 Membership Application/Renewal Form

Please mail this form along with $35 to our Chapter Treasurer, Checks can be made out to <u>EAA Chapter 691</u>:

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: