

# Hangar Talk

## The “Lightning” Newsletter

Sharing info between builders, flyers, and future customers.

### Second Quarter 2013 - Volume 6, Issue 2



#### Bruce Keen’s “Lightning of the “Quarter”

This issue of Hangar Talk starts with Bruce Keen’s Lightning of the Quarter. Coverage of 2013 Sun N Fun is next, followed by an extensive report on current Factory News. News from Builders and Flyers once again has great reports from the Lightning Community. Over the years I think the newsletter has been a big help for the entire Lightning community by providing a source of information for builders, flyers, and potential customers, as well as a way for the factory and the dealers to keep the Lightning community up-to-date on all news and any potential safety issues. I think everyone agrees that it is worth the effort to continue it. So, here is another plea for someone out there to grab the stick and take command of the newsletter for a while. I think you will enjoy the experience and the newsletter readers will appreciate your efforts. More info below in Final Thoughts section.

Blue Skies.

Buz Rich – N1BZRich@aol.com

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## Lightning of the Quarter

I'm extremely pleased to announce that this issue of **Hangar Talk's** Lightning of the Quarter is **Bruce Keen's** beautiful and recently completed Lightning. Bruce, from Australia, reported via email on 1 May that his Lightning, which was kit number 31, made a first successful test flight on 21 April 2013. Congratulations on that first flight, Bruce. The photos below show what a great job you did.

I think the paint design and colors that Bruce used are perfect for a Lightning. The simple but elegant scheme accentuates the long graceful lines of the Lightning. I'm sure it will get lots of attention wherever you fly to in Australia.

Below are some photos that Bruce sent of his first flight.



**Take off roll on first test flight.**



**Lift off!**



**Just before touchdown. Looking good.**



**The Lightning "I did it" Laugh. It is a wonderful feeling of accomplishment.**

Congratulations, Bruce. Absolutely beautiful Jet – and certainly worthy of receiving the “Lightning of the Quarter” award. Please do a follow up feature article for the newsletter and send me some additional photos when you get a chance. I’d like to include it in the 3<sup>rd</sup> or 4<sup>th</sup> quarter newsletter. I’m sure the Lightning community will enjoy hearing your thoughts on the building process, how the test flying went, and how you intend to use your Lightning once it is out of the testing phase.

Blue Skies,  
Buz

# Sun N Fun Report

This year's Sun N Fun dates were from Tuesday April 9<sup>th</sup> through Sunday April 14<sup>th</sup>. The Arion Lightning team arrived early and set up on Sunday before the show started. That gave them a day to relax before the show actually started. The photo below shows the main booth area that the Lightning has had for several years. It is a prime location in the center of the display area and just behind the FAA building.



On display in the main booth were a past customer's "For Sale" Lightning and the "Top Secret" project Lightning that would be unveiled on opening day.



Secret engine ready for the unveiling on opening day.



Nick un-wraps the 160 HP O-320 Lycoming on the new "go fast" EAB Lightning.



Overall attendance at Sun N Fun this year seemed to be down slightly from other years. The total number of homebuilt aircraft, the number of vintage aircraft, and the number of warbirds all seemed to be down somewhat when you walked through their respective parking areas. However, the “drive in” crowd must have been good as most display areas had good traffic all week. That was certainly the case in both Lightnings booths – their main booth and the Light Sport Mall booth. I spent most of my time in Lightning’s main booth and there was a constant stream of interested people looking at the Lightnings on display and asking lots of questions that seemed to indicate their sincere interest in the Lightning – both the Light Sport version and the kit version.

Obviously the new “go fast” experimental amateur built (EAB) kit version generated lots of interest. That interest has continued since the Lightning team returned to Shelbyville as the number of phone calls and emails about the new O-320 powered Lightning has been tremendous. The goal for the new “go fast” Lightning version was to have it begin phase one test flying in time to have it on display at Oshkosh. However other priorities prevented that. It will be at Oshkosh, but will be trailered. It will fly in August.



**Mark shows off the new 160 HP O-320 Lycoming. This thing is going to be fast. They may need a new airspeed indicator that is calibrated in mach numbers.**

The Sun N Fun “Light Sport Aircraft” Mall location was relocated this year to the area that once was reserved for the Ultra-lights. There is a new paved road through the Ultra-light area that curves around the Light Sport Mall. The Lightning display area in the mall was right in the middle of the curve and just in front of the LSA Mall tent – a prime location.



**“Green Acres” Dean, “Moostang” Mike, and “Squirrel Hunter” Nick say hello.**

The Wednesday morning Lightning forum was well attended as the photo below shows. Nick covered the Lightning history, recent developments, and of course the “next generation” Lightning. The attendees asked lots of good questions about both the light sport Lightning as well as the experimental versions.



**There was great attendance at the Wednesday morning Lightning forum. Unfortunately this photo only shows about half of the room. The attendees had lots of good questions.**

The annual Lightning community get together at noon on Friday was once again well attended. As always Arion provided corn on the cob and drinks. Nick introduced the Lightning team and brought everyone up to speed on recent developments. Everyone attending had a wonderful time renewing old friendships and making new ones. I wish I had been able to get photos of everyone in attendance, but below are the photos I was able to get.



**Dennis and Donna.**



**Bear and Lynn.**

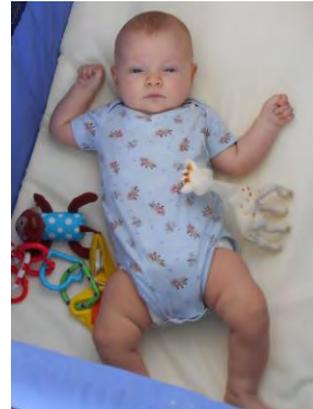


**Greg and Tex.**



**"Moostang Mike"**

**Maybe it is time to come up with a new "tactical call sign" for Mike since he recently bought a Jaguar. How about "Moo-cat" or "Jag-stang".**



**Olena watching over her and Max's new daughter – Liz.**



**Dean and Ryan.**



**Sam**



**Lynn, Carl and Pat.**



**Paula and Mark.  
Paula works at Sun N Fun.**



**Max and Mark talk to Doug and Rhonda Guy. They are now building the first UL Power Lightning in the US. See more info in the News from the Factory section.**



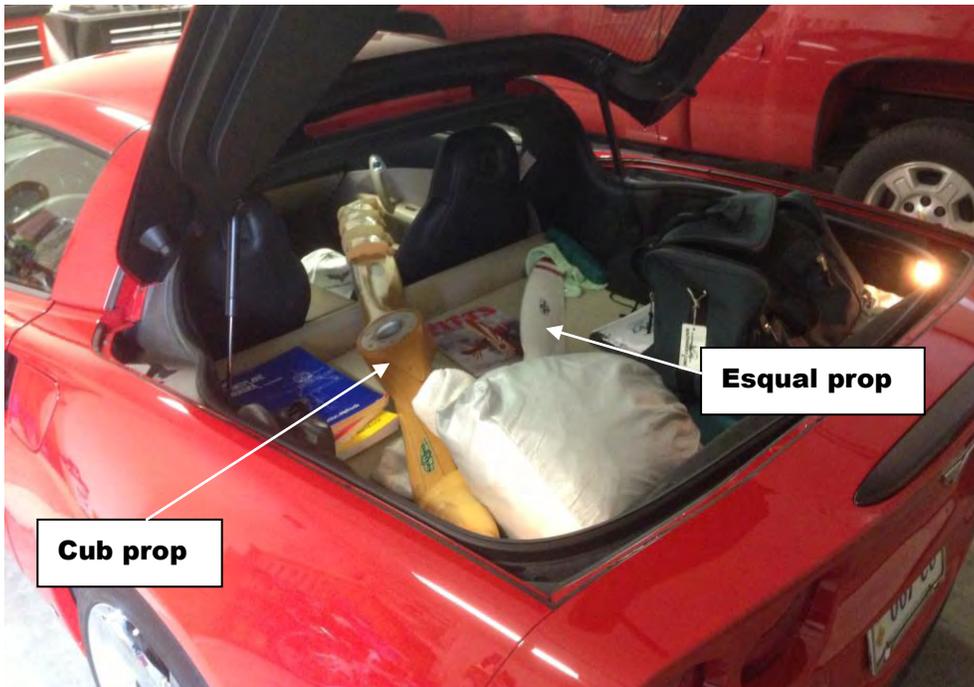
**Lots of interest in the Lightning during the entire Sun N Fun show.**



**Mark took this photo.  
I wonder why?**



**Talking to customers is always fun.**



**My “flight” to Sun N Fun this year was “low altitude” all the way. I took two wooden props to the Sensenich factory in Plant City for refinishing - my Cub prop and Esqual prop. They were able to get them ready for me in only ten days. Both props now look brand new and are back on the respective aircraft.**

**Every year Sun N Fun is the “un official” start of the summer fly-in season. It is always a great show and allows those living “up north” to get away from winter weather a little early. Start planning now to attend next year. You will be glad you did!**

## News from the Factory

### Lycoming O-320 Project Update:

I had hoped to have a flight report on the new Lycoming O-320 powered Lightning project, Code Named "Strike", however unforeseen circumstances having to do with other factory work and build requirements prevented as much progress as had been hoped. As this is written the 160 horsepower Lycoming powered Lightning is three to four weeks behind schedule and obviously has not flown yet. Arion still plans to have it at Oshkosh on display, but it will be trailered to the big annual EAA show instead of flown there as they had planned. So at this time, the Lightning "Strike" project will probably not fly until August. I plan on doing a complete flight report in the Third Quarter Lightning Newsletter (probably published in September) that will also cover the EAA Fly-In at Oshkosh.

Below are a few photos of the new O-320 cowling as it was being designed and formed to cover the 160 HP Lycoming. It still has the long, fast, "strong & striking", look that the Lightning is famous for.



**As you can see, the new 160 HP Lycoming O-320 cowling still has that sleek & striking look that the Arion Lightning is famous for.**

Along with the new cowling for the O-320 Lycoming powered, the factory guys have also redesigned the nose gear lower socket and the main gear weldment for the heavier engine Lightnings. (See photos below that show the old and new designs.)

The nose gear socket angle has been changed between the gear leg and down tube which the forks pivot on. The forks are now parallel to the surface with no forward pre-load of the fork. This should make taxiing (steering using the brakes to turn) somewhat easier and was also needed due to the heavier weight of the both the Lycoming and UL Power engines.



**Old nose gear on left; new design in middle with changed socket angle. Right photo is new lower main gear weldment for heavy duty axles and brakes, this is a bolt on type axle, all gear “toe” can be taken care of with shims from Matco.**



**These photos shows the O-320 Lycoming hung on the fuselage. Photo on the right shows the new longer gear legs and the new lower nose socket. The longer gear legs were needed because the 160 HP engine must swing a much larger diameter prop for efficiency (and speed!). That’s what its all about – speed.**



**Close up of an engine mount gusset for the larger HP engines. This one has not been bonded in yet, there is one at each fuselage engine mount attach point.**



**These photos show a close up of a firewall recess area that was required to make space for O-320 engine accessories.**



**These photos show the cabin area with Carbon fiber (black area) 3" tape laminate installed. Using 3" wide Carbon tape from the engine attach gussets back past the cockpit provides additional torsional support to the forward fuselage. The tape was about \$80 for 30 feet, but only required 20 feet to do what was wanted here. Arion may have this installed on all aircraft regardless of engine since it is not expensive and light weight. This mod will also provide improved forward strength of the cabin. There has been 3 cases where the forward area above the wing root has compressed during a crash. In one extreme case the nose sheered behind the firewall. The area was intended to absorb impact forces but not to break during an impact. Continued improvement of a great design.**

## **More Engine Choices for the Lightning:**

In the last issue of the Lightning Newsletter Arion Aircraft announced that they are working with Robert Helms from UL Power North America to design a factory supported firewall forward engine package kit for the Lightning. Engine choices will be the UL350 130hp and the UL390 160hp engine.

The first Lightning builder in Germany (and in Europe) was Gerd Nowack of Linden, Germany. Gerd was also the first Lightning builder to use a UL Power engine in his Lightning. Gerd is a Lufthansa pilot and

you can read about his built in two past issues of the Lightning Newsletter, Issue 3-1, and Issue, 4-1. The German rules on homebuilt aircraft certification are much tougher than in the US and Gerd even had to prove his own aircraft's wing G-loading capabilities.

Unfortunately, shortly after Gerd started his test flying on his first Lightning, he had an electrical problem that affected the electronic fuel system in the engine and it caused an off field landing that resulted in the airplane not being economically repairable. Gerd did an amazing job of landing the aircraft in a very difficult location and he suffered no injuries.

I'm happy to say that Gerd is building another Lightning, this time having used the factory builder assist program, and his second Lightning is ready to be shipped to Germany as I write this. This time Gerd is using the UL Power 390iS which is rated at 160 HP. It should be super-fast.



**The UL 390iS is 160 HP.**

The left photos below shows Gerd receiving his first Lightning in Germany several years ago. On the right is his new Lightning ready to be shipped to Germany via a Lufthansa 747.



**Here are some of Nick's comments on Gerd's current Lightning build:** "Gerd's UL Powered plane is still in the shop in Shelbyville. It is finished and is in a crate awaiting some back ordered parts (mainly the engine mount) before it ships to Germany. What is very unique with this aircraft is it has many firsts for a Lightning. Aluminum fuel tanks for one, needed for easier compliance in Europe along with fuel restrictions and or availability as well. It also has the first single, center stick ever. Gerd and I worked together on this one to design a system that will free up the tunnel area for your legs and put a stick right in front of a comfortably rested arm. Because of the total length from the aileron bell-crank in the wing to the stick, it was necessary to add a "walking bar" at just inside the wing root to keep pushrod length shorter. An extreme long tube could have flexed too much under air loads. The walking bar is something

that may turn into a standard add-on for the higher horsepower, higher speed kits after some flight testing is done. Gerd's engine choice was the UL Power 390SI of 160hp and will have a 2 blade constant speed prop.

The Second UL Power project here in Shelbyville is slightly further along but we are still awaiting an engine mount as well. That aircraft is being built by Doug and Ronda Guy from Nebraska, their Weimaraner puppy Piper was here also for the structure build and kept everyone working hard.

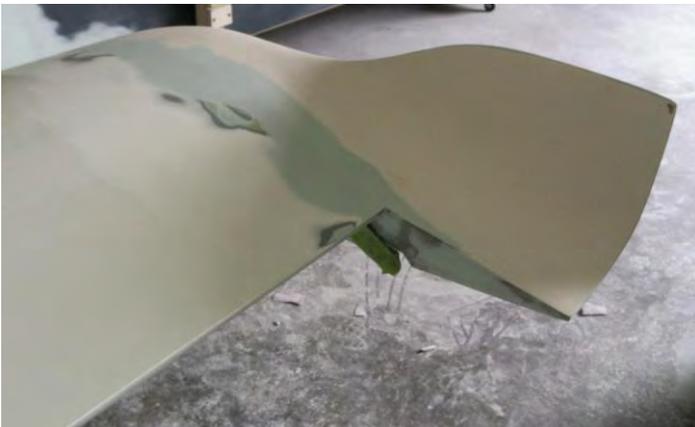


**This Lightning is being built by Doug and Ronda Guy; "Cornhuskers" from Nebraska. Their aircraft will be getting the UL390 160hp engine. The engine is here in a crate. It will be hung when the engine mount arrives here later this week.**

### **More on the Short "Winglet" Wing Tip Mod:**

As reported in the last issue, a popular modification to the Lightning is shortening the LSA long wing tips which have the "winglet" to use just the "winglet" section on the tip. These short tips with winglets are now available from the factory at the same price as the longer LSA "winglet" tips.

Pilots who are not flying in the LSA category do not need the extra wing area for a lower stall speed. The shortened "winglet" style tip gives added roll stability, better fuel economy at altitude, a slightly slower stall speed and landing speed than the standard round tip. And it just looks cool.



**The short "winglet" tips can replace the standard round tip if you don't need the added wing area to meet the "light sport" stall speed.**

Nick reports that the short winglet tips fly very nice. We cannot take credit for the first ones to do this mod. Ryan has been modifying LSA tips for some time, and several builders, Gerd from Germany, and Bill from TX, have accomplished the same thing on their own. We all know what the LSA extension tips do for performance, but it's the up swept winglet that provides for greater roll stability. The old short round bullet tips don't provide a whole lot of anything except a cap on the end of the wing. The short wing had much better roll rate and lighter aileron forces. So the idea is that you can add roll stability to the short wing with the winglet, but still keep the lighter aileron force. In flight testing they do exactly that. The aileron forces are significantly lighter than before with the long tips, and are now even lighter than the pitch forces. So control harmony, being about equal with the long LSA tip, is now heavier in pitch and lighter in roll, which is very common on sport aircraft. No strain gauge testing was accomplished, however it is my calibrated hand's opinion, due to the shorter wing and reduced wing pitching moment, that the elevator pitch feel seems heavier than roll by only a few pounds. This aircraft is equipped with the MK2 tail as with all new models, and I do believe this combination to be a very nice combination. I did only minimum flight testing with stalls. The stalls of course are straight ahead with no break in roll. The stall speed, both indicated and true, do not seem much higher than with the long tip extension. Calibrated airspeed is what really is important when talking LSA. I will leave it up to the builder to determine the LSA compliance of the short tip, and won't be surprised if independent testing finds that it will fit the need.

## **Lightning Sales Update:**

Mark Stauffer, the Lightning Production Manager tells me that overall Lightning sales, like the US economy, remain a little sluggish compared to past years. However, interest in both the SLSA and EAB Lightning remain high as they still get quite a few phone calls on both types of aircraft and Nick continues to give demo flights on a regular basis. Total sales so far this year are for 5 aircraft, 3 EAB and 2 LS-1. An interesting note is that one of the EAB kits is going to Indonesia (to Mr. Tikno S. Handoko). I remember talking to him at Sun N Fun and introducing him to Greg Hobbs, the Arizona dealer who handles kits sold on the west coast. With these latest sales the current total count is 158 airframes sold.

The Lightning Facebook page is: [www.facebook.com/flylightning](http://www.facebook.com/flylightning).

The above info provided by:

*Mark Stauffer*

Production Manager

Arion Aircraft, LLC & Jabiru USA

2842 Highway 231 North, Shelbyville, TN 37160

(931) 680-1781

## **Recent Safety Alerts and Service Bulletins:**

There are no new bulletins for the Lightning at this time.

## **Arion has a Slightly Used LS-1 For Sale:**

Are you possibly looking for a slightly used LS-1 Lightning? N332AL has only 80 hours total time, no damage history, all ADs and SBs complied with, Grand Rapids EFIS 8.5" screen with Trutrack AP and

internal GPS. Equipped with 22 gallon tanks which equates to over 3 hours flying time (with plenty of reserve) at cruise speed. Aircraft is located at the Shelbyville factory at an asking price of \$110K.



**Slightly used SL-1 for sale at factory, 80 hours TT, asking price \$110K.**



**Grand Rapids EFIS 8.5" screen with Trutrack AP and internal GPS**

### **Arion Aircraft expands their Builder's Assistance program:**

Since the US economy continues to be in a slump, Arion Aircraft has been expanding their builder assistance program by taking on the Rans S-7 aircraft. The airplane shown below belongs to Sam Kite who is also a Lightning EAB owner. Sam wanted to experience low and slow around his home and his airfield in eastern Tennessee so he is building an S-7 with Arion's assistance. When Sam really needs to get somewhere fast he uses the Lightning! Sam's S-7 will be ready for the paint shop by the end of the week and then should be in final assembly shortly after Oshkosh.



**Arion Aircraft may become a remote S-LSA assembly facility for Rans. Having flown several Rans S-7s, they are a responsive "bush type" aircraft. The one I flew with a 3300 Jabiru was like flying a "super" Super Cub. Lots of fun!**

## Current Lightning Dealers or Representatives



Arion Lightning, LLC, contact Nick Otterback, Shelbyville, TN, 931-680-1781, [www.flylightning.net](http://www.flylightning.net)



Lightning Southwest, Greg Hobbs, 18750 West Avra Valley Rd, Marana, AZ 85635,  
520-405-6868 [www.lightningaircraftwest.net](http://www.lightningaircraftwest.net)



Mid Atlantic Region, Green Landings Flight Center, Ryan Gross, 309 Takeoff Dr, Hedgesville WV  
25427, 304-754-6010, [www.greenlandings.com](http://www.greenlandings.com)



Lightning North Central, Tom Hoffman, 3015 Shady Ln, Neenah, WI 54956-9509, (920)-585-9704



Lightning New York - Jabiru Power Solutions, LLC, Dave Jalanti, 136 Millbrook Rd, Hudson NY,  
12534, Kline Kill Airport, Ghent NY - Identifier NY1, (518) 929-4307, [dave@jabirups.com](mailto:dave@jabirups.com)



Lightning Florida, Moonshine Aviation, LLC, Max Voronin, 917 Biscayne Bay Unit #5, Deland FL,  
32724, 386-873-9995, [www.moonshineaviation.com](http://www.moonshineaviation.com)



Midwest, Heart of America Aviation LLC, Jack Gonzenbach, 12906 W 122nd St, Overland Park KS,  
66213, (913) 890-3052, [jgonzenbach@flyhoaa.com](mailto:jgonzenbach@flyhoaa.com)



Western Light Sport, Sullivan Equipment and Leasing, Jay Sullivan, Hanger #23, Redlands  
Municipal Airport (KREI), Redlands CA, Cell 909-362-7294, Office 909-307-5757,  
[FlyLightningLS1@gmail.com](mailto:FlyLightningLS1@gmail.com)



Lightning Representative Australia, Dennis Borchardt, Kingston SE, South Australia 5275, (08) 8767  
2145, [lightningaustralia@bigpond.com](mailto:lightningaustralia@bigpond.com)



Russia and CIS, AVIA-NIANIA Ltd, Moscow, Russia, Phone: + 7495518-62-75, Mobile Phone: +  
7925518-62-75, [avianiania@mail.ru](mailto:avianiania@mail.ru) or [avianiania@aol.com](mailto:avianiania@aol.com)



South Africa-Flylightning SA, Deon Lombard, Petit Airport, Pretoria, Phone 0834196613 or  
0723122717, [deonandpamela@yahoo.com](mailto:deonandpamela@yahoo.com)

## News from the Dealers

**Max Voronin of Moonshine Aviation in Deland, Florida sent the following message:**

Hi Buz,

Picked up a slightly used LS-1 Lightning, N97RB, and had a good flight back into DeLand, dodging all kinds of Florida buildups. Original owner is Bob Bedell from Vero Beach area. The airplane is a 2012 LS-1

S-LSA, with less than 100 hours total time. The plane is well equipped with a 10" Dynon Skyview and a built in 796. It also has covers and cowl plugs. Not set on the price yet, but I think it'll be somewhere around 100k. Referrals are appreciated!

Liz is doing fine. Doing the same thing other girls her age are doing - eating, sleeping, learning new things and hanging out by the swimming pool.

Olena says hi!

Best,  
Max

**For additional information  
on this aircraft, contact  
Max at 386-873-9995.**

**His web site is:**

**[www.moonshineaviation.com](http://www.moonshineaviation.com)**



**Greg Hobbs of Lightning Southwest in Marana, Arizona, sent the following  
update about ongoing projects and builds at his facility:**

Hi Buz,

From the western reaches of the Lightning empire, here is what is going on in Marana, AZ.



**Enrico Bernardi's Lightning, N120EB, is in final stages for inspection.**



**Lee Smallsreed's Lightning, N161LS, is ready for inspection, it just needs paper work.**



**Fred Peters lightning N677BP after 5 years of setting on my aircraft lift is ready for inspection. The airplane will get a GRT upgrade and new tail and elevator mod.**



**George Bailey's lightning is back for tail mod and auto pilot N214DG**

Tikno S. Handoko is from Indonesia and was at Sun N Fun this year looking for an airplane. He decided on the Lightning and a build with us here in Arizona. We will start his airplane before Oshkosh and finish it in August. We will completely build the airplane to include all wiring and avionics; basically everything except paint. Tikno will be in Arizona and help take the airplane apart to ship it to Indonesia. This way he will have an idea of how to put it back together. He will do some flight training while he is here. Ernie Pritchard, Lightning owner and CFI & AP, will go to Indonesia to inspect the reassembled airplane and do first flight and some more training. Indonesian import duty on an airplane is 60+%, but duty on an imported kit is 16%, so by doing Tikno's build this way he will save quite a bit on import duty.

**For additional information on Lightning Southwest in Marana, AZ, contact Greg Hobbs at 520-405-6868.**

**His web site is: [www.lightningaircraftwest.net](http://www.lightningaircraftwest.net)**

**Jay Sullivan of Western Light Sport in Redlands, California, sent the following two messages about upcoming events in his area:**

Dear Fellow Flyers,

We have a Summer LIGHTNING LS-1 Open House as a Fly/Drive-in scheduled for Saturday, 0730 (beat the heat), July 20th, at Hangar #23 KREI, Redlands, CA. Come on out and see the LS-1, get your questions answered and let's schedule a demo flight.

Serving coffee/donuts early and as we get closer to lunch we'll have dogs/cokes with adult beverages for those that are passengers, also we have a craft brewery about 100 yards from the hangar, referred to as "Hangar 24".

If you have any questions on the LIGHTNING LS-1 please let me hear from you or contact the factory at [www.Flylightning.net](http://www.Flylightning.net) , as your dealer for the Western States my contact info is below and on the factory website.

We look forward to seeing you and your interested friend there and if you would RSVP as a reply it would help out with logistics.

Jay B. Sullivan  
EAA# 1021168  
Sullivan Equipment Leasing, LLC, Hangar #23 (KREI), Redlands, CA  
909.362.7294 c or 909.721.0949 c  
Hi Buz,

On another note, I will be showing and promoting the Lightning LS-1 at the Big Bear Air Fair, Big Bear City Airport, on Saturday, August 24<sup>th</sup>, 2013, from 9:00 a.m. to 4:00 p.m. More info on the show can be found at:

<http://www.bigbearcityairport.com/air-fair/>

Take care,  
Jay B. Sullivan

**Jay also sent the following photos of his current demo LS-1 Lightning:**



**For more information on Western Light Sport, Sullivan Equipment and Leasing, Jay Sullivan, Hanger #23, Redlands Municipal Airport (KREI), Redlands CA, Cell 909-362-7294, Office 909-307-5757**

**[FlyLightningLS1@gmail.com](mailto:FlyLightningLS1@gmail.com)**

# News from Builders and Flyers

## Another Lightning will soon fly in Western Australia:

Wayne Patterson sent the message below (along with some recent photos) about his recently completed, but not yet flown Lightning. By the time you read this, Wayne will probably have completed his first flight. Wayne has been great at keeping the Lightning community informed of his building process and had a very interesting article in the September 2010, Volume 3, Issue 9 of the Lightning Newsletter, and an update in Issue 6-1. Please go back and read Wayne's contributions about his on-going build at the time. I've included a photo from that article in his message below.

Hi Buz

This is a little pre-emptive as my Lightning hasn't flown yet, but the build is finished so the plane is complete...



I received Kit #65 on 11 August 2008. I spent a year overseas, so deducting that time, the build has taken 1250 hours so far over close to 4 years – so that makes it an average of about 6 hours per week. That is actual build time and doesn't include researching for parts and materials, and phoning and driving around to pick up said parts and materials! I'd add about 25% to the build time for all the running around.



I've fitted a Sensenich 64" ground adjustable prop with a Cummins spun alloy spinner. I also have Skyview 10" display with GPS, MicroAir radio and transponder and an Eflaps push button flap controller.

I completed the first 3 years building at home in 1 half of a

double garage, then for the last year I have worked in my hangar at Serpentine in Western Australia (a 1 ½ hour 110km round trip each working day). Driving to Serpentine has chewed a lot of time, but the benefit in having access to many experienced builders has far than offset that driving



time. It is great for guys drop in and study the plane and pass comment on anything they observe – particularly the constructive criticism on build techniques.

I have greatly enjoyed the whole process with the exception of the electrics ... Because electrics are at the edge of my experience envelop, I have had to do a lot of trial and error to get the harnesses designed and built. And as I have an avionics bay under the baggage area floor (with all Skyview remote modules etc.) it has been a challenge to route all the wiring under the centre console along with the throttle cable and fuel lines. It is not a problem to just get it done – but it is more of a challenge to set it all up so the centre console can be reasonably easily removed to access everything underneath.

I am now obviously greatly looking forward to completing the checking, fine tuning, weighing, certifying and final registering being complete so I can see how well it bores holes in the sky. Once the 25 hours testing regime is complete – Sheryl and I will be off exploring Australia from 5,000 to 9,000ft. That’s why I built the plane so that’s how I’ll use it!

Cheers from Perth, Western Australia.

Wayne Patterson  
**Cambodia Connect**  
[www.cambodiaconnect.com.au](http://www.cambodiaconnect.com.au)  
Phone (08) 6262 3927  
PO Box 1042  
Booragoon WA 6954

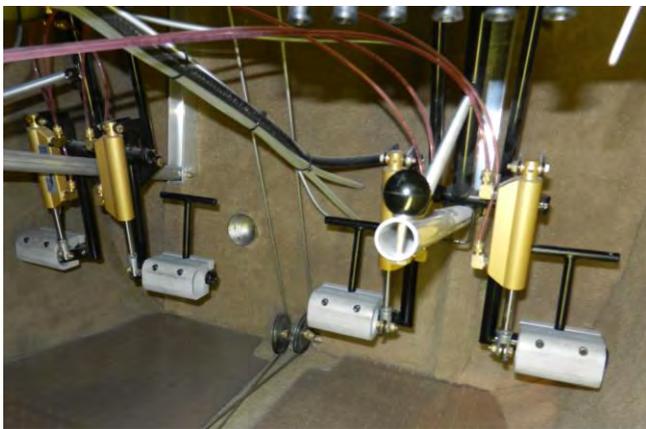


**Beautiful “Jet”, Wayne. Super Job!  
We look forward to a follow up newsletter article from you on your tests results  
and future flights in your Lightning.**

**Next, Lightning builder Gary Barnett sends photos and comments on some rudder pedal extensions that he designed and had made for his Lightning. Gary shared his tie down design for his Lightning in the last newsletter:**

From: Gary Barnett [mailto:gbsss@bendbroadband.com]  
Subject: rudder pedal extensions

Attached you will find photos of the extensions machined for me by a friend of my sons. You install them by first bringing the pedals as close to the pilot as they will come. Install one of the two screws loosely into the clamp bar and slip the bar behind the vertical brake pedal tube. Swing the clamp bar down install the other screw and tighten evenly. They are then solidly attached by the clamp. Now I can work the rudders and brake pedal at the same time. By the way there is an error on the pedal drawing, it calls the vertical bar of the brake pedal as 1/4 inch it is 3/8 inch. If anyone wants the drawing I will send it to you or whoever wants it. Gary



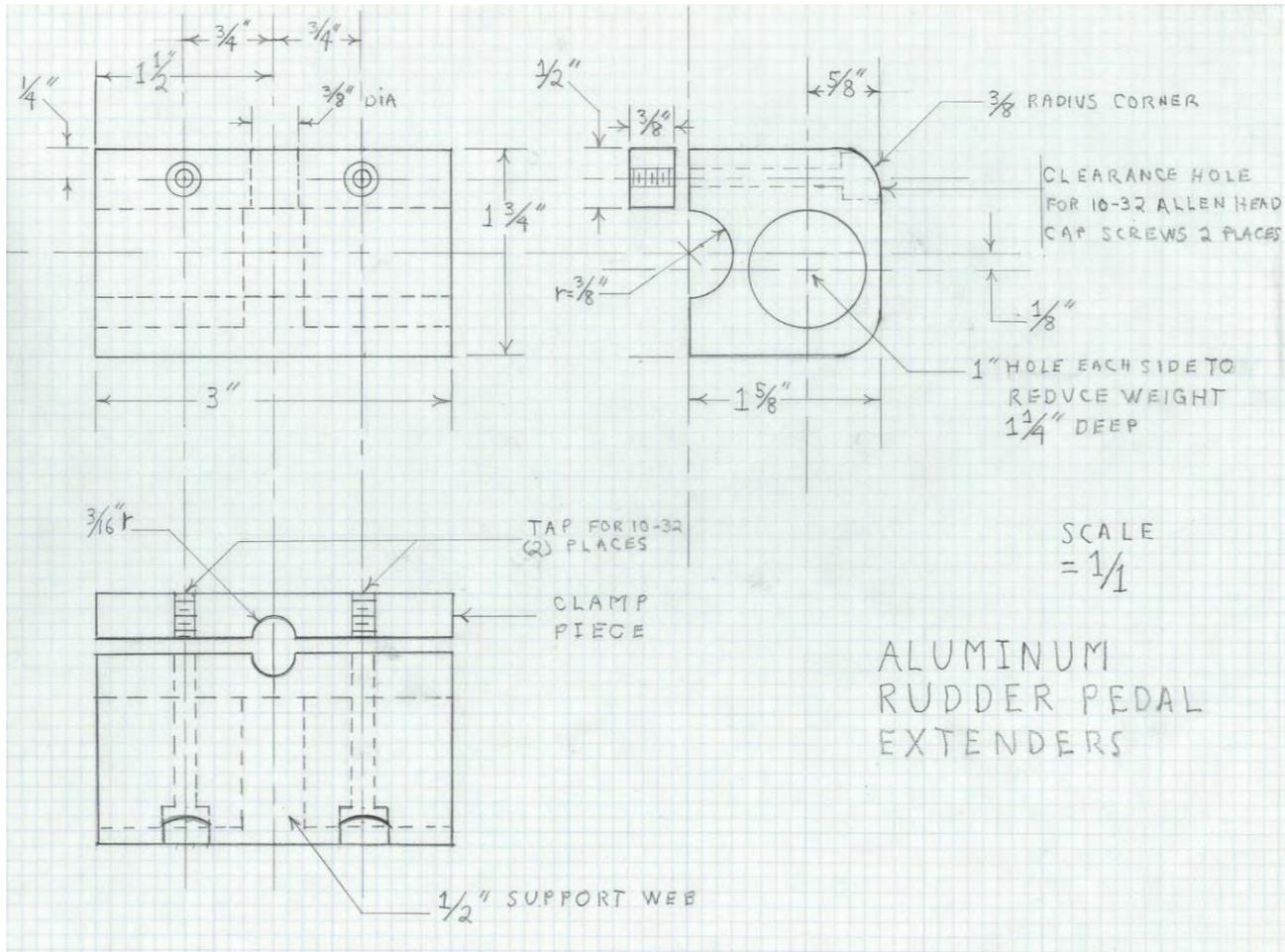
#### **Comments on Rudder pedal extenders:**

1. The pedal extender clamps around the vertical part of the brake pedal. You will need to radius the area around where the pedal and clamp meet the weld of the vertical arm of the brake pedal to clear the weld and let it seat properly. I used a Moto tool to make the radius.
2. I had the machinist cut some shallow grooves across the face of the pedal extender where it meets your shoe for added traction.
3. To install the extenders bring your pedals all the way to the rear. Then install one of the mounting screws just a couple of threads and slide the extender onto the rudder pedal brake assembly with the clamp held vertically. Lower the clamp behind the vertical brake pedal arm and insert the second screw. Tighten them equally.
4. For people with long legs and small feet you might want to reduce the 1 5/8 inch dimension to just one inch and reduce the weight reduction hole and screw lengths correspondingly. These were set up for a person with 35 inch legs and size 13 shoes. The way to test this is to tape a small block of wood to the instep part of your shoe of various thicknesses to find what thickness is ideal for you to comfortably reach the brake pedal.

Attached you will find my "crude" drawing of the Rudder Pedal extenders and an explanation of some areas. At one time I was reasonably good as a draftsman but that was fifty years ago. In the future I will send additional information on the wheel balancer and stopping the Lightning shimmy and my

Lightning's weird landing characteristics. I finally got it taking off and landing like a real airplane and not a crazy squirrel.

Gary

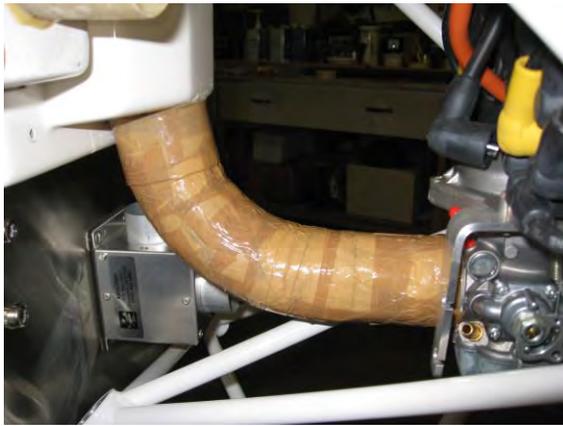


**Gary, many thanks for your write up on your rudder pedal extenders. I'm sure some future Lightning builder will follow your plans and build extenders similar to your design.**

**Bernardo Melendez, Jr. (n45bm@yahoo.com) once again is sharing his building experiences along with his interesting and beneficial changes (and photos) with the Lightning community:**

Some photos of the goings on around here. I used pipe insulation to make the mold, and then wrapped it in packing tape as a release agent.

The air splitters are made from flat fiberglass, bonded in place. Don't know how good they'll work yet, but I'll report later. See photos below:



Due to the fact that the carburetor is attached to the engine, I did not think that a rather solid interface to the filter box was good, because of engine movement. So, I cut the duct off behind the section with the vanes, similar to the setup that Nick came up with, and will join it to the filter box with scat hose. It does not end there, however. One thing that I am going to do is to add straightening vanes to the inside of the duct at the filter box end. I'm guessing (emphasis on guessing!) that that is the end that the air is very turbulent also, and helping it straighten there can't hurt. That's my 2 centavos' worth, anyway.



Maybe a little over kill, but this is my method of attaching the 'glass ducts. I prefer to back up the 'glass under the valve cover bolts with .032" aluminum.

This is how I made my cooling air duct for the oil pan. Took a little thinking and fiddling with a couple of manila folders, but overall a simple process. The intake front will be trimmed to fit later.



### Even more from the Melendez Skunk Works:

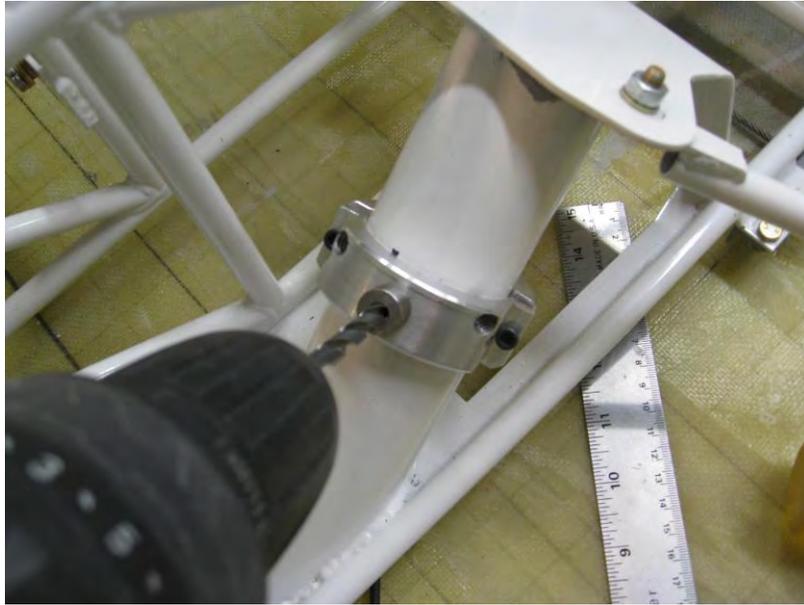
I modified the front of the intakes on the ducts by forming sloped ramps, as I didn't much like the vertical ramps. It seemed to me that they would create turbulence at the air inlet, not to mention drag. I think that cylinder cooling may be improved, too. They do have some weird compound curves to fit them properly, so I hand bent some soft pieces of aluminum flashing to fit as molds (easily cut with scissors), then covered them with packing tape and laid four plies of glass cloth. Another benefit of this is that I can easily remove the oil filter without removing the left duct altogether. I felt that some valuable cooling air would escape between the cylinders around the sides of the ducts, so I fashioned these small baffles from .025" aluminum. They should help, methinks.



### Note from Mark:

Hi Bernardo,  
Just a quick comment about the "ramp" for the ram air ducts. I've heard reports of elevated CHT's for #1 and #2 from others that tried the same thing. It seems that the turbulence created by the flat plate actually helps cooling. Just keep in the back of your mind if you do see elevated CHT's for the front cylinders that it may be caused by the ramps. In a good 95% of Lightnings, #5 will run the hottest on the first flight until you adjust the air "dams" over #1 and #3. I do want to hear about your results when you start flying your bird.  
Best regards,  
Mark

Below is a picture of one of the drill jigs I made to drill the landing gears square and true.



I forgot the "tell" part of "show and tell" on the new and improved choke and throttle bracket. The drill instructions for the throttle lever bracket locate the throttle cable hole too high, not in line with the lever. So, I made a new one from .063" 4130 steel with the top hole 3/8" higher, which lines up more better, less worse.



**Many thanks, Bernardo. Great inputs as always. Buz**

# Reader Feedback

Hi Buz,

If I remember correctly you are pulling together another newsletter. Attached is an article about data analysis that identifies SavvyAnalysis.com as a free source of engine data graphing. I think a lot of owners would find it this information useful and the basic service is free. See below. Use it or toss it at your discretion.

Bill Browns

## Graphing Engine Monitoring Data (Free)

A couple years ago I submitted a newsletter article that discussed capturing engine data from GRT EFIS systems and converting it to an Excel spreadsheet. I then developed a number of spreadsheets to graph the data (CHT@RPM, FuelFlow@RPM, etc.) but decided I did not want to get into the software support business and kept them to myself.

I was somewhat aware of an online engine data analyses site called SavvyAnalysis.com but back when they did not support GRT. Then I was looking at the GRT site and found the following:

<http://www.grtavionics.com/miscsw.html>

One of the great things about this solution is that SavvyAnalysis will work with data from most engine monitors. From their FAQ section:

- Advanced Flight Systems (AF- series)
- Avidyne (R8/R9/EX5000)
- Chelton EFIS
- E.I. (UBG-16 & MVP-50)
- Dynon (D10/D100-series, SkyView)
- Garmin G-1000 and Cirrus Perspective
- GRT Avionics
- Insight Avionics (GEM 610, GEMINI 1200, G1, G2, G3 and G4)
- J.P. Instruments (700-, 800-, and 900-series)
- MGL Avionics
- Ultra-FEI/Flightline AuRACLE

They provide the ability to upload engine data to their web site and provide graphs that you can modify to compare various metrics (CHT@RPM, EGT@RPM, FF@RPM, etc.). And the nice part about it is the basic graphing is free.

They also provide a Pro service for a fee which provides an analysis service. I have not used that service.

Bill Browns  
N716MZ

**Thanks Bill. Looks like a good and very useful service. Buz**

**Mark Stauffer sent the photo below of his Mom taking her first flight with him in his RV on 7 July 2013. This was the first time she's ever flown with Mark and her first time in a small two seat airplane. Mark says she is 87 years and 3 months young!**



**Fantastic Mark. Encourage her to start taking lessons and to join the 99s.**

## **Upcoming Events**

Western Light Sport (Jay Sullivan) Lightning Open House, Redlands CA, 20 July 2013.

AirVenture, Oshkosh, Wisconsin, 29 July – 4 August, 2013.

**Lightning annual meeting at the Booth, noon on Friday, 2 August**  
**Lightning forum was not yet scheduled when newsletter was finalized**

Big Bear Air Fair, Big Bear City Airport, CA, 24 August, 2013.

6th Annual Lightning Homecoming and Fly-In, Shelbyville, **date TBD**, October 2013.

AOPA Aviation Summit, Fort Worth, TX, 10-12 October 2013.

The 2014 Light Sport Aviation Expo in Sebring, FL, is scheduled for Jan. 16-19, 2014.

## **Flight Safety**

**A recent email from Mike Ryan about his experience transitioning into the Lightning (along with a follow up email from Dennis Wilt) makes a great**

**Flight Safety article and a potential learning experience for any future Lightning pilots. Here are Mike and Dennis' emails along with some comments from me on transition training:**

Buz,

I purchased an Arion Lightning at the end of May this year. It is a 2011 model that was owned by a fellow in Nashville. I brought my wife with me to look at the plane before I bought it and she really liked it. Tail number is 1976N previously owned by Bob O'Dell.

I tried to find a local Shelbyville area instructor to do transition training in the plane. The only fellow that was in the area was going to be on vacation and away from the area when I wanted to pick up the plane. I called an instructor that was in my area and asked if he was familiar with light sport aircraft and he said he was and that he would be willing to fly down with me and do transition training while we flew back to my home airport of 27K, Georgetown Kentucky.

What a disaster that turned out to be. Take off was quite interesting in that as we left the ground the plane was over controlled to the point where the nose went too high and the left wing dropped. We recovered without incident but scared the crap out of me. The flight home was without incident up to the landing. The instructor suggested that he would land the plane this time. I told him about the approach speed being around 52 knots but he came in at 75 to 80 over the numbers and floated almost all the way down the runway.

After landing, the fellow that flew us down to Shelbyville suggested that we all go to lunch. Excellent idea! After lunch, another friend and light sport owner suggested that he and I go for a flight in the Lightning and that he would fly it. The flight was good, takeoff was fine and I was beginning to feel a little more comfortable with my new purchase. That was up until my friend decided to try some stalls. Unfortunately he was not familiar with the stall characteristics of the Lightning and when the Lightning went into the stall, he pushed the stick forward instead of just holding it and we were graced with a wonderful view of the earth as we were looking at it from a straight down view. We recovered from that and went back to the airport to change our pants.

Bottom line for new Lightning owner/pilots is make sure that the instructor you choose knows the Lightning quite well.

I am fortunate in that there is another fellow at our airport that is an instructor and does most of the first flights for experimental aircraft constructed at our airport. I flew with him on the third flight in my Lightning. What a difference! This fellow put the lightning through a number of tests to get the feel of it. He brought it the edge of a stall and just held it there talking about the characteristics of the light aircraft compared to general aviation planes. We did a number touch and goes at the airport. I have had three hours of instruction from him. I have become comfortable with my new toy but have not flown it myself yet. I want to do a couple of more hours with him before I solo in my new plane.

As an aside, I have flown Cessna and Piper aircraft for twenty years but had never flown an aircraft with a stick instead of a yoke. So even with the hours that I have in my log book, I am still a student pilot in the Lightning.

The only problem I had with the Lightning was a bad shimmy on takeoff and landing. I read all the newsletters and read about the attempts to solve the problem. Well, I did solve my problem by having all

three tires balanced. Hope that it stays fixed.

Buz, Thank you for your effort in producing the newsletters. They were helpful and contained a lot of useful information.

Mike Ryan  
1976N @ 27K  
Georgetown, KY

### **Dennis Wilt's response to Mike's email is below:**

Mike,

Transition training for the Lightning is extremely important for most of us that have flown Cessnas or Pipers most of our flying careers. The airplane is much more responsive and more pitch sensitive than anything we have ever flown. I took a five hour course that my wife put together (she is a CFII and ATP and the Associate Dean for the College of Aeronautics at Florida Institute of Technology). I flew the course with Ryan Gross, the dealer where I built the airplane in West Virginia. He is not an instructor, but he is a very good pilot and kept me out of trouble. Basically you need to learn how to fly this airplane, climbs and descents, with turns and without, slow flight, pattern work at altitude, etc., etc. Landings are last and they are tricky until you get used to the airplane. Not so hard now, but the first few were quite interesting.

Good luck with your Lightning, I know I enjoy mine.

Regards,

Dennis W. Wilt, Aviation Consultant  
Communications, Navigation, and Surveillance Subject Matter Expert  
Program and Project Management  
757-784-8113  
N616DW ([Arion Lightning](#) S/N 132)

### **My comments and flight safety advise:**

**In several past newsletters I have often stressed the EAA Flight Advisor Program and that a good transition program should be designed for each specific aircraft and pilot. As a long time EAA Flight Advisor (and Technical Counselor) myself, I have helped many pilots plan their first flights in recently completed experimental aircraft and their flight test program. I have also helped pilots transitioning into aircraft new to them to devise a training program to insure a safe transition. So my first advice is to always contact your EAA chapter's Flight Advisor or if the local chapter does not have one, the contact EAA national to get the name of one near your location.**

**Below is a condensed version of a briefing that I often give to EAA chapters or other aviation groups about transitioning into a new aircraft.**

**OK, here is a strong advertisement for the EAA's Flight Advisor Program.**

**If you have recently completed any experimental aircraft or are transitioning to an aircraft you have not flown before, call your EAA Flight Advisor.**

**Most EAA chapters have a Flight Advisor, but if not, you can check with EAA at:**

**<http://www.eaa.org/flightadvisors>**

### **What do Flight Advisors do?**

- Helps pilot conduct a self-evaluation of your past flying experience and your currency and proficiency**
- Helps pilot evaluate the flying characteristics of the new aircraft.**
- Helps design a training program just for you.**

**It has been well documented that the accident or incident rate on the first few flights in experimental aircraft has gone way down since the Flight Advisor program was started many years ago. Based on those statistics, often insurance companies will not even cover the first few flights if the Flight Advisor program has not been used. I really do believe in the Flight Advisor program and have had a 100% success rate with those I have worked with.**

**What is a good transition training program? Well, it depends on you, your experience, your currency and the type of aircraft you are transitioning into. As an example, a Cessna or Piper pilot transitioning into a slippery, sporty handling aircraft with light control pressures would probably need a slightly different transition program, possible with more air work and landings, than someone who had previously been flying sporty experimental airplanes. About a year ago I had lunch with a current Continental Airline pilot who relayed how embarrassed he was on his first flight in an SLSA. The very light, responsive and quick stick forces plus the lightly wing loading took some time for him to get used to.**

**As another example, that same Cessna or Piper pilot transiting to an Ercoupe would have a different program – or an even different program if going into a Cub, Champ or Taylorcraft.**

**The flight advisor will also help you determine the type of flight instructor to look for.**

**Just in the Lightning community, I can give you four examples of using the wrong instructor:**

**-The instructor got the Lightning into several accelerated stalls along with other bad decisions – training in a heavy air traffic area, not squawking or talking, resulted in a near mid-air.**

**-Fuel starvation (fuel onboard), too wide a pattern to make the runway, two fatalities (the instructor and trainee).**

**- Instructor attempted a no-flap landing with a tail wind - and didn't go around – resulting in major aircraft damage.**

**- The instructor decided to try a cross wind landing on a grass strip when better runway way with much less cross wind was available – aircraft damage.**

**So many instructors have never flown sporty type or light sport aircraft, yet they are willing to “instruct” you in how to fly them.**

**Obviously the key to good transition training is finding the right instructor. One that is proficient and current in the specific type is what you are looking for. Hopefully, they have provided transition training in the past, and will probably be familiar with a transition syllabus. All SLSA companies are required to have developed a transition training syllabus. But like all things having to do with aviation, the quality may vary widely.**

**If you don't know an instructor that is current and proficient in the type, you might try talking to someone currently flying the type you are transitioning into and ask for names of instructors. If you strike out here, then my final recommendation is to find a very experienced instructor (not a newbie) that has experience in *lightly wing loaded sport aircraft*. Suggest that they get a checkout in your type and then when they feel comfortable to instruct in that type, your transition training can begin. Occasionally, no IP is available – Try calling your insurance company and ask for some names. On two occasions, Falcon has sent new Esqual builders to me for a checkout.**

**Once you have found the right instructor, do your homework before the first training flight. It will save you time and therefore, probably money.**

**-Study the Flight Manual or Pilot's Operating Handbook –Arion calls it a flight manual for the EAB – like the military does for its fighters – and a POH for the SLSA (ASTM requirement).**

**-Know the V-speeds for both normal and Emergency Procedures.**

**-Review and understand all checklist items for normal and emergency procedures.**

**-Know the Emergency Procedures – memorize the bold face EPs**

**-Get some cockpit time. Know the location and operation of all controls for the aircraft and avionics. In Air Force pilot training you had to pass a blindfold "cockpit check" before solo.**

**-Compute the expected performance for the planned flight using the performance charts.**

**-Calculate the Weight and Balance for your planned flight.**

**By following the above advice your transition into your Lightning (or other new to you aircraft) should go smoothly with no difficulties or problems. Fly safe and have fun. Buz**

## **Technical Tips**

### **How to Make Your Engine Live Longer:**

Here is a short but very effective tip on how to insure your aircraft engine will "live longer". First and foremost – try to fly your engine at least an hour a week. Far more engines rust out than wear out. They rust because the oil drains off the cylinder walls and the moisture in the air then reacts with the iron in the engine. The rust creates a rough surface, which increases wear.

By flying your airplane at least an hour a week, you can insure that the pistons and other engine internal parts keep a coat of oil on them to prevent internal rust. By flying at least an hour (not just running it on the ground), all engine internal parts will get up to normal operating temps and thus insure all engine parts get a good covering of oil and thus help to keep your engine from developing internal rust.

Another good procedure is to change your oil and filter every 25 to 30 hours or every 3 to 4 months, whichever comes first.

Take care of your engine and it will take care of you. Plus flying once a week keeps you current.  
Blue Skies,  
Buz

**Besides Gary Barnett's information on rudder pedal extensions above in the "News From Builders and Flyers" section, he also has a good tech tip:**

Buz,

Attached are photos of a wheel balancer I made for the Lightning. I have tested it while balancing my Lightning's tires. It will indicate a weight difference of 1/8 OZ. on a 2 1/2 inch radius. With the Lightning wheels having sealed ball bearings and relatively small axel diameters so the typical two cones on a shaft type balancers won't fit into the bearings. I elected to have two separate axels made for front and main tires that just slide into the wheel bearings. The axels are supported by skate board bearings that have phenomenally low static friction.

Gary Barnett  
Lightning N335AL, SN133



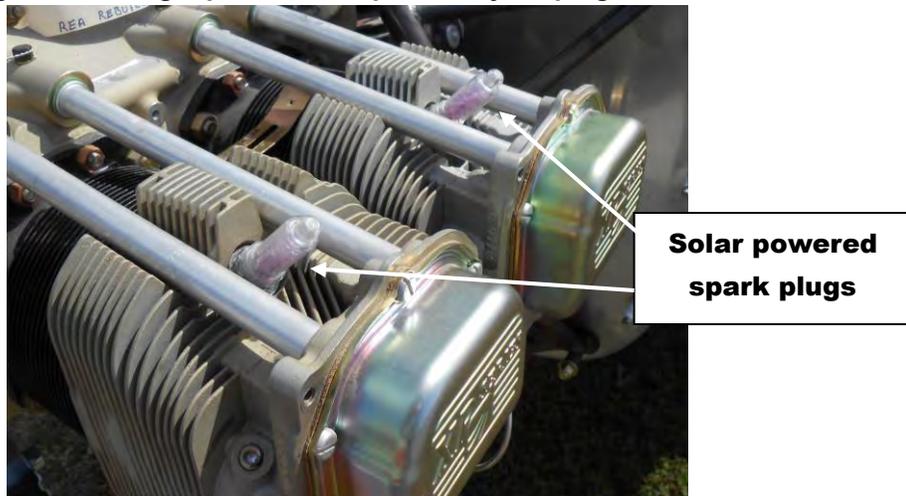
**Thanks Gary. Your homemade wheel balancer looks very similar to one that I use that was originally designed to balance go kart racing wheels. Buz**



## **Lightning Skunk Works**

The avionics section at Arion Lightning has been working on an "ATS" (Above Top Secret) Skunk Works project that is a new "Green Energy" development that will simplify the wiring in the engine compartment of your Lightning. Can you imagine no wires to power the spark plugs? With this new development of

Solar Powered Spark Plugs, the Sun light provides the power to your plugs.



**These are the new “SOLAR POWERED” spark plugs being developed by the Arion avionics department. Note the lack of plug wires. The cowling will need “windows” to allow the sunlight in. No night flight allowed. “Dark air hath no lift”, and no Sun.**

## Other Items

**At Sun N Fun this year I was fortunate to be invited to a special luncheon in honor of the 70<sup>th</sup> Anniversary of the WASP (Women Airforce Service Pilots). During World War II, a select group of young women pilots became pioneers, heroes, and role models. They were the first women in history trained to fly American military aircraft.**

**The photo below shows the eight surviving ladies that were able to attend this special luncheon. They each spoke briefly about some of their experiences. All the WASPs are now in their late 80s to early 90s.**



**Dora Dougherty, one of only two women to ever fly the B-29, is third from the left.**

**My favorite WASP story is about the only two women to ever be checked out to fly the B-29 Superfortress, Dora Dougherty and Dorothea Moorman. Several years ago I was lucky enough to spend a weekend at an airshow in Ohio with General Paul Tibbets and these two amazing ladies. The ladies were at the airshow representing the WASP and General Tibbets was there with several other B-29 crew members that been involved with dropping the two atomic bombs that effectively ended WWII. I had dinner Saturday evening with General Tibbets and the two B-29 lady pilots. Obviously it was an amazing evening for me, but my favorite part of the evening was listening to them tell stories about their experiences.**

**General Tibbets explained that in the summer of 1944, he was a young Lt. Colonel in charge of training pilots to fly the B-29. The problem was that experienced B-17 and B-24 pilots would not volunteer for the B-29 program because, not only was it much larger and heavier than any bomber the U.S. had flown before, it also hadn't gone through years of operational testing, was having lots of engine fires, and several had crashed early in the program. General Curtis LeMay called Tibbets into his office and asked him how he was going to solve this problem.**

**Tibbets decided that the way to convince the men to fly the plane was to “out macho” the guys by showing them that women could do it. He told me he recruited Dora Dougherty and Dorothea (Dede) Moorman, the two smallest and cutest WASP ladies he could find, to be his demo pilots. They would demonstrate flying the B-29, then land and taxi up to the group of male pilots standing on the flight line. The ladies said they always enjoyed dropping down out of the crew hatch, taking off their caps, and shaking their hair free to the astonished looks of the young men. “We hear some of you boys are scared of this big plane. If a couple of little old gals can fly this, I'm sure you all can handle it just fine.” Then they'd wink, wave, and scamper off to the hanger.”**

**Tibbets' plan was a terrific success: After watching the women fly the four-engine bomber, the men stopped complaining about the B-29 and eagerly volunteered.**



**At Sun N Fun, Robin Moorman, Dede Moorman's daughter (also a pilot) and Dora Dougherty.**

## Final Thoughts - Newsletter's Future

As I mentioned in the last newsletter issue, Nick and Mark talked me into doing a few additional issues while we were at Sebring in January of this year. Many of you will remember that I started the Lightning Newsletter back in February 2008 and wrote 36 monthly issues until January of 2011. After publishing the newsletter for three years, I felt it was time for someone new to “take the stick” to provide a fresh approach, possible new direction, and renewed interest. John Jenkins, a Lightning builder from Wisconsin, accepted the task and wrote 9 issues during 2011. Then the “factory guys” wrote one issue in Jan/Feb 2012. Nick and Mark just do not have the time to produce a newsletter on a regular basis.

Due to other commitments and responsibilities my plan at this time is to do only two additional newsletters after this issue to finish out 2013. Those future additional issues will complete 2013 with four “quarterly” newsletters. The plan for the third quarter of 2013 issue will be to primarily cover the Oshkosh show and a flight report on the new O-320 Lightning. The fourth quarter newsletter will cover the upcoming Lightning Homecoming and Fly-In at Shelbyville that will be in October. That’s all folks. It really is time for some other Lightning builder or flyer to take on the newsletter responsibility for the future. Will you be the one?

Over the years I enjoyed writing the newsletters because it gave me a chance to meet so many Lightning owners, builders, and flyers, and it helped me to continue my close association with the factory. So here is a plea, hoping that someone in the Lightning community will decide that the newsletter is important enough to take on that mission. You might be a current Lightning owner, builder, or maybe even someone that hopes to be a future Lightning flyer or is just interested in writing about the airplane and helping to spread important information to the Lightning community. The Lightning community needs you to volunteer. The newsletter is important to all of us, and you will immediately become a “world famous” correspondent, editor, and published writer. What a deal!

If you have any questions, please contact the factory guys at [info@flylightning.net](mailto:info@flylightning.net)., or me at [N1BZRICH@AOL.COM](mailto:N1BZRICH@AOL.COM). Let us hear from you! Buz Rich

Blue Skies,

*Buz Rich*

[N1BZRICH@AOL.COM](mailto:N1BZRICH@AOL.COM)