



*"To promote, encourage, and facilitate in a harmonious and inclusive manner all recreational aviation activities with an emphasis on education, safety and fellowship".*

## Upcoming Programs and Events

Gary Arms, Program Chairman

**October 6, 2015:** Florida resident Jeff Guy will be with us to discuss powered paragliding. He will bring his gear and some videos to show.



**November 3, 2015:** Ed Wischmeyer will present slides of the 2015 Homebuilt Award Winners from Oshkosh, along with general interest slides. He is also doing a study of RV accidents and incidents, based on NTSB reports, and may have preliminary results to share with the chapter.

## EAA Chapter 1514 General Meeting Minutes September 1, 2015, 6:00 PM at Lovezzola's Pizza, Pooler, GA

The September 2015 meeting was held at Lovezzola's Pizza in Pooler. There were 8 members and 1 guest in attendance. The originally scheduled speaker had to cancel, so Will White gave a presentation on the history and progress of the Chapter Design Group.

The meeting opened with the introduction of guests:

Alan Pinnick is from Woodstock, Georgia, had recently retired from Lockheed, and has just started at Gulfstream as a flight controls engineer. He has built a Pulsar, which has a total of 200 hours so far.

The presentation went over a brief history of the Design Group (originally started in 2010 with Chapter 330, then moved to Chapter 1514). The first project was a small 2-place jet using a tiny (45 lb. weight, 250 lb. thrust) turbojet engine. The biggest challenge was the large fuel consumption, which drove many aspects of the design. For more information, see the summary report on the Chapter website.

The next project (which is still ongoing) is a small 2-place. The original concept was to have 4 optional airplanes with a common fuselage. There would be options for either a VW engine (65-80 HP) or a certified O-200 engine (100 HP) and either a short wing (for faster cruise) or a long wing (to qualify as an LSA). In the end, the conflicting requirements proved to be too much for the full family, and the group has down-selected to just the VW-powered cruiser. The group normally meets approximately every other Tuesday at Sheltair. Contact Will White or Doug McKissack if you are interested in participating.

A short business meeting was held after the presentation.

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# Design Group Minutes

By Will White

## 2015 Officers:

### President:

Keith Gay 912-657-2696 [keithmgay@gmail.com](mailto:keithmgay@gmail.com)

### Vice President:

Mike Wordell 912-660-1832 [mnword@aol.com](mailto:mnword@aol.com)

### Secretary:

Doug McKissack 912-965-4924 [dmckissa@ix.netcom.com](mailto:dmckissa@ix.netcom.com)

### Treasurer:

Jack Scott 912-441-6577 [jscott@echosierra.net](mailto:jscott@echosierra.net)

## Chairmen of Standing Committees:

### Design Team Chairman:

Willard White 912-925-2478 [whiteat50@comcast.net](mailto:whiteat50@comcast.net)

### Fly-In Chairman:

Swaid Rahn 912-655-0966 [indigoaviation@gmail.com](mailto:indigoaviation@gmail.com)

### Membership and Publicity Chairman:

Kathy Roberts 912-308-91664 [katann23@aol.com](mailto:katann23@aol.com)

### Program Chairman/Asst Newsletter Editor:

Gary Arms 912-665-1680 [gary\\_arms@yahoo.com](mailto:gary_arms@yahoo.com)

### Web/Newsletter Chairman:

### Advisors:

#### Flight Advisor:

Ed Wischmeyer 912-665-2969 [ed319@alum.mit.edu](mailto:ed319@alum.mit.edu)

#### Technical Advisor:

Bill Leftwich 912-401-8338 [bill.leftwich@hotmail.com](mailto:bill.leftwich@hotmail.com)

EAA Chapter 1514 meets the first Tuesday of every month at 6:30 PM at Lovezzola's Pizza, (328 US Highway 80, Pooler. 912-748-6414) or at an offsite location as dictated by that month's program. The October meeting will take place at Lovezzola's.

The October speaker will be: Jeff Guy  
See [Upcoming Programs](#) for details.

The deadline for the November 3, 2015 newsletter is: Close of Business, October 23, 2015.

## September 8, 2015

### Attendees:

Geoff Foster

Joe Buttner

Patrick Lloyd

Willard White

We began with the EAA design contest projects. When we left off the last meeting, there was little enthusiasm for the design contest projects. The stall preventer was proving to be more difficult than we imagined and the tandem wing airplane is a large and intimidating project. This time we made some good progress on sourcing some sensors (thanks, Patrick). That device now seems feasible again and we'll continue to work on it. The parts aren't terribly expensive and the potential is considerable.

The tandem wing airplane, if we pursue it, would probably take up our time and resources to the point of stopping work on our VW conventional airplane – something we had agreed to continue two weeks ago. The tandem wing airplane has the potential to do well in the EAA contest, so we're going to refine it a bit and bring it up to the group one more time. Joe said he could support which ever direction the Group decided to go. Geoff objected to calling it a No-Stall-No-Spin airplane because the canard actually will stall, and if that happens during landing, damage can result. So now we'll call it a No-Spin airplane and we'll include our top secret stall preventer on the canard – and we'll trot it out one more time before the group.

We ran out of time before we got to the main objective for the evening – a new airfoil for our VW project. A little history here: Our first attempt at an LSA wing (45k stall speed w/o flaps) resulted in a whopping 129 sq. ft. wing. We decided to find an airfoil that would achieve a 2D Cl of 1.5 in order to reduce the size of the wing. Esteban came up with our present airfoil and it reduced the wing size from 129 to 116, no small feat. Since then we've given up on LSA and the Continental engine and our airplane has evolved into a one thousand pound Experimental so we need a new airfoil.

One of our objectives was to see and assess the facilities at Maven Makers and consider membership in order to get access to the building space and the tools. Our meeting area was separated from the shop by partitions and we weren't

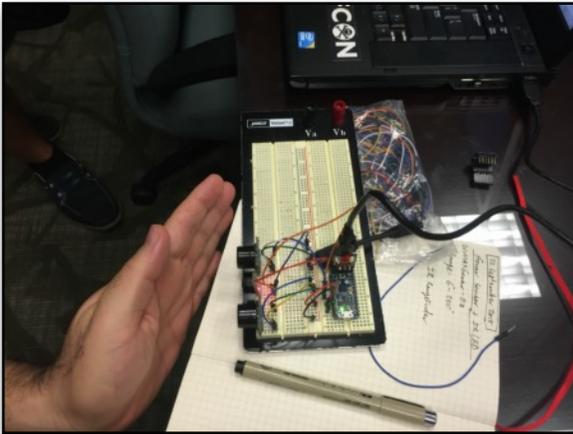
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disturbed during our meeting except for the occasional wail of a router or a saw as other Makers were working in the shop. The noise interruptions would, of course, be offset by having immediate access to our project and to tools. We'll talk about it some more.

Thanks for your participation; we'll meet again in two weeks at a place to be determined.

Objectives will be:

1. Progress on stall preventer, perhaps with some hardware to look at.
2. Another look at a tandem wing No-Spin airplane with a canard stall preventer.
3. New airfoil for our VW project.



**September 22, 2015**

**Attendees:**

Doug McKissack  
Joe Buttner  
Patrick Lloyd  
Arman Motamedi  
Eteban Villa  
Willard White

We began with Patrick dumping a bunch of electronics components on the table while I explained the concept of the 'Electronic Silver Chain.' The Silver Chain is presented in Chapter 9 by Wolfgang Languishe in his 1944 book 'Stick and Rudder.' While the discussion was going on about how to implement such a device Patrick assembled a demonstration prototype on a breadboard. Since we had no shaker motor or piezo alarm our prototype illuminated a red light emitting diode (LED).

A lively discussion developed over whether to share our developments with the world. Being a competitive type, I was of the opinion that we should keep our device secret as long as possible. The other side of the coin, as Patrick explained, is the open source and sharing philosophy. There are resources out there we haven't tapped, resources we need to complete our project and the expectation is that if we use (download) open source programming for example, we should share our enhancements. Esteban pointed out that, if our device works and makes aviation a little bit safer, we should put it out there. This conversation will continue, but consensus is that we will take satisfaction from our own education and share our developments appropriately.

We considered entering the No-Loss-of Control contest a second time with a no-spin tandem wing sheet metal airplane design. Aerodynamically such an airplane is feasible, but structurally it's a challenge. Arman pointed out that the main landing gear struts don't line up well with an available bulkhead. I am certain we could solve that and other problems we don't even know about, but we finally decided to not pursue the project and to continue the development of our conventional airplane.

Our third objective, selecting a new airfoil for our one-thousand pound VW powered airplane, wasn't achieved, but we had fun making progress. Our current airfoil is an LSA airfoil which has excellent low speed characteristics ( $Cl_{max}$  1.52) and a benign stall, however at faster than LSA speeds it is operating at a negative angle of attack and is turbulent top and bottom at cruise. We looked at a 65-215 airfoil which has excellent cruise performance being 50% laminar top and bottom. The 65 series airfoil has acceptable climb performance ( $Cl_{max}$  1.17) and poor stall characteristics. If I'm not mistaken it was used on the Grumman Yankee and Piper Twin Comanche airplanes. We considered a third airfoil; an airfoil that is in between the first two in terms of cruise vs take-off and climb performance ( $Cl_{max}$  1.36). This airfoil has a nose radius between our LSA foil and the too-pointy 65 airfoil. The third airfoil is thickest at 50% c and 2.3% camber at 50% c; it had by far the best cruise Lift-over-Drag (L/D) performance, but the stall more closely resembled the 65-215 stall. Since it is illegal to train in the airplane, we'll debate how important stall characteristics are in the design.

We fired up the projector and JavaFoil and went through several iterations of modifying airfoils to get a good cruise L/D and a benevolent stall without much satisfaction. We concluded with a discussion about how airfoil choice affects the wing plan and concluded that a 55K stall speed was a good place to start and that is easily achievable with a 66 sq. ft. wing with a  $Cl_{max}$  of approximately 1.35 and flaps, an Aspect Ratio of 7.33 seems to be a good compromise between aerodynamics and structure..

We ran out of time and the airfoil selection process will continue. Here are some resources: UCIC airfoil database; a thousand airfoils which can be downloaded into JavaFoil. Airfoil Investigation Database; this is for modelers, but very useful for comparisons, it can access over a thousand airfoils and compare them, however at very low Reynolds Numbers.

We'll meet next in three weeks at a location to be determined.

Objectives:

1. Review progress on the Electronic Silver Chain.

2. Sort out the wing airfoil and planform.
3. Begin a complete review of our airplane specifications. Recent decisions have rendered some aspects of our airplane obsolete.

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Plans are to have a Chapter barbecue in October at Hodges Airpark in conjunction with the 3rd Saturday breakfast. (The breakfast normally starts at 9:00, the Chapter would put together a lunch at ~12:00). Volunteers are requested.

We need to start planning for the Christmas party in December at the Mighty 8th museum. Renting the space will add to the cost, so we would like to coordinate with one of the other aviation organizations in Savannah for a joint meeting. Volunteers are requested.

Chapter member Rick Gafney is looking for a set of scales to weight his Cessna 172. Contact Rick or Gary Arms if you have a set available.

**Reports:**

**President:**

No report.

**Vice President:**

No report.

**Treasurer:**

The treasury stands at \$2088.48.

**Secretary:**

No report.

**Design Group:**

The group is looking for workshop space, and on Sept 8 will meet at Maven Makers on W Boundary Street to look over their facility. We are still working on the VW-powered cruiser, and are considering ideas for the EAA's safety contest to come up with ideas to prevent loss of control accidents.

**Programs:**

Upcoming meetings are:

- October 6 6:00 Lovezzola's pizza.
- October 16 12:00 BBQ at Hodges Airpark.

**Guests in Attendance:**

Alan Pinnick

**Members in attendance:**

Joe Buttner

Will White

Bill Newborn

Keith Brand

Keith Conzachi

**Officers in attendance:**

Keith Gay

Jack Scott

Doug McKissack