



Arion Hangar Talk

The “Lightning” Newsletter

January 2009 - Volume 2, Issue 1



The 2008 Lightning RG* Demo – “Lightning of the Month” and Winner of the “Best Composite Award” at SNF 2008.

***RG on “1 April” 2007 – but it is an actual formation photo.**

Please submit a photo of your Lightning for future “Lightning of the Month” consideration.

The goal of the newsletter remains **to get the word out** on happenings at Arion Aircraft, and **to give a voice** to Lightning builders and flyers. To be successful we will need the inputs from all of you in order to meet that goal. So it is not only a way for the factory to provide Lightning news, but it is your newsletter as well, and, as such, its success will depend on you getting involved to spread the word and to help other builders and / or flyers with their project airplanes. So think of this newsletter as an “exchange of information publication”. Send your inputs directly to me at: **N1BZRICH@AOL.COM**.

Contents in this issue:

Page	Page
2 -Lead Stories – Bill Brown and Peter Mitchell	16 – Upcoming Events -
8 -News from the Factory –	17 - Technical Tips -
10 -News from the Dealers –	19 - Lightning Skunk Works –
12 -Current Lightning Dealers -	20 - Other items –
12 -News from Builders and Flyers-	21 -Final thoughts –

And now, the rest of the news.

Holiday Wishes

I hope this **12th issue of the Lightning Newsletter** finds all of you continuing to enjoy a wonderful holiday season after having a very merry Christmas, and that you will have a very happy and prosperous new year. 2008 has certainly been a year of accomplishment for Arion Aircraft and also for the entire Lightning community. Twenty-one new Lightnings made their first flight in 2008 and hopefully 2009 will result in many more taking to the skies.

The new Special Light Sport Aircraft (SLSA) Lightning model will fly early in 2009. That airplane, to be called the "Lightning Sport" (Model number LS-1), should usher in a new era for Arion Aircraft as Experimental Light Sport Aircraft (ELSA) Lightnings will then be available to complement the already available Experimental Amateur Built (EAB) Lightnings. This new ELSA Lightning Sport should enable more people to enjoy the great flying and beautiful Lightning aircraft as those customers will be able to purchase their ELSA kits at a greater degree of completeness. So if you have been concerned about your building abilities, then perhaps the ELSA Lightning kits will be the answer for you. Once again, Arion Aircraft is being proactive in their attempt to provide the best looking, best performing and safest "quick build" kit on the market.

Please accept my best wishes to you and to your family, and to all your flying buddies and friends, for a continued wonderful holiday season and a bountiful New Year. Buz

Lead Stories:

Once again I am happy to have **two "lead stories"** in this issue of our newsletter. First, **Bill Browns**, who built Lightning **N716MZ**, provides a great article about **how to best record and analyze data from the Grand Rapids Technologies EFIS** that so many of us use. His information should be a great help during your 40-hour FAA phase one testing period. Next, **Peter Mitchell** from **Western Australia** covers **how he chose to build a Lightning**, and then goes over some great information about the **building process and flying his new creation**. I think you will enjoy reading both articles and hopefully glean some good information that you can put to use in the future.

*Now, here is **Bill Brown's** article:*

Buz, I thought some information about **Recording and Analyzing Data from a GRT EFIS** system might interest the Lightning group. This is something I do quite a bit to develop performance data for my plane. Also makes it easier to see what impact any changes I make to engine or overall performance.



Bill's Lightning, N716MZ

Although the Grand Rapids (GRT) Electronic Flight Instrument System (EFIS) is not strictly speaking a standard Lightning component, it has been used extensively in Lightning aircraft and a discussion of the capabilities of the GRT EFIS to record data and programs to analyze the data may be of interest to the Lightning community.

On the back of a GRT EFIS (Sport or Horizon) you will find a Universal Serial Bus (USB) port. This USB port is designed to accept a USB flash drive (otherwise known as a thumb drive). In all probability you found a 256MB SanDisk flash drive in the package with EFIS. Almost any flash drive will work but I would stick with 256MB to 1GB drives. It is almost impossible find anything less than 512MB these days. The amount of data you can record is limited by the internal memory of the EFIS and the options installed (Terrain, WX, Map Range). The good news is that these drives are cheap.

If you anticipated using the data recording capabilities of the EFIS you may have installed USB extension cable to provide a USB plug on your panel. These cables can be purchased from GRT or Steinair.com (there maybe others). I have these cables in my panel and it makes it easy to plug in a flash drive to record data or update the software in the EFIS. If, however, you did not plan this into your panel design an alternative option is to plug in a "USB A/A extension cable" (do a Google search – a 3ft cable should work about right). You can plug the cable into the EFIS and use a Velcro strip to tie the cable up under the panel and then pull it out when you need to use it.

A fair amount of data can be recorded on a 256MB flash drive. I have found it easier to make multiple recording than one long recording which I would later have to search through to pick out specific flight parameters I was trying to record. So if I'm trying to establish fuel burns at various RPM settings I will get the plane flying straight and level at my target RPM and then start a recording. I'll fly for a period of time (say 5 minutes) and then stop the recording. Set the plane up for the next RPM and make another recording. Obviously you could also just continue recording and slice the data up after the fact.



Here is **Bill's** instrument panel

I normally plug in the flash drive during my pre-flight so it is ready to go without my having to find the flash drive and plug it in while I'm flying the plane. You can switch flash drives while the EFIS is turned on but I would not do it after you have started recording. A flash drive must be plugged in before you can start recording.

Recording Data (starting from the PDF screen):

- 1 - Push the right button to bring up the menu at the bottom of the EFIS screen.
- 2 – Page through the menu by pushing the button under the Next menu item until the DEMO menu item appears.
- 3 – Push the button under the DEMO menu item to select (highlight) the Record option.
- 4 – Recording will begin and a message will appear near the bottom of the screen to remind you that a recording has been started.

Stop Data Recording:

- 1 – Repeat the steps 1 and 2 from above to locate the DEMO menu item.
- 2 - Push the button under the DEMO menu item to select (highlight) the STOP option. You will see the flash drive light flashing as data is written to the Flash drive.

Ok, now we have some data to analyze. There are two programs I am aware of to analyze EFIS data:

EISlog – This is a program available on GRT's download site:

<http://www.grtavionics.com/File/EIS/EISLog.exe>

EISlog is a Windows program that will read an EFIS data recording and produce a spread sheet style display of the data received from the EIS. The major drawback to this program is that only data received from the EIS is displayed. While this includes CHT, EGT, Oil Temp, Oil Press, and AUX data information from the EFIS like air speed is not provided. This is, however, a very simple program to use and is supported by GRT.

GRT decode – This program can be downloaded from the following site:

<http://www.rvproject.gen.nz/grt/>

The author has done a good job of documenting how to download and use the program. The documentation on the site even walks you through screen shots to show you how the recording option works. Once you have the program installed you can load in a raw data file (.LOG) and generate an XML file which can be read by a browser like Internet Explorer or Firefox or whatever. The display is color coded with data from both the EIS and EFIS displayed in a spreadsheet style table. I tend to use this program when I am trying to analyze performance data. The only drawback to this program is you must be connected to the Internet to use the program – the XML translation file is stored on the www.rvproject.gen.nz site.

You may have noticed I keep referring to the output display from these programs as “spreadsheet style”. Well, there is a reason for that. With a little select all, copy, and paste work you can drop the data into a

spreadsheet program and sort, min, max, age, sum to your heart's content. I have started developing an analysis spreadsheet in Excel but that is another story. For now I hope you find this information useful.

Bill Browns

N716MZ

Below is a photo of **Bill** "strapping in" for another test flight.



Next, Peter Mitchell's article:

BUILDING & FLYING THE LIGHTNING

By Peter Mitchell



I was captivated by the Lightning from the first time I saw a picture of it; to my eye it was so sleek and well proportioned. The claimed performance figures were spectacular, the new Lightning promised to be the

highest performing aircraft which could be registered as an ultra-light in Australia. Always something of a petrol head I just had to see and fly it. My opportunity soon came. My wife **Jenny** and I live in Busselton WA, but we were driving to Melbourne in May 07 to pick up a new caravan, and this provided the ideal opportunity to call in to Kingston, South Australia, meet **Dennis Borchardt** the Australian agent, and see his Lightning, the first one under construction in Australia. **Jen** and I were very impressed with what we saw. The kit appeared to be of very high quality and the layout of the cockpit area appeared reasonably roomy. I found **Dennis** to be down to earth and to the point, the sort of person I like to deal with. The Lightning, even in its partly built state, looked the goods.

I visited Kingston twice more that year while the Lightning was under construction. I was greatly impressed by the quality of workmanship that **Dennis** and his build assistant **Stewart Durham** were putting into the building of the aircraft. Finally in January 08 the call I'd been waiting for, the Lightning was completed and ready to fly. I couldn't get to Kingston fast enough to test fly it, and to see if it lived up to its great promise.

A mate of mine from Bunbury Flying School, **Cliff**, was heading over to Brisbane at that time so it wasn't hard to talk him into coming to Kingston with me to test fly the Lightning. I valued **Cliff's** opinion as he has enormous experience flying and instructing on a wide variety of aircraft. When we arrived the weather was marginal, but **Dennis** was confident so away we went. That hour transformed my view of ultralights. Fast and agile it climbed like no other ultra-light I'd flown, it was light on the controls and I saw 158 knots TAS in level flight. **Dennis** put the Lightning through its paces, stalls, medium turns, climbing and descending, slow and fast flight. Through it all the Lightning handled beautifully. We landed and it was **Cliff's** turn. They spent a good hour in the air and **Cliff** came down smiling. That night we talked at length, we were both very impressed and could not find any significant points of criticism. The next day, after discussing costs and delivery dates with **Dennis**, I ordered my Lightning.

Building the kit into a registered aircraft was however another matter. I've had a lot of experience with engines and all things mechanical, but had not built anything like an aircraft. Also I run my own business and so time is limited. I also was highly impressed with the quality of the workmanship in **Dennis's** aircraft, and I had to face the fact that I did not have the patience or expertise to build my aircraft to this standard on my own. **Dennis** had the great advantage of having visited the Arion Aircraft Company, the designers and builders of the Lightning, and of having built several aircraft previously before tackling his Lightning. I would be doing everything for the first time. The decision was simple; I would take advantage of **Dennis's** expertise and do a factory assist built in Kingston. There was also the advantage that **Dennis** has a terrific facility at Kingston with a well equipped workshop, he has all the equipment, and a number of jigs to assist in the accuracy of the build.



The kit arrived in May and we got right ahead with the building. It's a fast process when compared with a kit such as an RV. However, quality is what I wanted so there was no rushing and **Dennis** and his off-sider **Stewart** made sure that everything was built to the most exacting standard. The further the building went the more pleased I was that I had chosen to do a factory assist. I decided to fit my Lightning with a Dynon 180 glass cockpit, a Garmin 296 radio and transponder, Trio autopilot with height hold and trim. **Dennis** had put me in touch with an electrical specialist named **Jake Jansen** whom I arranged to source all the equipment and to help with the installation and wiring. **Jake**, like **Dennis**, is something of a perfectionist, and this can be seen in his magnificent Glassair which he and his wife **Barbara** built some

years ago. **Jake's** work was expertly done, very neat, and everything has worked from the first switch on. I could ask no more.



Finally the plane was ready, painted white with bright yellow top sides and yellow wing tips ailerons and flaps. Blue pin stripping will be added later. The engine was ground run and **Dean Tompkins** came to do the air worthiness inspection for the RA Australia Provisional license. The inspection went without a hitch. **Dean** was very thorough and I appreciated the time spent going over the Lightning with a fine tooth comb. Talk about excited! I was a kid again! I could not wait to fly it. I taxied up and down the air strip a few times to get the feel of ground handling and had to exercise enormous self control to not "accidentally" take off.

Finally the day arrived. Paper work completed and provisional license granted; 19-5453 was ready to fly. The weather unfortunately had other ideas; it was blowing a "Kingston". After lunch however it eased off some-what and I decided to go. Thorough inspection, start up checks, pre-take off checks and I taxi down to the end of 02. Checks completed, lined up, throttle firewalled, stick gently back and we parted company with mother earth at 50 knots. What an incredible adrenalin rush. Oops! We're at 300 ft 75k, flaps in, pump off, climbing out now at 85 k and 1200fpm. Ease the throttle a little; we're still nose high 85k and 1000 fpm. I circle to the left and climb to 4000 feet in minutes, keeping the air strip in gliding range. What a wonderful feeling! It is not only my first flight in my Lightning but I have never piloted a plane with this performance before. All temperatures and pressures checked and recorded, I commence basic flight testing which goes very satisfactorily. All too soon the hour is up. Pre-landing checks completed, it was time to land. I have found that landing the Lightning is a little different from other ultra-lights I have flown. It's a very slippery plane yet approach speeds are relatively low. It took me a while to get used to this. My previous aircraft, a Terrier was so forgiving you could fly a very sloppy circuit, arrive way too high and fast and side-slip down nose high to wash off speed, and land it on the keys. Well I was not going to try that maneuver in the Lightning, at least not for a while yet. I have found it is imperative to fly an accurate circuit and to get the speed and height on approach right. Approach is 60k and 55k over the fence, maximum. Anything more and you are going to land very long. Stall speed of my Lightning with 20 degree flaps is 32 knots. That's right 32k! How can a plane fly so fast but have such an amazingly low stall speed. So get the approach right and the landing is easy. Too fast and you have potential trouble. You will float forever and any tendency to put it down will result in a nose low bounce and go around.

Well we got down safely, congratulations shared all round and I basked in that great feeling of flying my aircraft for the first time.



A thorough check and off I go again. I had mapped out a comprehensive test flight program which I methodically completed over the next few days. When I finished the test flying I had a mass of data which was and still is very useful. The flying around Kingston was fabulous. Great coastal scenery, a few grass strips within 25 nm and I was lucky with the weather. The 25 hours was flown in record time and amazingly we had no teething problems. All performance figures and temperatures and pressures were as expected or better. I had expected some teething problems; after all it is a one off home build aircraft. Well I had none. What a recommendation for **Dennis, Stewart and Jake**. They made sure everything went together properly the first time, and it paid off in spades later. What a fabulous aircraft. I enjoyed that week test flying enormously. Finally we were able to fax off the application for license to RA Aus. Back it came in a few days and I was ready to fly my new Lightning home to Bunbury, Western Australia.

Peter Mitchell, Bunbury, WESTERN AUSTRALIA

News from the Factory:

Lightning SLSA Testing Update:

Here is the latest from Nick-

Arion Aircraft has received all of the welded and machined components from Specialty Enterprises and will begin assembling our test rig for the SLSA. This rig will be very close to a fully assembled Lightning. We will not be installing flaps, ailerons, elevators, rudder, or a real Jabiru engine, otherwise she will be all up....The unfortunate fate of the rig will be a barrage of structural testing to meet the specific ASTM standards, although the Lightning already meets all of these requirements the need to document in detail the results is required. One of the last tests will be an all up gross weight drop test from an unspecified height. We will try to get a video of this on the web or you tube when done. We have completed much testing to this point and these final tests should round up the load testing. Don't worry if we wreck the airframe. This is the one that came to a disagreement with a Bonanza that ran thru our hangar, so it is used to it!

Nick Otterback, Arion Aircraft, LLC

Lightning Sales Update:

Mark Stauffer sent the following update-

Congratulations to **Gary Pennington** on his first flight, which was on 30 November, 2008. **Gary's** is the 36th Lightning to fly. Other recent first flights were: **Bear Bryant** was number 32, **Pete Disher** number 33, **Gary Winkler** number 34, and **Walt Mefford** was number 35.

On a side note I believe that **Gary** has the record for quickest customer built (meaning no Builders Assistance Program) Lightning. **Gary's** kit departed WI on August 4th so he received it about a week later. His first flight was yesterday for a total build time of just over 3 1/2 months! Wow! That is the quickest individual build time that I know of. **Gary** has a beautiful plane and we wish him many happy hours flying it.

Mark Stauffer, Production Manager, Arion Aircraft

*Note – Since Mark sent the above information, **Bill Strahan's** Lightning made its first flight (#37) on 19 December, 2008. Current Lightning completion rate is a remarkable 53%!*

To all, Lightning N197RW, **Bill Strahan's** "jet", took flight for the first time today (19 Dec) at 3:15 pm central time. The only comment from **Nick** was "we need to vacuum them out better before we fly them!" The flight was uneventful but a little bumpy. Here's a photo of **Nick** taxiing back to the hangar after the flight.

Bill's is the 37th Lightning to fly and the 21st this year. Congratulations to **Bill**.

Mark Stauffer, Production Manager



News from the Dealers:

G'day Buzz

Thought you might like to see the four Lightning's finished and flying in Australia.



JPG 342 - Dennis Borchardt



JPG 397 - Anthony Morrision



JPG 404 - Peter Mitchell



JPG 866 - Peter Disher

We're well on the way with the construction of our new demonstrator (with the new wing tips). It will be in the paint shop by Christmas and hopefully flying by February 2009. Thanks to "your" outstanding efforts in relation to the global economy - our sales have slowed considerably. As of today we are receiving 63 cents for 1 USD!!

Fortunately, we're still getting plenty of enquiries but no commitments (with the exception of 1 this week).

Regards

Dennis & Angela Borchardt

Lightning Aircraft Australia

Ryan from Green Landings sent the following information:

This new video by Green Landings Flight Center is a work in progress. In the future, we will have more flight and build videos on our web site. Go to: <http://gallery.mac.com/greenlandings#100079>

Ryan Gross, Green Landings Flight Center, Inc.

And also from Green Landings are two of the latest photos of **Jim Langley's** beautiful jet with the wheel pants and gear leg fairings now installed. Great job, **Jim**.



Why was **Doug K'Berg** (Green Landings) recently seen checking out in Buz's 1940 Piper J3 Cub Sport?

Current Lightning Dealers:

Arion Lightning, LLC, contact Nick Otterback, Shelbyville, TN, 931-680-1781, www.flylightning.net

Lightning Southwest, Greg Hobbs, Marana, AZ, 520-405-6868,

Green Landings Flight Center, Ryan Gross, Hedgesville, WV, 304-754-6010, www.greenlandings.com

Lightning North Central, Tom Hoffman, Neenah, WI, 920-836-2318

Sport Plane Dynamics, Ed Ricks, Glendale, AZ, 623-695-9040

Lightning Australia, Dennis Borchardt, Kingston SE, South Australia, 08-8767-2145

Lightning Brazil – Cimaer Ltda, Claudio Nunes, Brazil CEP 24 900-000, 21-2637-3605, 21-9451-9700

News from Builders and Flyers:

Installation of an Auto Pilot in N 13LN, by Lynn Nelsen

Although I knew that my Lightning was going to be a delight to fly, I wanted to have an autopilot installed because of my many hours of cross country flying in my Bonanzas. I at first wondered what I should install, but as my panel took shape, it became obvious to me that I needed a TruTrak ADI II. Why this particular model? My reasoning was that I was putting minimal instrumentation in the panel, and I felt I would like a back up. I also did not want to spend a ton of money on the autopilot. I had put a TruTrak ADI in the panel of an Ercoupe I



owned, and it had provided excellent service. This led me in the direction of TruTrak, and made my decision an easy process. The ADI II combined all that I thought that I wanted, a backup gyro horizon for my Grand Rapids Technology Sport EFIS, track read out (digital) as well as a two axis auto pilot (and several more things that I have not yet used/discovered or probably will never need).

I find that the autopilot makes VFR flight a delight. It is so much easier to be looking outside the airplane for other traffic, as well as the beautiful countryside of this fantastic country of ours. I would not even consider owning a Lightning now without the added convenience of the auto pilot.

Lynn

Gary Pennington made his first flight on November 30th, 2008 – a day I am sure he will remember for quite some time. Now the fun part begins; flying his beautiful “jet”. Below is what he had to say about his first flight. You can reach Gary at: pennington@q.com

Good afternoon everyone,

Yesterday was the end of my Lightning build process. She was certified "Airworthy" by the local DAR. Yeah!!!! At long last. Now, a new era begins....working out the bugs.

First thing this morning, I completed another thorough inspection and then performed taxi tests. All was good...except the warning messages from the EFIS. I am having difficulty programming the EIS, EFIS and the other black boxes. I'm not really computer challenged, but you wouldn't know now. Nothing seems to be communicating with the EFIS. I guess I'm going to have to bother **Ben** again. Sorry **Ben**.



After a few tweaks, I lined up on the active runway and applied throttle. With **lots** of right rudder and a whole lot of anxiety, I zoomed down the pavement. The first startling thing I noticed was the horrible oscillations in the gear legs beginning at about 20 mph. I remembered that other builders experienced the same thing but were able to eliminate it with balancing. So, I continued accelerating. At around 55, I rotated and climbed. The engine turned around 2700 rpms but had a slight vibration. I backed off to about 2600 rpms and it smoothed out. Weird. Warning messages from the EFIS continued squawking but all the temps and pressures were very good.

After turning downwind, I backed off the throttle to approx. 1800 rpm to slow down and apply flaps. I discovered that I need to move my right leg as far down as possible to allow stick clearance for aileron authority. Also, the ailerons don't feel to be balanced. I'll call Mark or Nick for advice.

After turning final, I pulled the throttle off for a nice descent. As it turned out, the idle was too low and the engine died. There was a certain amount of "Pucker Factor" involved at that moment but I was over the threshold and lots of runway ahead, so, I just set it down and rolled out. The transition training I received from Arion was life saving. Thanks guys.

I spent the next several hours adjusting and tweaking. Afterward, I took off again and did five touch and goes. As I said in the beginning, I have bugs to work out but my girl flies!

Have a great day to all.
Gary Pennington



Here is **Gary's** beautiful jet.

Tex Mantell sent the following photo of his beautiful and highly qualified test pilot.

Here is my test pilot getting used to the controls and verifying the systems as the build continues on N251TM. Tex



Craig Sumner sent the following suggestion which comes from the FAA Safety Team. It is Safety Tip #1 for 2009. You can read this article by going to FAASafety.gov's News Section: <http://faasafety.gov/hottopics.aspx?id=63> :

Buz, Here is a great safety tip for our newsletter. We could provide the link or cut and past the message into the newsletter. Just a thought.

Craig E. Sumner, Chief Engineer, Space Shuttle Propulsion Elements, United Space Alliance

Risk Management

CONSIDER THE UNIQUE RISKS FACED FOR EACH FLIGHT

By: **Max Trescott**, Author and 2008 National Instructor of the Year!

In industry, risk management is the practice of identifying risks that have a high probability of occurring and/or have a high consequence if they do occur. Strategies are then developed for minimizing those risks. In aviation, it's up to us to become risk management experts. Fully 80 percent of accidents are the result of pilot error, so it's clear that we can improve our own personal safety by managing risks and avoiding pilot errors.

One high-probability risk is night flight. Although less than 5 percent of personal flying is done at night, fully 21 percent of all fatal accidents occur at night. To avoid this high-probability risk, pilots can minimize night flights or become extremely well educated about the unique hazards they face at night. An example of a high-consequence activity is inadvertently flying into a cloud, because fully 90 percent of VFR into IMC accidents are fatal. When pilots make sure that they never fly into a cloud, except when on an IFR flight plan, they can avoid this high-consequence risk.

Rather than consider every possible risk before flight, I take time to consider the *unique risks* posed by that flight. Invariably, those risks vary depending on conditions. For example, on one recent flight, a student and I concluded that the greatest risk posed was from nearby rain that might reach the airport before we returned from a training flight. To mitigate that risk, we identified an alternate airport to which we could return and we monitored the precipitation during the flight using NEXRAD radar on our G1000-equipped aircraft.

On another training flight, the weather was perfect. In that case, the student pilot and I identified that the biggest risk was violating the Class B airspace or the noise abatement procedures at our destination, located next to the San Francisco International Airport. Thus, we carefully reviewed all airspace and noise abatement rules and selected a cruising altitude that minimized the chance of an incursion.

You may face a wide range of potential risks on any flight, and you should be creative about teasing them out and then mitigating them. A few possibilities of risk are changing weather, flying at night in a poorly lit area, flying over mountainous terrain, experiencing fuel exhaustion, flying an aircraft with which you lack familiarity, flying with little recent experience, and flying when fatigued. Dozens of other risks are possible, and you should develop a plan for mitigating each risk. Mitigation plans might include delaying or canceling a flight, getting additional dual instruction, or bringing along a more experienced pilot or CFI on the trip.

Become a risk management expert and, before each flight, take the time to clearly identify the greatest risks you face on the flight and then take steps to mitigate those risks. Remember, the life you save may be your own.

And lastly, Lynn Nelsen sent the following:

Hey Buz: I wish you a merry Christmas and a Happy New Year! A good friend of mine was flying his Ercoupe a couple weeks ago with another friend. They took some still pictures and video of my Lightning. You can see the video at: <http://www.vimeo.com/2588202>
Lynn

Note: I just watched the video and it is just over one minute long and has some good C&W music in the background. It shows Lynn doing some fly bys in his Lightning off the „Coupe“s left wing. Take a look.

Upcoming Events:

Next Jabiru Engine Seminar, 9 to 11 January 2009 at SYI.

US Sport Aviation Expo, 22 to 25 January, 2009 at Sebring Airport

Sun-N-Fun, 21 to 26 April 2009 at Lakeland, Florida.

Arion Lightning will be in Booth LD005.

Virginia Regional Festival of Flight, 30 to 31 May 2009.

Oshkosh AIRVENTURE, 27 July to 2 August 2009.

The 2009 Lightning Fly-In will probably be 25-27 September at SYI.

Technical Tips:

The first two tech tips have to do with a subject we have covered in the past, gear leg shimmy. But as always, any new information should be shared with the Lightning community.

First from **Dennis Borchardt**: To those experiencing landing gear shimmy: Here in Australia I have experimented with our first demonstrator aircraft and through trial and error have found that by taking the wheel alignment to a toe out setting instead of the suggested toe in setting, the problem is eliminated. I have used the same toe out as was suggested for the toe in. Over a 12 month period we have monitored the tires and there is no evidence of any excess wear. Due to the success of this trial, we have used the same settings on several other aircraft that are flying with the same positive result. These results we obtained regardless of weight loading of the said aircraft.

Dennis Borchardt

Lightning Aircraft Australia

Dick Cleavinger added the following: The gear legs in my Lightning were set to 1 degree toe out in June of this year. The speed at which shimmy occurs changed from about 40 mph to about 20 mph. I have balanced the wheels with not much change. I am now making the wooden stiffeners used by the RV folks and hope to have them installed in a couple of weeks. An old hand RV builder told me last week that they set the gear legs straight, i.e. no toe in or toe out and have seen no wander or other problems. I plan to try that if the gear leg "stiffeners" do not solve the problem.

Dick Cleavinger, n213rc, Lightning #42, n213rc@gmail.com

*Next, there has been some recent discussion by several Lightning flyers about the engine quitting on short final. This can be caused by several situations. Having the idle speed set too low or having the idle mixture jet not properly adjusted can cause this problem. Another possible cause is the throttle cable adjustment. It is also apparent that some of these incidents have been caused by the pilot perhaps being over aggressive on pulling or jerking the throttle back and thus causing the throttle cable stop to slip or bend. **Mark Stauffer** addresses this problem in his below message:*

To the group, I don't know if this will solve the problem but I thought I'd throw it out there because it's helped us here in Shelbyville. What we've started doing here at the shop is add a second cable swivel stop to the throttle cable.

What happens is with the throttle extension installed (standard with the kit) the longer moment arm makes it much easier to pull back on the throttle and bend the idle stop tab to a point that you can pull the throttle back to a point where the engine quits. We've had this happen many times, especially with transition training when pilots (me included) pull too hard back on the throttle trying to reduce RPM.

What we do now is add this additional swivel stop to the cable between the throttle arm and the end of the cable sheath. We warm up the engine and then set the throttle to a good idle speed. Turn off the engine (don't move the throttle!) and then slide the second swivel stop up against the sheath of the cable and tighten it down. This provides a good mechanical stop that should prevent you from bending the idle stop tab.

Hope this helps!

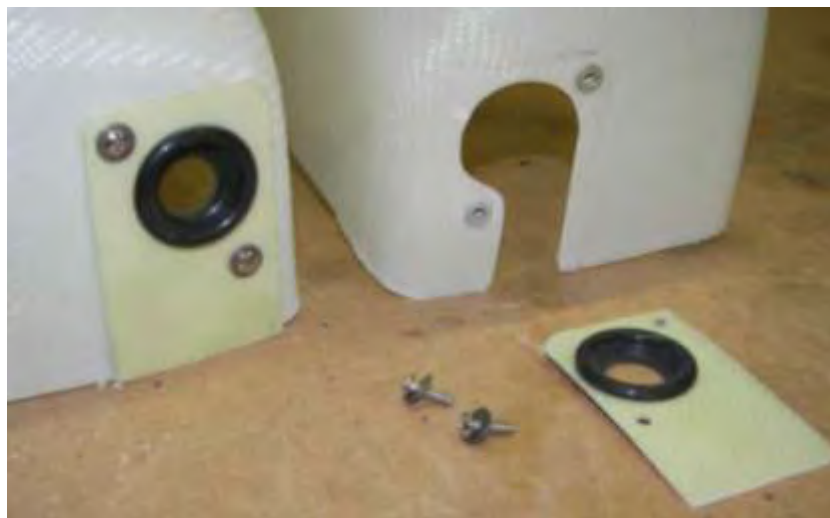
Mark Stauffer, Production Manager, Arion Aircraft

The photo to the right shows the throttle cable stop that **Mark** is talking about.



*Lastly, **Tex Mantell** has the following technical tip:*

Enclosed please find a picture of a mod that I have done to make service easier. Taking off the fiberglass ducts to get to the plugs etc. can be a hassle. I have cut out the duct where the sparkplug wires go and have made little covers that goes in its place. You need only remove the two screws and off the duct comes leaving the wires in place. Tex Mantell wb2ssj@frontiernet.net





Lightning Skunk Works:

With the recent economic downturn in the US, the recent Detroit auto makers bailout, and the push towards the “green movement” due to so called “global warming”, **Nick** thought it might be timely to use some aviation technology in building an auto that aviators would love. The result of his new design and innovative thinking is shown below. This boat tail, propeller driven, rear wheel steering marvel using wood and other aviation materials weighs in at about 1000 pounds and is capable of over 75 mph. **Nick** says you also get a nice windblown feeling just sitting at a stop light. However, parallel parking (backing up) can be problem.



Note the Tennessee tag on the left and the highly recommended goggles on the right.

Actually, this is a Helicron, the only one in existence; owned by Lane Motor Museum in Nashville, TN.

Other Items:

The following interesting short article is a true story from World War II that was not de-classified until 2007. It is a "now you know the rest of the story" type of article. Those "Government Intelligence" agents, past and present (like my oldest daughter) do some very interesting things. See what you think of this story.

Starting in 1941, an increasing number of British airmen found themselves as the involuntary guests of the Third Reich, and the crown was casting-about for ways and means to facilitate their escape.

Now obviously, one of the most helpful aids to that end is a useful and accurate map, one showing not only where-stuff-was, but also showing the locations of 'safe houses' where a POW on-the-lam could go for food and shelter. Paper maps had some real drawbacks, they make a lot of noise when you open and fold them, they wear-out rapidly, and if they get wet, they turn into mush.

Someone in MI-5 (Military intelligence-internal) got the idea of printing escape maps on silk. It's durable, can be scrunched-up into tiny wads and unfolded as many times as needed, and makes no noise whatsoever. At that time, there was only one manufacturer in Great Britain that had perfected the technology of printing on silk, and that was John Waddington, Ltd. When approached by the government, the firm was only too happy to do its bit for the war effort. By pure coincidence, Waddington was also the U. K. Licensee for the popular American board game, Monopoly. As it happened, 'games and pastimes' was a category of item qualified for insertion into 'CARE packages', dispatched by the International Red Cross, to prisoners of war. Under the strictest of secrecy, in a securely guarded and inaccessible old workshop on the grounds of Waddington's, a group of sworn-to-secrecy employees began mass-producing escape maps, keyed to each region of Germany or Italy where Allied POW camps were located (Red Cross packages were delivered to prisoners in accordance with that same regional system). When processed, these maps could be folded into such tiny dots that they would actually fit inside a Monopoly playing piece.

As long as they were at it, the clever workmen at Waddington's also managed to add:

1. A playing token, containing a small magnetic compass.
2. A two-part metal file that could easily be screwed together.
3. Useful amounts of genuine high-denomination German, Italian, and French currency, hidden within the piles of Monopoly money!

British and American air-crews were advised, before taking off on their first mission, how to identify a 'rigged' Monopoly set ----- by means of a tiny red dot, one cleverly rigged to look like an ordinary printing glitch, located in the corner of the Free Parking square! Of the estimated 35,000 Allied POWS who successfully escaped, an estimated one-third were aided in their flight by the rigged Monopoly sets. Everyone who did so was sworn to secrecy indefinitely, since the British Government might want to use this highly successful ruse in still another, future war.

The story wasn't de-classified until 2007, when the surviving craftsmen from Waddington's, as well as the firm itself, were finally honored in a public ceremony. Anyway, it's always nice when you can play that 'Get Out of Jail Free' card!

Final Thoughts:

Here is Buz's formula for a successful flight. The best safety device in any aircraft is a well-trained, proficient pilot. Information, training and proficiency is **power**; and **power + attitude = good performance**. Have you prepared for your next flight with good information (weather and other pre-flight requirements), the proper training, current flying proficiency, and a good attitude?

Blue Skies,

Buz Rich

N1BZRICH@AOL.COM (Contact me directly for newsletter inputs – I need your help to keep this newsletter both interesting and informative.)

