



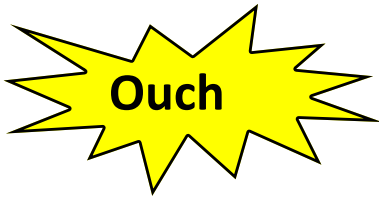
# Bringing the E to EAA

**President: Ray Hecker**

**April 2010**

**Editor: Larry Severson**

When dealing with any mechanical manufacture, one thing remains true: A solution to a problem simply works, but the correct solution works simply. This newsletter is dedicated to correct.



The FAA classifies complex airplanes as needing special sign offs. However, there is a class of “simple” airplanes that need special consideration. They are “high performance”. We have at least 3 planes in our group that fall into this classification, the Falco, BD4 and Q2. These planes land at speeds well above 60MPH. They also have fairly high wing loadings. What they are not is Piper Cubs or Cessna 150s. They fly differently.

<http://www.google.com/hostednews/ap/article/ALeqM5hLhArMqCEtCZrXZA-XwoxWHM9ClwD9ELULFG0> IS A MUST READ.

## **Property tax exemption:**

All planes may be eligible for a property tax exemption provided:

1. At least 35 years old, or
2. One of a kind (up to 5 examples of a new design), and
3. File the Tax Assessor Form BOE-260-B, and
4. Display the plane to the public at least 12 days a year.

### **NOTE:**

Deadline for a full exemption is Feb 15, 2010 or by Aug 1, 21010 for a partial exemption. The requirement does not require 1 day each month.

Young Eagle rallies—4/ year

All restoration days - 50/year at Chino

**Contact Bob Cushman for additional details to avoid the tax on your plane.**

**The President’s letter is not included this month due to the press of business (taxes).**

# Advisor Corner

## Pattern Safety (Larry Severson)

[add the CNO pattern view]

The biggest question that every pilot should ask himself/herself is “why?”.

**Why** does the presentation of the airport pattern always show a rounded rectangle?

Ans: During the turn, a high wing plane can not see the runway and a low wing plane can not see an intersecting aircraft (one coming down the glide slope vs one turning base). Always establish at least a short level flight segment in each segment of the pattern.

**Why** are we told to use 30 degrees of bank in the pattern?

Ans: From years of experience, that is the optimum angle of bank to fly the pattern safely in both aircraft handling and traffic visibility.

**Why** am I told to fly at 1.3  $V_{stall}$  prior to establishing on final?

Ans: That speed gives a 15 degree bank angle protection when turning with a 30 degree bank (45 degrees). This requires a plane that stalls at 60 mph in level flight to fly at 78 during the turn to be safe. Go below 78 mph and risk “stall, spin, boom”.

**Why** do I fly at 1.1  $V_{stall}$  on final?

Ans: Again, that speed gives one a 15 degree bank angle protection when turning with a 15 degree bank (30 degrees). Once on final, greater than 15 degrees of bank should be cause for breaking off the approach as being dangerous. I received this “operational error” runway incursion simulation of an actual error that occurred with an air carrier and general aviation (GA) turboprop on May 19, 2009 at the Charlotte/Douglas International *Airport*, Charlotte, NC.

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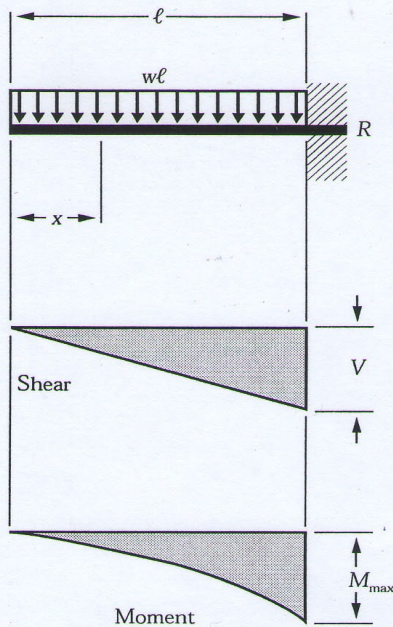
## Building Safety (Larry Severson)

There is a lot of information about the benefits of using carbon fiber when building composite planes and parts, but not a lot about the potential problems. Carbon fiber is about 4 times stiffer and stronger than fiberglass; however, when it breaks, and everything does, it splinters. The resulting splinters are extremely sharp. Infection is a serious risk. There is a design/manufacture choice that will cure the risks—Kevlar. Kevlar resists impact. Using a thin layer of Kevlar over the carbon fiber part will restrict the spread of the sharp carbon fiber splinters during a crash, or other causes of the breaking of the carbon fiber parts.

It is also important to remember that carbon fiber acts exactly like a metal skin to radio signals. All antennas need to be outside a CF fuselage.

# Research: Wing Strength Requirements

**Figure 12 Cantilever Beam – Uniformly Distributed Load**



$$\begin{aligned}
 R = V & \dots \dots \dots = wl \\
 V_x & \dots \dots \dots = wx \\
 M_{\max} \text{ (at fixed end)} & \dots \dots \dots = \frac{wl^2}{2} \\
 M_x & \dots \dots \dots = \frac{wx^2}{2} \\
 \Delta_{\max} \text{ (at free end)} & \dots \dots \dots = \frac{wl^4}{8EI} \\
 \Delta_x & \dots \dots \dots = \frac{w}{24EI} (x^4 - 4\ell^3x + 3\ell^4)
 \end{aligned}$$

This information comes from the [American Wood Council](#). All of the math is defined on their site, as well as other combinations of beam fixing and loading.

It should be obvious from the above that both the shear and moment loads drop as one proceeds out from the wing root. It should also be obvious that for those planes that have a wing strut, the stress is uniform between the wing root and the strut position and drops from the strut to the wing tip. This system takes the total lift produced by 1/2 the wing span and divides it by the percentage of that inside the strut.

In the design considerations is the fact that the strut reduces the wing structure requirement, but it does significantly increase the parasite drag.

I have a Excell file that calculates for structural requirements for my tri foil design that I will be building. It can be adapted for any type of airplane fairly easily. It is used to work with cantilever beam wing structures without struts. All three (3) wing structures are measured and calculated.

# Why we fly!

Good Evening,

On 3/30/2010 I returned to where it all started. I took to the air for the sole purpose of Flying. Not to get anywhere or because of someones schedule but for the Pure joy of the act.

I took off from Dallas Executive, headed south climbing to 2500'. There I took in the spectacle that is the VAST TX countryside. I saw wooded areas starting to turn to green of various shades. Young and Old trees. The Old ones responsible for the young ones being. The fields that spread before me as far as the eye could see were a pallet of color. In various stages from the most parched to the vibrant green of young growth to the dark browns of newly plowed soil.

As I cruised along at an astounding 100knots following this strange thing called a "Propeller". I tried some old skills not used in the past 21 years. Steep turns and a few stalls. What is this strange thing called "P" Factor. I then headed for an "Un Controlled" field, I thought those vanished years ago, to practice the lost art of "Touch and Go". After a half dozen or so I pointed the nose of the "Cheetah" on no particular heading for I just decided to "Follow the Road" I believe it was 67, till I saw 20 and low and behold I actually found the field I had departed from 1.4 hrs ago. I called the tower, My 4th radio transmission of the day, and proceeded to enter a left base for Runway 17, turned base to a "Short Final" and landed.

The winds for the day were around [190-210@15G24](mailto:190-210@15G24). A sporting day to say the least. As I taxied to the tiedown I had a smile that would not leave for quite a while. For I had returned to "Flight" as it was meant to be enjoyed. Flying for the sake of just that. For the sheer pleasure of being one with the wind and the sky. To enjoy the earth from a vantage point where life can be treasured. I have said in the past that "I spent 17 years at 35000 ft doing MACH .82, now I wanted to see it all from 3000' doing 80 knots". I began that journey on 3/30/2010. The "Head is Clear, the Mind is Free and the muscle Memory is Intact".

My Friends in Flight, take the time to enjoy Flying for what it was meant to be. Don't be like me and wait 21 years to rediscover. I am getting set to achieve my CFII and revalidate my CFIA. I will endeavor to pass along the true meaning and joy of Flight. Thank you for letting me share this with you.

Bill.

Bill Moyle

(former member of EAA 92 who moved to find work.)

# EAA 92 Partners

They help us do better!



## Chapter Research Project

The project to speed the final finishing of home built planes is nearly ready for presentation. It looks as though the home builder the time savings could be up to 2000 hours of finish work.



(Aeropoxy)

(Aeropoxy)



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# Young Eagles

We have suspended the Young Eagles operation until Spring. In the meantime, during the next 4 months, courtesy of Macro Press, we will be publishing on our web site:

1. A 4th grade introduction to flight
2. A lesson "Scientists Test" - exploring paper airplanes
3. A lesson "Scientists Control Variables" - making research more accurate
4. A lesson "Scientists Develop New Ideas" - expanding research in new directions

All of the lessons were scripted so that the teachers could learn with the students about flying AND how to become scientists. ALL work should have been on the web site by 3/1/2010. This will help the Young Eagles get ready for Flight Day. I can e-mail them to those who contact me.

## 2010 Young Eagles Events:

	Sept 18	
Jun 12	Oct 16	Oct 23

## April Meeting

The meeting will be at the normal 1st Tuesday time:

5:30 Board meeting

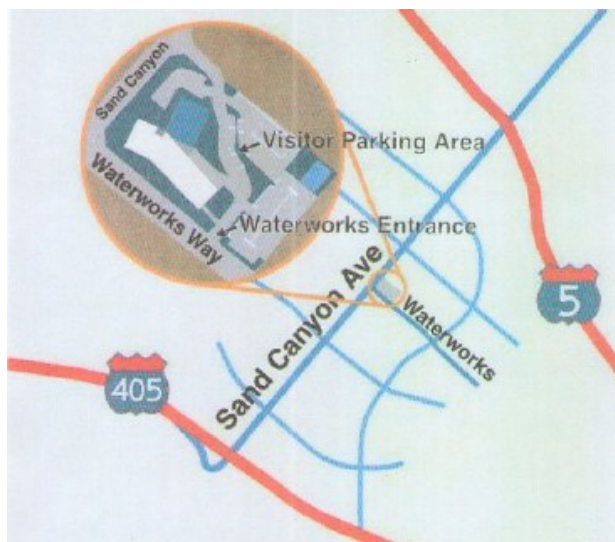
6:30 social

7:00 General meeting

Location:

Irvine Ranch Water District

15600 Sand Canyon Road.



This month: On April 6, 2010,

Presentation: GPS navigation by Ray Hecker (flight Advisor)

In the coming months, a couple more "Wings" presentations are planned. There is an advantage to belonging to EAA 92.