

# EAA CHAPTER 66



## KFMY-Page Field Fort Myers, FL Newsletter



### Building Airplanes and Pilots One at a Time

#### Presidents Message April, 2021

#### David Burns, President Chapter 66

April is here and the weather up north will improve and encourage travel to other parts of the country. Yes we see some spring weather in the mid parts of the country as tornado season is upon us. Be aware of dry lines and warm moist air coming together, not to mention the temperature difference as altitude changes. These are warning signs of severe weather events. Also, the afternoon storms are greater in the Midwest as evening approaches. Having lived in Missouri previously I have seen some pretty awesome storms with lots of lightning. Flight planning might want to include a hangar at your destination.

The chapter purchased an airplane from Ray's brother for parts. This was a well-built wooden and cloth airplane, however while it was stored in Miami, it was attacked by termites. We purchased it for \$800.00 which included an engine that will power the Thatcher. When it was trailered to the chapter it was dismantled and the parts taken off to use on the chapter airplanes.





That really did not take long!

I thought I would include the following article from Kit Planes for information about reliability. It is important to insure that your aircraft is safe and will get you there without having to stop for repairs or other issues.

David

# Building Trust—Reliability vs. Redundancy

By [Paul Dye](#)

March 9, 2021



Redundancy is desirable but this is overkill. (We were testing the Garmin GI 275 in an airplane that already had dual G5s.) Balancing redundancy and complexity can be a challenge.

It is hard to fly without a little trust. Call it faith if you will, but we fundamentally can't leave the ground without some sort of belief that the equipment we depend on to get us back down is somehow going to

work. We don't really care how that safe return to the surface of the planet is accomplished, but we want to make sure that it occurs. What we want is called "functional reliability"—the assurance that a required "function" can and will be performed.

Making sure that a machine or a mechanical system can fulfill a particular function can be accomplished a number of different ways. What I want to talk about is the concept of redundancy versus that of reliability. Both are means to an end—the way to ensure that a function occurs. Simply put, if you build reliability into a system or component, you are sure that it is going to work, all by itself, whenever it is needed, and won't fail—at least to some magical statistical probability that you can accept.

Reliability is a lofty goal that takes time, money and testing to ensure you have met the requirements. Redundancy, on the other hand, supplies numerous methods of providing the required function: several of the same thing or multiple different ways of assuring that the function will occur. A good example might be the means of lowering the landing gear. The primary system is usually backed up with a secondary method to make sure that you won't scrape that belly paint if the primary system fails.

While reliability is a wonderful way to build simple, light aircraft (redundancy almost always comes with a weight penalty), it is often very hard to achieve. Even when it is achieved, it must be maintained via exceptional quality control, preventive maintenance and periodic testing to make sure that the functionality is still there. Configuration control is very important in the world of reliability—once you have determined that a component is reliable, you need to make sure that every subsequent copy of the component meets the same standards as the original if you want to be able

to trust it. Changes are the enemy. Build them the same or it's back to the drawing board—or the statistical testing cycle.

Because reliability is difficult, many of us resort to redundancy whenever possible. (The general exception to the redundancy rule is aircraft structure. Redundant structure is heavy, and structural design is actually a pretty well-known science. Building a reliable structure is pretty easy if we are not trying for the ultimate in lightness.) In fact, I generally design with the explicit assumption that any system I build is going to fail in flight. I then ask myself the simple question, “What is the backup plan?” If I require the ability to fly a precision approach to minimums, I might put in an ILS system. If it fails, how about a second one? Or... I could limit myself to flying where I am assured to never need better than a non-precision approach—or always flight plan so that a PAR approach is available within available fuel reserves. There are often alternative, creative ways of creating functional redundancy that don't even add anything to the aircraft!

## Backup Plans

The concept of the “backup plan” is a simple and powerful tool for anyone trying to build a functionally reliable aircraft. First, define the list of functions required for the type of operations you wish to perform. Next, define the list of primary systems and equipment necessary to perform those functions. Then ask yourself what you will do to ensure the function if each primary system fails. Add only what you need to ensure the function, and you'll have an efficient, redundant design. I said it was simple, didn't I? Well, yes and no...because when we design airplanes, we often have to deal with certain realistic constraints.

Let's take that single engine, for instance. We pretty much decide up front if we are going to build a single- or multi-engine aircraft. It is one of the key assumptions that goes into our preliminary design cycle. For homebuilders, it is generally a cost issue as well as one of complexity. The vast majority of home-builts are single-engine due to these realities.

So what do we do when our desire for redundancy runs up against the facts of what is practical—or affordable? Well, there is always that reliability business. If you can't make it redundant, then make it reliable, right? In the case of power-plants, this is the main reason that easily a third of the cost of an airplane you are going to build is going to be for the engine and propeller. Building reliability takes money—money for design, money for testing, and money for quality control of each and every end product. Fortunately (or some original thinkers may say unfortunately), we have purpose-built aircraft engines available to us—engines that have run for millions of hours over decades on aircraft of all sizes and designs. Engines by Lycoming and Continental are built to precise specifications and certification standards. (By the way,

I am a big supporter of the clone engines as well, but they are still copies of the highly reliable certified versions.)

If you leaf through the maintenance and parts manuals for one of these engines, you will be amazed at the detail to which they go to define exact parts, right down to which washers go on which bolt—even those bolts that might seem quite trivial to us. The clamps that route ignitions wires, for instance, are specified exactly, as are the bolts and washers that hold the clamp to the engine. They don't just say, "Clamp the wires so they don't flop around." No, they tell you exactly where each one should be held and which Adel clamp to use. Sealants, gaskets, safety wire—all are specified so that each engine exactly matches the engines that have been so thoroughly tested that we can be pretty well assured that they will keep running when we need them—which is anytime we decide to "commit aviation."

## Enter the Experimenter

We love to tinker. We love to try new things. We love to invent and hate to do things "just because that is how they are done." But if we want to achieve the kind of reliability that we need in flight-critical systems, we need to be very, very careful when tinkering in the arena where we have no redundancy. Take, for an example, an incident that happened a while back in an Experimental airplane with a stock Lycoming engine. Well, an almost stock Lycoming motor. The builder had a good idea—instead of mounting the fuel flow transducer upstream of the engine where it is susceptible to pulsations from the pumps, why not put it between the fuel servo and the distribution spider—just before the fuel is split up to go to the cylinders. It would be isolated from the pulsating fuel pumps and measure the total fuel flowing into the cylinders very precisely. He was absolutely correct—this would be a good place for it! Unfortunately, changing the fuel line between the fuel servo and the spider altered the dynamics of the system. The "stock" system had, indeed, millions of flight hours on all sorts of airframes that proved it was OK. But his trivial redesign broke due to harmonic vibration after only about 65 hours total time. There was no testing or evidence that showed that this new configuration would be reliable—and that dropped the reliability numbers for the entire engine to what could best be described as unknown.

There is nothing fundamentally wrong with Experimental power-plants; how else are we ever going to advance the science of aviation if we don't experiment? But we have to acknowledge that when we experiment, we can drastically affect the reliability numbers of the stock equipment that we have changed. We can deal with this by limiting our operations. For instance, until the power-plant has proven itself through testing, we can restrict operations to within gliding distance of a runway. That might seem like a drastic restriction, and it is...but it is exactly what aerospace companies do with their new designs until they have enough experience and data to let them leave the nest.

Amateur-Built Experimentals have a very poor record when it comes to engine failures due to systems issues, and many of them end up in off airport landings—many with serious injuries or fatalities. In the case I cited above, the pilot was in instrument conditions when the engine failed, but he was able to dead-stick it through the clouds and use his EFIS database to be pointed at a small private strip when he broke out. He then used his superior flying skills to plant the airplane safely on that runway. Fortunately, the area over which he was flying has numerous little private strips sprinkled about a flat coastal plain. Had he been over the mountainous West, things might not have turned out nearly as well.

Reliability is something that we need to understand if we are going to depend on it. Build in redundancy wherever you can. And when you can't, make darn sure that you are using systems with proven reliability when you have to depend on them working—or else. There are no minor modifications to reliable systems. Any change needs to be rigorously analyzed and (if necessary) tested to make sure that it doesn't compromise the overall reliability of the system. Make sure that your critical functions are covered—whether by reliability or redundancy—before you have to depend on them to achieve the functionality that you need.



**\$15 FISH FRY \$15**  
**April 10, 2021**  
**11am-2pm Campground Pavilion**



**YES...** as you wander the peaceful skies of Florida, you may see this banner flying at the Arcadia airport fuel pumps. This is announcing the next event that EAA 66 is sponsoring. Be sure to put this on your calendar.

**This Just in from John Coleman, Membership Chairman**

## **MEMBERSHIP**

We have 78 dues paying members of the 158 on our mailing list. If you are unpaid mail a \$30 check to EAA 66 PO Box 60204, Ft Myers, FL 33903

or pay a board member at an activity (check preferred). All paid members received an email receipt. Unsure, email [jcn2650f@aol](mailto:jcn2650f@aol) and I will confirm. A list will be available at next general meeting. Also, we will discuss providing all paid members a listing of members phone numbers for communication convenience. If this is agreed to at the meeting this will be done by 3-19. If one does not want info published, email me and it will not be published. Again, encouraging everyone to where name tag at gatherings. Mingle and talk to those you do not know. Chapter Tan Short Sleeve Shirts are available for a bargain \$15.00. **Fred's Awards** and **Graphics By Fran** info on the website. Update your profile while you are there.

John Coleman

**WEBSITE INFO:** Pilots, there is now a Ride-Along listing on the website of people who would ride-along with you on a flight thanks to Joe Keenan. For those pilots who would like a ride-along person on a flight, log into our website, look under MEMBERS ONLY section at the RIDE-ALONG LIST. Any person who wishes to add their name to the list, email your name, phone number, and whether you are seasonal or full time to John Coleman [jcn2650f@aol.com](mailto:jcn2650f@aol.com)

Also, all members, please update your profile

I am sending out individual emails on open member dues.

Thanks, John

#### **THE NEXT BIG EVENTS COMING UP ARE:**

##### **Regular Meetings**

- Next Breakfast: Current planning is for May 2<sup>nd</sup>, 8 to 10am. Shop cleanup is for May 1<sup>st</sup> at 9am & takes about an hour

-Saturday Coffee & Doughnuts: Still Suspended (for now)

- Board Meeting 2nd Thursday of every Month. Next meeting is Apr 15<sup>th</sup>, at 6:30, at the Chapter House.

- General Meeting 3rd Tuesday of every month at Chapter Building. Next meeting is...

Apr 20<sup>th</sup>, at 7:30. Burgers & hotdogs served at 6:30

- Builders Night is every Thursday 7:00 – 9:00PM

**This bears repeating...Builders Nite Participants & Young Eagle Youth Protection Policy & Program (YPP)**

With Builders Nite restarting, we have been working to include High School Aviation students into the mix. The goal is to augment/expand into a STEM program. Todd Callahan, the Aviation Program Instructor at the Estero High School, has been working with the EAA 66 Board to accomplish this. With the introduction of Young Aviators (under 18 years of age), EAA 66 assumes the responsibility to protect those minors who are attending builders nite. This is the same policy that EAA mandates for Young Eagles pilots and volunteers.

To that end, the EAA Chapter 66 Board is recommending that all participants in Builders Nite complete the EAA's Youth Protection Policy. It is a relatively easy process and is good for several years. The process is to;

- 1) On your computer, Search for EAA Young Eagles Volunteers, and click on the "Youth Protection Policy & Program" link
- 2) There you should find the following information that explains why and how this process works...

EAA's Youth Protection Policy and Program sets basic requirements for EAA staff and volunteers who work with children under age 18. It includes online best-practices training and, for certain categories of volunteers, a basic background check (**U.S. and Canadian residents only**).

All of the following persons are required to complete both the online training and background check. Both steps are necessary and the cost is covered by EAA.

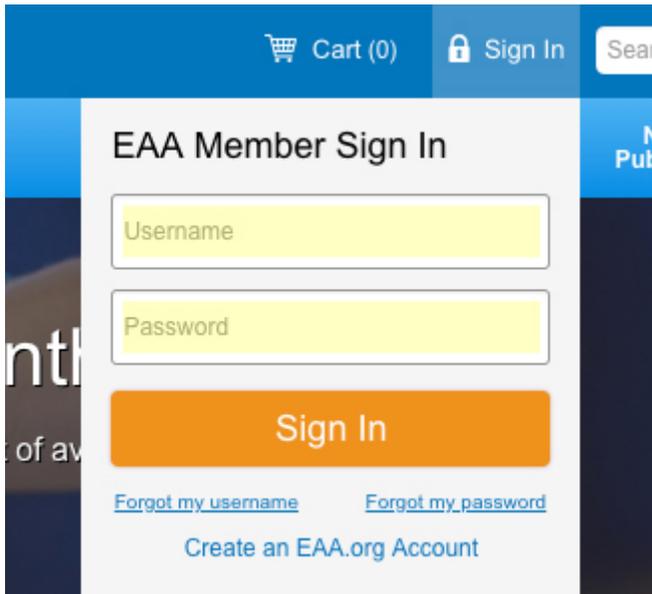
- All Young Eagles pilots
- All Chapter Young Eagles Coordinators and Field Representatives
- Two-deep leadership supervisors
- Volunteers who will work with youth in ongoing programs other than Young Eagles
- EAA staff

**Note:** While not all volunteers who will work in some capacity with youth in an EAA-related program or event are required to complete training and basic background checks, we *strongly encourage* them to complete both steps.

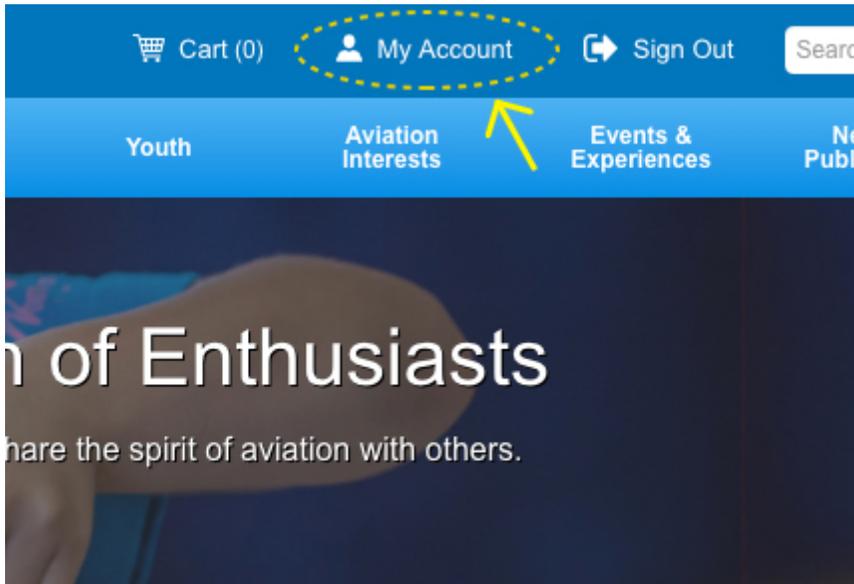
If you're wondering whether your volunteer activities should comply with the training and background check, please review the [policy](#) and the [frequently asked questions](#) pages on this website.

## **Training Access Instructions:**

1. In order to access the Youth Protection Training you will need to [sign in to your account](#) at EAA.org. If you do not have an online account, simply go to the sign in area at the top of page and create a username and password.



2. Once you are logged in at EAA.org, go to your Account Profile page by clicking “My Account” at the top of the page.



3. At the bottom of your Account Profile, click “Go to Training” then select "Training Information" and "Go to course" for the course you're looking to take.

# My Account

Welcome, [Redacted]

## Personal Information [edit](#)

Name

Member number

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## Contact Information [edit](#)

Email Address

Primary Address

Main Phone number

**Not Disclosed**

Cell Phone number

**Not Disclosed**

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## Order History

[Go to Order History](#)

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## Training Information

[Go to Training](#)



[Personal Information](#)

[Password](#)

[Training Information](#)

**Training**

Course	Completed
<b>Available Training Courses</b>	
<b>Background Check</b>	
<i>Processing takes 7-10 days.</i>	
<b>Youth Protection Training</b>	
<i>You may also need to complete the background check at the end of the course in order to participate in some youth programming.</i>	

[Order History](#)

The online training and background check review will typically take about 20-25 minutes. After information is submitted for the background check, we expect verification to take no more than 10 business days.

Upon successful completion of the online training and review, and the background check, each volunteer will receive an e-mail confirming he or she has successfully met the basic requirements of the Youth Protection Program and a printable wallet-sized card.

For complete information about EAA's Youth Protection Policy and Program, please review the Policy and the program FAQs on this website.

If you have further questions and would like to contact someone at EAA Headquarters, please call our membership services office at 800-564-6322 or e-mail [membership@eaa.org](mailto:membership@eaa.org).

Any Chapter member who attends any activity with minors for more than 4 hours (day camp, YE rally, build night) per YEAR (Yes, That's per year) should complete the Youth Protection Policy and Background Check.

AS USUAL, if you should have any questions regarding this request, please feel free to ask.

Steve G. ed

**IF YOU ARE LOOKING FOR A DAR**

I'm including this e-mail I received.

Hello Joe and Steve,

I am writing this to let you and your Chapter know that I am available in your area should you need a DAR. I am attaching a brief ad if you want to put in your web info or news letter for your members information.

I am also trying to get a certification in the next couple of months for the FAA Orlando MIDO to do an over the shoulder on me since most of my DAR work has been too far for them to travel. If someone has an aircraft ready and were interested I would reduce my fee 50%. If so I would appreciate if you could let them know and they can call me for information at 216-233-0613.

Thanks and best regards,

Pete Udem

216-233-0613

**For Your Convenience...**here's a EAA Chapter 66 application Form in case you need it for a new member. It's also available on the EAA Chapter 66 web site.



**EAA CHAPTER 66 APPLICATION**

Please give Application to Treasurer or a Board Member. Checks payable to "EAA Chapter 66"

Chapter Yearly Dues \$30.00, Renewed Beginning of Year Mail To: EAA 66 PO Box 60204 Ft Myers, FL 33903

		Official Use Only	Treasurer's
<u>Initials</u>			
Date of Application _____		<input type="checkbox"/> Joined in Jan. 1 to Sept 30 = \$30.00	
Date Paid _____		<input type="checkbox"/>	
Cash (circle)      Ck# _____		<input type="checkbox"/> Joined in Oct. 1 to Dec. 31 = \$30.00, includes next year	

National EAA # \_\_\_\_\_

Expiration date \_\_\_\_\_

We strongly suggest for you to join National EAA to get all of its benefits. Ask for an application.

Male Applicants First Name \_\_\_\_\_ Mi \_\_\_\_\_

Female

Last Name \_\_\_\_\_

Spouse Name \_\_\_\_\_

Local Address Street \_\_\_\_\_ Apt. \_\_\_\_\_

City \_\_\_\_\_ Fl. Zip \_\_\_\_\_

**Please notify Newsletter Editor of change of address & e-mail so you can get your newsletter**

Local phone \_\_\_\_\_

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

Work Phone \_\_\_\_\_

Cell \_\_\_\_\_

These numbers will not be listed and only used by members for official business

Airman Ratings \_\_\_\_\_ Current Y\_\_ N\_\_

Repairman Ratings \_\_\_\_\_ Current Y\_\_ N\_\_

Present Aircraft Owned or Building \_\_\_\_\_

Aviation or EAA Experience \_\_\_\_\_

i.e. Builder, Sport, Warbird, Antique, Aerobatic, Military, Instructor, Advisor, etc.

Do you have any subjects you could give a program on? Y \_\_\_ N \_\_\_

What? \_\_\_\_\_

Would you like to participate on a committee or the board in the future? Y \_\_\_ N \_\_\_ Maybe \_\_\_

Occupation or experience \_\_\_\_\_

The chapter may need your expertise at some point. **Retired is not an answer.**

We can always use your help somewhere. If you see somewhere you could help i.e. Monthly breakfast, Young Eagles, dinners, or you have an idea for a new position we could use, just jump in. Your input or help will be appreciated.

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Revised December 2019

Entered in Database \_\_\_\_\_

Initials

### **YOUR OFFICERS & BOARD of DIRECTORS**

President – David Burns [David.burns@eaachapter66.org](mailto:David.burns@eaachapter66.org)

Vice-President – Steve Gagnon [Steve.gagnon@eaachapter66.org](mailto:Steve.gagnon@eaachapter66.org)

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Treasurer - Kevin Eisenbath [kevin.eisenbath@eaachapter66.org](mailto:kevin.eisenbath@eaachapter66.org)

Membership Chair - John Coleman [john.coleman@eaachapter66.org](mailto:john.coleman@eaachapter66.org)

Young Eagle Chairs - Cheri Short. [cheri.short@eaachapter66.org](mailto:cheri.short@eaachapter66.org)

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