Hangar Talk

The "Lightning" Newsletter

June 2010 - Volume 3, Issue 6

Jim Johannes' Lightning of the Month

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

The newsletter goal is **to get the word out** on anything having to do with the Arion Lightning aircraft and **to give a voice to Lightning builders, flyers, and anyone interested in this amazing airplane**. It is not only a way for the factory to provide Lightning news, but it is your newsletter as well. Its success will depend on you getting involved to spread the word and to help others that are considering a Lightning, plus it offers building, flying, and maintenance tips. 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

And now, the rest of the news.

June 2010 – This month's newsletter features Jim Johannes' N563J as the Lightning of the Month. Jim's Lightning received the Reserve Grand Champion Light Sport Aircraft award at Sun-N-Fun this year, and I am happy to include some words from Jim about his award winning aircraft.

Next in this issue are photos from the recently completed Virginia Regional EAA Festival of Flight held at Suffolk Municipal Airport the weekend of 22–23 May. The Lightning guys from Green Landings, West Virginia, were there and had two beautiful Lightnings in their booth.

Also featured this month is the completion of Clive James' article on his recent flight around the UK with his bride, Shirley. Clive's writing style is very entertaining as are his photos. Enjoy. As always, our newsletter this month has lots of good technical tips and feedback from Lightning builders, flyers, and readers. The safety section has the current LS-1 Transition Training Syllabus. Remember this is your newsletter, so keep sending in articles, comments, and suggestions. Your continued input will ensure the newsletter stays informative and interesting.

Jim Johannes' Award Winning Lightning

Jim's –Pot of Gold" at the End of the Rainbow

Hi Buz,
I restarted flying again—after a 51-year gap—in a Jabiru J-230. My appreciation of the Jabiru 3300A engine led me to look at the Lightning on a trip to Shelbyville for a J-230 100-hour check. Nick took me on a demo ride, which convinced me I wanted this jet. I really like the responsiveness of the controls—light to the touch. I think this is because of the clean design and control surface areas, which are in aerodynamic balance with everything. Nick Otterback added an inset trim tab replacing the attached tab, which really helps. Flaps quickly deploy and retract thus adding to the Lightning's responses. The avionics panel is admittedly overkill—dual GRT Horizon HX with Synthetic Vision and dual AHARS, SL30 and SL40, TS autopilot VSVG. Since my profession is computer science, I believe that redundancy is a good thing.

I wrote the deposit checks in late August 2009 and started the Builders Assist program. The Air Worthiness Certificate was issued on December 16, 2009 with the maiden flight by Nick Otterback on December 17, 2009. Unknown to me at the time, it was a banner day for aviation—the Wright brothers' maiden flight and much later the Douglas DC-3. Since I live only 60 miles from Shelbyville, TN, it was an easy commute. The program was not only an educational experience but a lot of fun. I went from not even knowing what a cleco was or how it was used to applying fiberglass to the wing joints plus numerous other tasks. I now really appreciate the garage builder's completed projects. The Shelbyville people were very supportive and helpful; I could not have done it without them. The Phase I 40-hour flight testing was finished in late March 2010 after an ugly winter.

I like to go places; Blowing Rock, NC and Destin, FL are my frequent jaunts. Thus driving 6 to 7 hours becomes a little over a 2.5 hour flight. This makes weekend trips feasible! I look forward to exploring other places. World Record Earl—your astounding record is SAFE from me.

Jim Johannes
N563J

These photos show Jim's impressive instrument panel and interior, examples of the outstanding workmanship on Jim's aircraft that led him to win the Reserve Grand Champion Light Sport Award at this year's Sun-N-Fun.

2010 Virginia Festival of Flight

This year's Virginia state Festival of Flight, held 22–23 May, had good attendance on Saturday, but I think the weather forecast may have kept some people from flying in, particularly on Sunday. In fact, Sunday afternoon's heavy showers kind of ended the show around noon. Although weather in Tennessee and over the mountains of western Virginia kept the Shelbyville gang from attending, the East Coast Lightning dealer from Green Landings West Virginia flew in on Friday evening and had an overall successful show as indicated by the photos below.

Ryan Gross from Green Landings, WV, and Greg Crouchley from Rhode Island clean Greg's beautiful Lightning that Greg built at Green Landings. This aircraft flew demo flights on Saturday and Sunday and won second place in the kit-built category.

Linda Mathias had her Lightning in the booth, and it was a very popular "photo op" for attendees.

Greg‘s panel includes an iFly 700 GPS, one of Bill Strahan‘s products. Greg‘s N number is his anniversary and the first initials of his two daughters. That‘s neat, Greg, now you will not forget.

Joe Mathias, Doug K‘berg, and Ryan Gross are busy solving the world‘s problems. On the other hand, maybe they are talking about airplanes or other beautiful things.

Left photo shows Ryan and Greg, who just *had* to go flying to check out the local area. Right photo shows Dennis Wilt getting ready for a demo flight with Ryan. Dennis and Donna Wilt are local EAA members and plan to build a Lightning starting this fall. Great decision, Dennis.

Greg also built and flies a Sky Ranger, so he had no problem flying my 1940 Piper J3 Cub Sport. Remember, I have invited all of you newsletter readers to come to Virginia and fly my Cub. Even though it will be 70 years old this September, it still is great fun to fly! The Cub will certainly show you what a kite it is when in the wind and how quirky some lightly wing-loaded airplanes actually fly. The Lightning is definitely a modern design and flies like a dream compared to a vintage Cub.

Clive's Follow-Up on His Recent Flight around the UK

Remember Clive James' photo (right) from the April Lightning Newsletter that showed the Cerne man, an old carving on a hill in South England where folklore says that women with fertility issues should sit on a strategic spot? Well, this issue features a follow-up article with additional photos that I am sure you will enjoy reading and viewing.

On Monday, March 1st, along with stable high pressure, my Light Aircraft Association magazine arrived and with it —the "free for free." In the UK we usually pay a landing fee at all airfields—not a massive amount of money, but for regular flyers, it adds up. Not wanting to miss the weather and an opportunity to save a few bob (shillings), we jumped in our trusty Jabiru SP, G-JBSP, and left Norfolk for Cornwall and Devon. We refueled after an hour at Sywell, a large grass airfield that opened in 1928. During the 1930s and the war, Sywell was a training and repair base and has always been associated with the historic Brooklands Flying Club, founded at the banked race track near London.

Sywell has recently built its first all-weather runway after a 10-year battle with the planning authorities. This was handy for us as there had been lots of rain in the UK at the time. Sywell is also one of the few airfields in the UK that sells unleaded Mogas. Mogas pumps are starting to become popular as there is an increasing number of Rotax powered aircraft in the UK and a Rotax, unlike a Jabiru, doesn't like a diet of pure Avgas. The top-up would enable us to complete our plan to use the free landing vouchers by arriving in Cornwall and then returning to Devon without any more fuel. Soon after, we were over the Severn bridges and heading for some nice rolling countryside.

There's been a toll suspension bridge across the Severn since 1966—my first experience of having to pay to drive down a road since over 30 years ago. They added a second bridge in 1996 and we circled between the two waiting for clearance to enter the Bristol Zone. Bristol is like many small regional airports in the UK, incapable of coordinating more than a few aircraft without making a song and dance about it. This contrasts with what I found during my recent visit to the US, where the speed the guys speak seems to be the limiting factor.

Cornwall

Cornwall has a much more interesting coastline than our Norfolk home, where the low sand dunes in the main straight are monotonous. We flew cross-country for a while and eventually made for the coast again to fly down to our destination.

Boscastle

On the coast, the cliffs are about 150 feet and we passed by a small seaside town called Boscastle, where in 2004 a cloudburst caused a flood that washed 50 cars out to sea and damaged buildings and bridges. Amazingly, no one was killed from the torrent, which was actually a remnant of hurricane Alex. From our vantage point, we could easily see how all the moorland above the small town fed down one small narrow river gully. They've spent a lot of money since the flood, and from the air we could see the raised areas and new high-banked river.

Roserrow's Strip

Our overnight stop, Roserrow's strip, was the highest fairway on a hilly golf course that normally requires a £20 landing fee. The PPR call suggested all was fine with the strip, but in reality it was rather soggy—we'd had a lot of rain the previous week, and when we abruptly came to a halt it was clear we would be lucky to takeoff again. Not to worry that afternoon though, as we planned an overnight stay. The golf/leisure facility adjacent looks really smart and the bar/clubhouse are very welcoming with a log burner and tasty real ale. The golf course had ~~l~~uxury accommodations" for £150 a night, so—as the bar was closing at 18.00—we decided a nearby town/village would be more fun.

Before landing, it looked as if the tourist area called Padstow was a fairly long cab ride, and Polzeath, the nearest bay town, was fairly small and probably would be quiet in March. We made for the metropolis of Wadebridge (pop 6000) and stayed in the Molesworth Arms, an old coaching inn. After a few beers and dropping off our bags, we set off well wrapped up to see where the wading had been done before the bridge was built. Happening across another hostelry (recommended by our taxi driver who we found sitting at the bar), we discovered why the ale was so good—the Sharps brewery apparently is in Rock, about a mile from the golf course we'd landed on, so the ale hadn't come far. We ate in the Raj, a fine Indian establishment on the riverbank where at high tide half the car park was under 3 inches of water!


Padstow and Wadebridge

The next day, after a traditional English breakfast, the cab dropped us at the third tee and we set off up the squelchy course. Walking the strip (600m), it was a little less soggy than the day before, but I was going to make sure I could use all available runway. I picked my abort point (400m), but we were off in about 350. Not that good really for a lightweight Jab going downhill, but well within stopping distance if we hadn't started to accelerate as I got her onto her toes. As I mentioned, although the strip was on the top of a hill, the extreme rain we've had lately made it less than ideal for the small wheels of the Jab. I did wonder how the Esqual or the Lightning with the extra power and extra weight would have done.

We'd phoned a few local fields to see if I could add them to my book while in the area and only got an answer at Eaglescott, another hill airfield, but they said they were a bit soggy and to keep moving if we landed and stick to taxiways. ~~–~~She who must be listened to" as having a valid opinion decided we would give that a miss and stick to hard runways for the rest of our time in the West counties—this was after the long takeoff from Roserrow's had meant nail marks in the seat belt.

Great scenery and some assistance from Newquay radar and Exeter (both small regional airports) made the flight around and on to Dunkeswell a fine one. Dunkeswell was another WWII field with the traditional 'A' shape and tarmac runways. It now houses a flying club and a thriving microlight (UL) community along with a couple of helicopter organizations. Again 'one for free' at Dunkeswell, so that softened the blow of the £94 fuel bill. Yes, you can pay that much in a Jabiru, if the price is £1.65 a liter (a whopping $11.50 a gallon). I much prefer Tesco's (Wal-Mart type outfit) where I buy my unleaded at home, though it's still £1.09 a liter.

We were soon off to Newton Peverill (NP) in Dorset for a second overnight away from home as the weather looked OK the next day, southwest coast to south coast but just 110 miles.
On the way we passed the Cerne man, the guy with the large club over his shoulder (etc)—he was looking very proud of himself as usual! More properly known as the Cerne Abbas Giant, he's been there for hundreds of years.


Folklore says that if the local ladies are having difficulty conceiving, they just need to sit in a certain spot on the hill for a while and all will sort itself out. For more info see:
http://www.mysteriousbritain.co.uk/england/dorset/featured-sites/the-cerne-abbas-giant.html
http://en.wikipedia.org/wiki/Cerne_man

Newton Peverill is a farm strip in Dorset just north of Poole bay. Poole bay—home to thousands of boats and lots of wildlife—is also the location of the only onshore oil field in the UK. The rigs and wells are all screened by trees and vegetation, so from the ground and even in the air you wouldn't know they are there. NP's runway, despite being surrounded by waterlogged fields, was as solid as it was when we visited in the summer. Speaking to a local flier, I learned the runway soil had gravel added before the grass was laid, which is a neat trick.

After a 20-minute cab ride, we were in Poole—a charming town surrounded on two sides by water, which is also home to the RNLI, the Royal National Lifeboat Institution. In the UK, we do have the Coastguard, but they don't have any boats. Instead, our crafty government leaves marine rescue to a charity formed and supported by the public for some 185 years. The RNLI has a college that teaches volunteers to operate the different types of craft based around the UK coast. If the college isn't full, members of the Institute can stay there; it's a fantastic spot and a stay helps support the Institute's fund.


After a pleasant night, we left from NP and flew to the South of the Bournemouth. We could see the Needles, a row of chalk cliffs that reach out to sea from the Isle of Wight. Not a good picture today, but the area is a Mecca for flyers in the UK as a 'crossing' to the Isle of Wight represents many folks' first oversea adventure. It's only 2 1/2 miles, but a thrill for the first time and always a good view.

Needles

Leaving the coast, it was time to head northeast between the Bournemouth and the Southampton zones into a very damp Popham for a comfort break. It was a grey, bumpy day, so not good for taking pictures. Popham was built up mainly around UL aircraft but now has a good mix of all types. Popham is busy year-round, despite having a runway in the trees that is always a challenge with turbulence and crosswinds; it was no different today. Popham's solution to lots of rain is to cone areas off so the wear from the aircraft gets spread around—the coned areas are rested while the normally unused parts are rolled flat by the aircraft.

After more expensive fuel, we were away on the last leg for Norfolk (east coast of England). The visibility was such that all the airliners we don't normally see while transiting between Heathrow, Luton, and Stanstead in the British weather jumped out at us like approaching Cessnas until we got their size, shape, and distance identified.

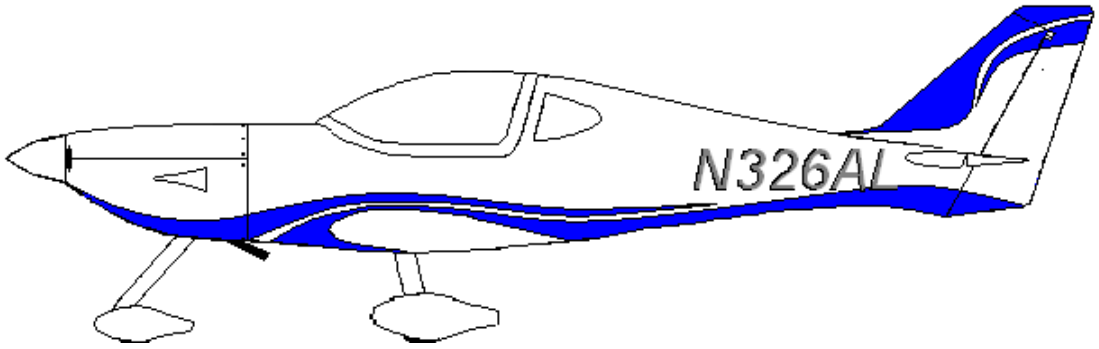
Back in Norfolk, it was very grey and the rain started, but we drove home from the airfield congratulating ourselves on getting a nice little tour in the bag so early in the year!

Regards,
Clive

News from the Factory

The Tennessee factory guys have been very busy since a successful Sun-N-Fun (actually since the Sebring show in January), so news from them is very limited this month. Nick did find the time to send us a line drawing of the next factory LS-1 Demo aircraft that shows the paint colors and design. The N number (N236AL) will be in sequence with previous factory demo aircraft and the primary color will be a bright blue similar to a color that has been used on Jabiru aircraft. The

panel will be a single screed GRT Sport EFIS with their new faster processor. That processor will feature synthetic (SX) vision. On the other side of the panel will be a Garmin GDU 375 moving map GPS that will also feature weather radar and traffic.



New 2010 Lightning LS-1 Demonstrator

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, WV, 304-754-6010, www.greenlandings.com

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

Lightning Northeast - Jabiru Power Solutions, LLC, Dave Jalanti, NY, dave@jabirups.com

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

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

Russia and CIS – AVIA-NIANIA, Moscow, Russia, + 7495518-62-75, avianiania@mail.ru

Lightning Florida, Max Voronin, DeLand Airport, FL, 386-873-9995, ww.moonshineaviation.com

News from the Dealers

From Lightning Southwest

Lightning Southwest has announced the following dates for attending air shows in the Western States:

- **Golden State Regional Fly-in and Air Show, Yuba County Airport, Marysville, CA. June 11–13**
- **Arlington Fly-in, Arlington, WA. July 7–11**
- **Rocky Mountain Regional Fly-in, Rocky Mt. Metropolitan Airport, Denver, CO. August 28–29**
- **Copperstate Fly-in, Casa Grande, AZ. October 21–23**

From Green Landings

Ryan Gross and Doug K'berg attended the Virginia Festival of Flight, resulting in three strong prospects as future Lightning builders. Greg Crouchley's Lightning, which was also in the Lightning booth at Sun-N-Fun, was used to fly demo flights during the Festival of Flight. One demo flight recipient was overheard saying he will definitely buy a Lightning with a build time starting this fall.

From Lightning Northeast

Dave Jalanti, the Lightning dealer in NY state, has finally received the FAA paperwork for his Lightning and has been busy flying the test hours on his LS-1. Yes, I said LS-1, as Dave's Lightning is the first non-factory-built LS-1, making it the first flying E-LSA Lightning. Hopefully we will get a report on it as soon as Dave stops flying for a while! Congratulations, Dave.

From Lightning Florida

Great Newsletter, Buz, as usual! The big news from Moonshine Aviation is that the new demonstrator has flown. See photos of N787FL below.

All the best,
Max

Below is the new Lightning demonstrator built by Moonshine Aviation of Deland, Florida.

News from Builders and Flyers

This first entry is from Tom Herbert of Titusville, FL, who recently bought the very first Special Light Sport Aircraft (SLSA) LS-1 Lightning, N325AL. Tom is a very spry 82 years old. Way to go, Tom—Sierra Hotel!

Hey Buz,
The May newsletter was fantastic. I was at the booth at Sun-N-Fun and saw some very pretty Lightnings, met some good folks, and had a nice chat with Nick.

Your remarks about transition in the LS-1 were right on. You definitely need the right CFI. Fortunately for me, I found one. He has 20 or so hours in my jet and can land it smoothly, even when I handed it off to him in some strange attitudes five feet above the runway. Of course, he has the usual 4000 hours in 8 or 10 different types, but he is also a skilled builder and is accustomed to the characteristics of kit aircraft. He checked out in my Lightning in about 40 minutes, including two landings.

Shortly after my CFI and I had flown up to visit Olena and Max at their dealership in Deland, where we found a sparkling new hangar and a gorgeous LS-1 almost finished, my CFI stepped out of my plane and said "you're ready." I soloed, shot a few full-flap landings, and was thrilled to remember how sweet it is to own this slippery bird.

I'm old and have low total time. If I can solo it, anyone can!
Later,
Tom

I wrote back to Tom and asked that he send a few more photos of his new jet and some info on his home airport in Titusville. His reply follows:

I am in Columbus, Ohio, for the next few months, escaping the brutal Florida summer. The LS-1 is in her hangar at Titusville, being flown monthly by my CFI. I changed the oil and filter before I left, but no other special prep was necessary because it will be flown regularly.

Space Coast Regional Airport is a Class C field, with a well-run tower and nice T hangars. A great little restaurant called the Outer Marker is on the premises, and both self-serve and full-service fuel is available. Runways are 18-36 and 9-27, so most landings are not cross-wind impeded. Titusville is small, but we prefer it that way. The airport abuts the Kennedy Space Center, so air space is restricted to the east. All other directions are reasonably flyable, from Key West to Jacksonville and all points west.

Keep up the good work, and tell Pete the 3300 engine info is much appreciated.
Ciao,
Tom

Current Photos of Tom's Jet

Buz,
Below is a section of a newsletter disseminated by my CFI. Of interest are his remarks about the LS-1. There is also another picture of yours truly with the plane.

Al is no lightweight. He has built many kits, flew aerobatics in his Pitts, and has 4000 hours or so in a ton of different types of aircraft. All of his time is over the past 40 years and all is civilian flying time. He is a retired Boeing mechanical engineer, now flies his RV8, and lives near Titusville.

Happy trails,
Tom

From Tom's CFI: *Tom Herbert soloed his new light sport airplane, a beautiful Arion Lightning LS-1, on April 27, 2010. He single-handedly slipped the surly bonds of earth and completed several full-stop and taxi-back landings to officially check out in his new airplane. Now it's on to more traveling and visiting those distant and exotic airports for $100 hamburgers. During his check out in the airplane we had many great adventures to different airports and learned a lot about flying his new bird. If you scoff at light sport aircraft, here is something to consider…his LS-1 will cruise at 120 knots on 5.5 gallons per hour or throttle back to a leisurely 110 knots and 4 per hour! Pretty efficient, I'd say. The LS-1 also sports an all glass cockpit. There are no round gauges in the airplane at all. Pretty state of the art. Congratulations, Tom.*

Tom's beautiful new Lightning parked at his hangar in Titusville, Florida. I have a soft spot in my heart for Tom's Lightning, N325AL, as I logged many hours in it while flying the required ASTM flight test for SLSA certification for all future LS-1s.
It flies just a great as it looks. Heck, all the Lightnings do.

This next News from Builders and Flyers entry comes from Helmut, another of our good friends down under in Australia.

Hi Buz,
I previously sent you two articles to add to the newsletter. The first was a pictorial with comments on the building of my brother's Lightning sent on 24 January 2010. The second was a technical tip sent on 2 February 2010. I never received confirmation that you received the articles and they have not appeared in any newsletter. The obvious conclusion is that they are lost in cyberspace. Could you please confirm my suspicions? I will resend if you are interested.

On another subject, Steve Biele informed me that you would like me to do an article on electric fuel injection for the Jabiru engine. I am currently fine tuning the fuel maps on my brother's Lightning and, when this is finished, I will try and write the article. I have been involved in fitting electronic fuel injection on 5 Jabiru 6cyl engines and all are running well, returning good fuel economy and power. The highest time engine so far is over 400 hours and the next highest is 340 hours. No engine has had any stoppages or breakdowns due to fuel injection. Like I told Rod Stiff, electronic fuel injection is the most reliable part of my Jabiru engine.

Cheers,
Helmut.

My email back to Helmut confirmed that I had not received either of the previous articles that he sent. I suspect that the problem is in my email address (N1BZRICH@AOL.COM), which is sometimes easy to misread because of the 1 and the I possibly being interchanged. So for future reference, N1BZ is the N number of the Pitts I built and Rich is my last name. By the way, Helmut has agreed to do an article for us on the fuel injection set up he has developed for the Jabiru 3300.

This next entry comes from Bernardo Melendez, a recent Lightning kit purchaser. I look forward to hearing more about his build when he gets started on his Lightning.

Hello Buz,
I'm Bernardo Melendez, and at this year's Sun-n-Fun fly-in I made a deposit on a new Lightning kit, which I should receive sometime in July. I've been reading your newsletters and find them informative. I hope to be able to contribute to them after I get my Lightning kit and engine.

My reason for writing to you is to tell you that I admire not only the work you're doing on the monthly newsletter, but also your plane. There are some things I like better on the Esqual than the Lightning and vice versa. One of the things I like better on your plane than on the Lightning is the wingtips (and the canopy) that you have on yours. I will be building mine EAB, but I anticipate that I will be exercising my flying privileges as an LSA pilot. At least that way I will have my repairman's certificate.

What I'd like from you, if it's not too much trouble, is to get a couple of pictures or details on your plane's wingtips, as I'd like to modify the winglets on the extended kit that I will receive to resemble yours. I know there's nothing aerodynamically wrong with the kit's wingtips, but for aesthetic reasons I'd like to copy yours. Any other advice that you can give me on that subject would be appreciated. Thanks a lot.

Kind regards,
Bernardo Melendez
P.S. I'm attaching a picture of my current steed for your review.

Additional information from Bernardo on his CJ-1 Starlet follows:

Hi Buz,
My plane is a CJ-1 Corby Starlet, an Australian design of all-wood construction. It is the first of the type to fly in the US and its first flight was on 12/31/87, over 22 years ago. I built it from plans, and I still play with it. It is 1835 cc VW powered, on its second engine, and is quite "spritely," to say the least. John Corby, the designer, calls it USA #1. Normal cruise at 3400 rpm is about 145 mph IAS at low altitude, so it's no slouch, for a beetle-powered plane. Top IAS I've seen is 155 mph and VNE is 162.

I went to Sun-n-Fun this year with the express intent of buying a two-holer LSA. I had in mind the Rans S-19 or the Vans RV-12. But when my wife saw the Lightning "eye candy" and I got to looking at the speed potential, high and low speed, along with the construction time, it began to look better and better. I do like its strong construction, as I like to yank and bank hard sometimes. It's quite attractive too.

I took a short demo with Nick O. at South Lakeland airfield, and though I was suffering from bad allergies and my head was stuffed up, I came away convinced I had made the right choice. The only thing I was not impressed with is the heavy ailerons. My Corby is only 18.5 feet span and has large control surfaces, so it is very responsive and the controls are very light. Maybe I can investigate adding spades to the ailerons or making them longer on the Lightning. The elevator and rudder were OK by me, but the ailerons were quite heavy, by my standards. We'll see what happens.

Anyway, when I get to that stage, I *will* bug you about the wingtips and more, I'm sure. I look forward to meeting you in person and maybe getting a ride in your bird someday, I hope. Thanks for the pictures of your wingtips. The workmanship on your plane is the kind of work I like and take pride of in doing myself.

Kind regards,
BERNARDO MELENDEZ

Reader Feedback

This first entry for this month is from Neil Jansen from Australia.

Hi Buz,
I've been a keen reader of your Newsletters for a couple years now, since undertaking LSA flight training here in Brisbane, Australia. I learned to fly in a Flysynthesis Texan and received my Pilot Certificate last year. I'm now hire-flying an Evektor Sportstar Max. Even though I don't fly the Lightning, I find your monthly newsletters very informative and relevant to any LSA pilot using a Jabiru engine.

I've been particularly interested in the development of the LS-1 because I simply don't have the spare time to build a Lightning from a kit. I've been in contact with the Australian Lightning dealer, Dennis Borchardt, who tells me that registration is in progress through our LSA administrative authority Recreational Aviation Australia (RAA) and that the all clear for importing the LS-1 shouldn't be too far off.

One thing that may get my wife to relent on her vow not to fly with me is an airframe parachute. Has Arion ever considered a ballistic chute installation? I know the Esqual VM-1 had it as an option (see attached). Another query, which may sound odd from someone coming from the home of Jabiru, is whether the Lightning has ever been considered a candidate for the Rotax 912 motor? Also, what is the rough/turbulent air speed limit on the LS-1?

In closing, keep up the good work on the monthly newsletter—it's one of your best promotional tools in my opinion, second only to seeing the Lightning in the flesh.

Regards,
Neil Jansen

My answer back to Neil follows:

Hi Neil,
I really appreciate your kind words on the newsletter. It obviously takes a lot of time, but I feel it is worth it since I am a firm believer in the Lightning aircraft and the people that are responsible for it. They have become good friends over the last few years and I try to help them as much as possible. Now to your questions:

Currently, the LS-1 does not have a ballistic chute option, but the guys there may offer one in the future if they think many customers might want that as an option. The original Lightning prototype did have a ballistic chute installed (we used it to do the spin test for ASTM certification), so the engineering data is available if enough people express a desire for that option. My personal thought is that the extra weight of the chute would take quite a bit of weight-carrying capability away from the airplane, and I would rather have that for cross-country trips. As best I can remember, of the 90-some kits sold, only one or two had the ballistic chute installed. If that is any indication, I think most people don't see the chute as a necessary option. Time will tell.

Your question about the rough/turbulent air speed for the LS-1 is a little easier to answer. Vno, which is defined as the maximum structural cruising speed, is 133 knots. In other words, do not exceed this speed except in smooth air. Another speed you might be interested in is Va, or the design manoeuvring speed. The Va speed is 108 knots: if you are at that speed or below, at any weight, you can use full- or abrupt-control inputs without worrying about over stressing the airplane. I'd also note that both are very conservative for the Lightning design. The Lightning structure is very strong.

Hope this helps, and good luck on your future Lightning. You will love the way it flies.
Blue Skies,
Buz

Next, as reported in the May newsletter issue, Allan Maxwell from Louisiana has been modifying his Esqual to include lots of Lightning mods. His first flight after all the mods was made on 26 April. Along with the modification work, including a Lightning nose, Allan has also completely repainted his airplane. Below are photos of the completed project.

This next entry is from another of our Esqual guys. Jay Schmitt from New Mexico is also modifing his Esqual to add Lightning parts. Jay's Esqual is on the right.

Hi Buz,
I hope that all is well with you. I own Esqual N117DA. I noticed the beautiful "Corvette" ending to the newsletters. I would guess that you own a 1963 Vette. I have a '65 that is highly modified. I'll try to get a picture or two to you. I installed the Lightning wheels and brakes on my Esqual and I'm presently waiting to hear from Mark if my use of 5606 is compatible with my original Esqual **pedal** brake cylinders. The little reservoir diaphragm swelled up and doesn't fit back into the hole that it came out of anymore.
Calm winds to you.....Jay

My answer back to Jay follows:

Jay,
The real key to whether a MIL SPEC 5606-based brake fluid will be compatible with your Esqual system depends on what you had in there before. That is why I always use a 5606 brake fluid in my airplanes. That way, if I ever need to replace some fluid when at another airport, I know that the FBO there will always have 5606 fluid—it is the standard in the aviation industry, although there are some newer MIL SPEC fluids that actually have a higher burn temp. Those newer fluids, however, are still compatible with the older 5606, so you can mix them.

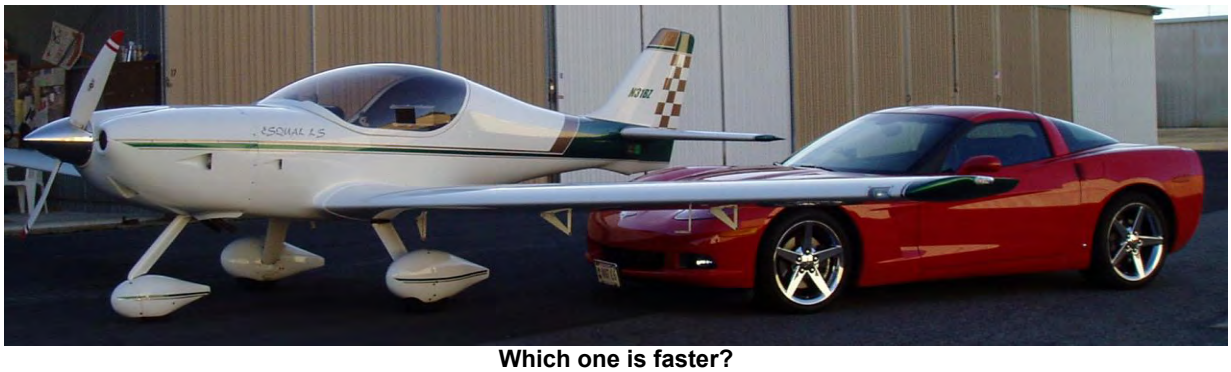
I seem to remember Mark mentioning they use an automotive transmission fluid in the brakes, but I don't know if that would be compatible with standard aviation brake fluid (5606), so someone might have a problem if they needed to replace fluid while at a different airport. From what you described, you might have had something in your Esqual that was not 5606 compatible—like auto brake fluid—which could have caused the rubber O-rings and or diaphragms to swell.
Buz

Hi Buz,
Thank you for your thoughts! I appreciate any help that I can get. I called Mark and found out from Nick that my **Esqual master brake cylinders do need DOT fluid**. Rats!! I have purged the lines of 5606; I removed the master cylinders—no easy job for a broken old guy like myself—under the panel, upside down, as you know. I am presently soaking the cylinders in DOT fluid hoping that the 5606 will eventually be displaced. I soaked my reservoir diaphragms in rubbing alcohol and then in DOT3 and they returned to their original size. Lucky! I am optimistic that the O-ring seals in my Esqual master cylinders will return to original size eventually as well. I now need to talk to George at Matco to get DOT-compatible O-rings for my wheel brake pucks. Wow! What a mess this has become. It all started when I ordered Lightning wheels and brakes. I asked Mark what fluid to use—5606 or DOT. He said, "5605." It didn't occur to me to say," Hey, I'm using the original Esqual master cylinders." I have learned my lesson. I need to first research my problem thoroughly, then I need to ask every question that I can possibly think of before doing anything.

You didn't mention if you have a Vette or not. You say, "Blue skies." I'll say, "Calm winds to you." And take care always.....Jay

Hi Jay,
Actually my current Vette is a Victory red 2007 that I bought new in the fall of 2006. It is the eighth one I have had and it replaced a used '66 that I restored in 1983. Over the early years of my Air Force career, I had several Vettes, but that '66 was the first used one I bought. My very first Vette was a red '66 that I bought new when I was a senior at the Air Force Academy. My excuse for buying the '07 was that I was going to finally get a chance to go to an Academy class reunion, and I wanted to go back to Colorado the way I had left—in a brand new red Vette. I have loved all of my Vettes, but this one is the best by far—stock base engine is 400 HP, but it seems much stronger than any of the midyear big blocks I had driven. Nick is also a Corvette guy, so that is why you may remember seeing a past aviation magazine advertisement showing our current Vettes along with a Lightning.

Blue Skies (and red Vettes),
Buz



Which one is faster?

Hi Buz,
Thank you for your support. I am very pleased to have the newsletter and other support to bring my Esqual up to the "LS" level. I'm enclosing pictures of my Vette just for fun.

Thanks again.....Jay
N117DA E180045

PS: I've also enclosed pictures of my 1919 Ford C-cab panel wagon for grins.

Wow, Jay, you have put a lot of work into your Vette. And that Ford panel wagon is fantastic! I really enjoy seeing the other activities our guys are involved in. Keep it up.
Buz

Upcoming Events

Sentimental Journey, Annual Cubs return to Lock Haven, PA, 16–19 June, 2010
Sentimental Journey is the best –grass roots" fly-in I have ever attended. You don't need a Cub or even a Piper product to be part of the fly-in. Everyone and all types of aircraft are welcome.

AirVenture, Oshkosh, Wisconsin, 26 July–1 August, 2010

4th Annual Lightning Homecoming and Fly-In, Shelbyville, TBD October 2010.
If you haven't been to one of the previous Lightning homecomings, start planning now to attend this one. You will have an absolutely great time. All of last year's creeper race winners will be back to defend their titles, and we will once again plan to have several Lightning competitions that you will want to compete in.

Engine Clinic

Sorry, no engine article this month.

Technical Tips

Propellers—Selection and Care:

I had a recent question from a newsletter reader having to do with selecting the proper propeller for his airplane. As with most things having to do with airplanes, the real answer is based on compromises. Over the years, Nick and I have done a lot of testing with various propellers from different makers, different types (ground-adjustable and fixed-pitch), different blade profiles, different diameters, and, of course, different pitches. At this point and based on this testing, Nick has been able to narrow the good choices for the Lightning down to one manufacturer—Sensenich. If you want to try a different manufacturer, you are pretty much on your own. Otherwise, rest assured that the Sensenich, Jabiru 3300, and the Lightning aircraft combination has been proven time after time. Other propeller manufacturers, however, often ask Arion to try their propellers. Arion will continue to test other props as time allows. If a better product is found, it will be added to the list of those available and suggested for the Lightning.

As I mentioned, the current recommendation for the Lightning is the Sensenich. The choice of a Sensenich carbon fiber, ground-adjustable prop versus a wooden Sensenich is pretty much up to you. The ground-adjustable prop will weigh more and cost more initially, but will give you the option of changing your pitch to suit your mission. However, a wooden prop will usually do just as well for takeoff and cruise performance if you select the correct pitch. So that is the big question—how do you select the right pitch?

Prop Pitch Selection

<u>Standard Pitch:</u> For normal ops, choose a prop pitch that allows the engine to turn up between rated engine RPMs and 50 over at full throttle in level flight at sea level. This gives best all-round performance.

<u>Cruise Pitch:</u> A prop that results in 50 to 100 rpm under rated RPM should give 4 to 6 mph more speed at cruise rpm. However, max level flight speed will be no greater speed than standard pitch. Takeoff and climb performance will suffer.

<u>Climb Pitch:</u> For high-altitude ops, select a prop that will turn 100 to 150 rpm over rated at full throttle level flight at sea level. Reduced speed by 4 to 6 mph.

Wooden Propeller Maintenance

Proper wooden propeller maintenance starts with proper installation as outlined on the Sensenich web site. Of course, proper torques (with a good calibrated torque wrench) is very important. When you install your wooden propeller for the first time, you should recheck the torque after the first flight, then again at 25 hours. After that, you should recheck the torque at least every 50 hours or more frequently if your area is experiencing severe climate changes or as the seasons change.

When you are not using your airplane, the wooden propeller should always be stored in the horizontal position so that any humidity changes will affect each blade in exactly the same way. If you do not follow this procedure, you will end up with an out-of-balance prop—the lower blade will end up being heavier as the wood absorbs the moisture in the air and that moisture migrates downhill to the lower blade.

In addition, if your airplane is stored outside, be sure to use a prop cover to protect your wooden propeller from extreme elements.

Part of your normal wooden propeller maintenance should include waxing your prop at least once a year to protect it from moisture.

If your prop needs a touch up in areas of worn finish, use spar varnish, but be aware that too much on one blade may cause balance problems.

One final and obvious cautionary piece of advice is to avoid doing engine run ups close to loose gravel on the taxiway.

And finally, take care of your wooden prop, or you may end up with a prop like that shown above.

This next tech tip comes from Gary Winkler, Lightning N428GW, of North Carolina. He explains a ground handling problem he had with his jet and the fix he devised.

Buz,
I am sending along some info concerning my front nose gear. Since completing N428GW in December 2008, the aircraft always had a pulling problem to the left on takeoff, especially on paved runways. I tried numerous takeoff methods—slow acceleration takeoffs, full-stop centered on the runway takeoffs, then even a roll onto the runway takeoff, but I always found that if I turned **LEFT** onto the active runway, the aircraft would pull to the left. I would taxi out and have full right rudder applied and, no matter what method of takeoff procedure I used, the aircraft would pull to the left as if the left brake was applied. I spoke to Nick and Ryan from Green Landings, and they had me check the left brake to see if it was hanging up. Everything was fine and free spinning. They also told me to check the front tire pressure, which was good at 29 psi.

This problem happened one time badly enough on a touch-and-go with Ryan in the aircraft that Ryan had to take over the controls as we tried to takeoff again, yet the aircraft never got centered back on the runway. With little success, we both used right brake and full right rudder to try and bring the aircraft around to the right. We flew back to Green Landings and checked the entire left side and front gear and everything was fine. We did tighten up the rudder cables, yet this was not the issue.

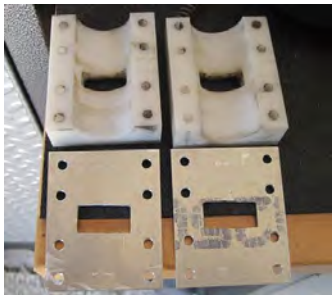
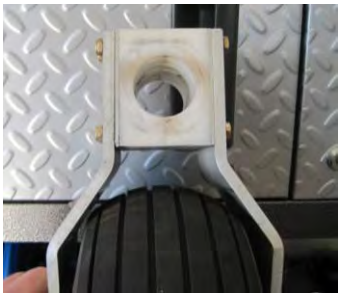
Some thought it was a prop and full-power torque issue, yet I started out using a Sensenich prop and now run a Prince prop, and I have had the problem with both props. At times it got so bad that I had to apply both full right rudder and right brake just to keep it somewhat tracking straight on takeoff.

Sometimes when I taxied to the hold position and completed my run ups, I applied some power to get the plane to roll and then applied full right rudder and right brake. The plane would still try and roll to the left, so it was easier to do a full left 360 on the ground and, as I came around, I would work the right brake hard to get taxiing straight onto the runway.

Finally, I decided to take apart the front-gear assembly completely. I found that the shaft had rust on it along with the nylon pitch blocks. I also noticed that the front outside ribs of the front tire had worn a groove in the aluminum front brackets on both sides measuring 3/32 deep. It seems as if the spacing was very tight and the front wheel was rubbing the bracket a lot (see pictures).



I made a few plates from 1/16 inch aluminum and added them on each side of the nylon pitch blocks, which opened the width of the bracket, allowing an additional 1/8 inch spacing. Now the front tire does not rub on the bracket. I also cut some ¾ hard nylon spacers to spread the bracket apart where it attaches at the bearings to make the bracket more vertical with the front of the bracket (see pictures).


I used steel wool to clean the rust from the shaft and applied good white grease to the shaft that the nylon pitch blocks would twist on. I reassembled everything and find that the problem is completely fixed.

Blue Skies,
Gary Winkler
(winky53@hotmail.com)
N428GW, Vass, North Carolina

Next are three tech tips from Tex Mantell (wb2ssj@frontiernet.net). **One covers exhaust leaks, while the other two have to do with fine tuning the Bing carb. All three are excellent suggestions.**

I am trying a new approach to fixing the leaks around the muffler, which seem to be a problem. I am trying the approach first on a 2200 Jabiru that is in my kitfox. It's called header wrap and is available at most hotrod shops. Header wrap stays somewhat flexible, so it may do the trick. It is rated at 2000 degrees, so we will see. I will follow up with a progress report in a few months (see photo at right).
Tex

Hi Buz,
I want to write a newsletter item about a situation I have had, hoping that some people may benefit. While I have been fine tuning the Lightning, I have been changing jets often. I thought I was getting really close to a perfect setup, then the crap hit the fan. All my CHTs and EGTs started going all over the place and changed greatly from cylinder to cylinder. I had placed the atomizer upside down in the carb. As soon as I found the problem, all cylinders were again fairly well-balanced. Anyone having trouble getting things balanced might take a look at the atomizer. The holes should be on the bottom when installed on top of the needle get. I am trying to find a good picture or drawing of the part and its position in the carb.
TEX

The last few months I have been trying to really fine tune my Lightning and have discovered some very interesting facts. The most frustrating thing I have found is that the size markings on the Bing jets are sometimes nowhere close to what they are supposed to be. After purchasing a dozen jets directly from Bing so I could fine tune the carb, I could not understand why the result of changing jets would be nowhere near what I expected. I finally decided to investigate further and found that some jets were marked smaller then they actually were, while others were larger than marked. I then got out a good set of drills and measured each and even drilled some to the right size. I am happy to report that I now am able to fine tune the carb as needed and found it very easy with the right sizes and with predictable results. If you need a size and don't have the right drill, they can be purchased from (MSCDIRECT.COM) a store on the Net. They have all the drills and all the sizes.
Tex

Flight Safety Tips

In last month's Flight Safety section, I discussed proper procedures for checking out in the Lightning, including finding the right instructor and using a good transition training syllabus. I mentioned that Arion had developed such a syllabus as part of the ASTM certification requirements for the LS-1, and I suggested that pilots transitioning to the Lightning should get a copy. In order to make that last suggestion easier, I am including the Lightning LS-1 transition training syllabus below. Copy it and make sure your instructor uses it for your transition training.

Transition Training Syllabus for the Special Light Sport Lightning Model LS-1 developed by Arion Aircraft, LLC.

This syllabus lists areas of operation to be discussed or demonstrated during transition training. The items listed are important points that need to be covered. PLEASE CONSULT THE POH for complete checklists and procedures for each operation.

Part I: Ground Instruction

I. Aircraft Familiarization
   a. Preflight exterior
   b. Engine care
   c. Cowling removal and replacement
   d. Ground handling (engine not running)
   e. Basic systems
      i. Flight controls
      ii. Fuel system
      iii. Electrical system
      iv. Engine Information System (EIS)
      v. Cabin heat and ventilation

II. Avionics
   a. Primary flight Instruments
   b. EFIS-EIS interface
   c. Map display
   d. Use of GPS
      i. Direct-to
      ii. Flight plan
   e. Use of VOR (SL-30 only)
   f. Use of radio, intercom, and transponder
   g. Autopilot operation (if installed)
   h. 406 MHz ELT registration and operation

III. Flight Planning Considerations
   a. Operating limitations
   b. Weight and balance
   c. Performance

IV. Flight Control Technique
   a. Jabiru vs. other aircraft flown by customer

V. Local Area Briefing
   a. Runway data
   b. Traffic pattern
   c. Frequencies
   d. Practice areas

Part 2: Flight Instruction

I. Passenger Briefing
   a. Use of safety belts and shoulder harness
   b. Positive exchange of flight controls
   c. Emergency egress procedures

II. Engine/Avionics Startup
    a. Engine start checklist
    b. Proper use of choke
    c. EIS operation–engine temperature and oil pressure
    d. AHRS and GPS initialization
III. Taxi Technique/Ground Handling
    a. Proper use of toe brakes for steering
    b. Limited Caster nose wheel
    c. Engine cooling during ground operations
IV. Pre-Takeoff Checklist
    a. Fuel valves
    b. Use of trim
    c. Magneto check
    d. Carburetor heat
V. Normal Takeoff
    a. Directional control technique
    b. Proper liftoff airspeed
    c. Proper climb attitude
VI. Normal Climb
    a. Proper climb airspeed
    b. Engine cooling and visibility
    c. Rudder coordination
VII. Basic Flight Maneuvers
    a. Cruise power and trim
    b. Rudder/aileron coordination
    c. Constant altitude 30 degree bank turns
    d. Steep turns
    e. Slow flight
    f. Power-off glide at approach airspeed
    g. Stalls in various flap and power configurations
    h. Stall/spin awareness
    i. Simulated power-off emergency approach
VIII. Traffic Pattern and Normal Landings
    a. Pre-landing checklist
    b. Proper airspeeds in the pattern
    c. Use of pitch trim and flaps
    d. Use of carburetor heat
    e. Stabilized approach
    f. Normal touchdown and rollout
    g. Directional control
    h. Braking procedure
IX. Abnormal or Special Landing Procedures
    a. Forward slips
    b. Go-around procedures
        i. Abandoned approach
        ii. Bounced landing
    c. No-flap landing
X. Optional Operations (based on weather conditions and customer needs)
    a. Crosswind takeoffs and landings

b. Short-field takeoffs and landings
c. Soft-field takeoffs and landings

XI. After Landing and Post-Flight Procedures
a. Aircraft tiedowns
b. Aircraft cover
c. Propeller position
d. Trickle charger
e. Tanis heater (if installed)

XII. Customer Questions

Lesson 1--Ground Aircraft Familiarization 2 Hours

Section1. Cockpit and Instrumentation

I. Cockpit familiarization

A. Controls

- ☐ Throttle
- ☐ Carb heat control
- ☐ Cabin Heat & ventilation control
- ☐ Choke control
- ☐ Control Sticks
- ☐ Rudder Pedals and Adjusters
- ☐ Toe Brakes
- ☐ Trim
- ☐ Flaps

B. Panel

- ☐ As required for equipment installed; EFIS system or Steam.
- ☐ Engine Information System(EIS)
- ☐ Garmin Radio, transponder and functions
- ☐ Switches & fuses or circuit breakers

II. Preflight Inspection

- ☐ Reference the checklist
- ☐ Any other items at instructor's discretion

Section 2. Aircraft Systems

I. Airframe Systems

A. Flight Controls

- ☐ Ailerons
- ☐ Elevator
- ☐ Rudder
- ☐ Trim
- ☐ Flaps

B. Wheels & Brakes

C. Fuel System

II. Engine Systems

- ☐ Carb heat
- ☐ Cabin heat
- ☐ Throttle & choke
- ☐ Fuel pump
- ☐ Oil fill & pump
- ☐ Oil over flow
- ☐ Caps & rotors
- ☐ Alternator

Section 3. Normal Operating Procedures

- ☐ Before starting
- ☐ Engine starting
- ☐ Taxi
- ☐ Before takeoff checks
- ☐ Takeoff
- ☐ Climbs
- ☐ Cruise
- ☐ Descents
- ☐ Approach,
- ☐ Landing
- ☐ Go-around and balked Landings
- ☐ Shut down & securing

Section 4. Performance charts Weight and Balance

- ☐ Weight & Balance
- ☐ Takeoff
- ☐ Cruise
- ☐ Landing

LESSON 2—1.5 Hours Basic Flight Maneuvers

Before beginning any flight training, the Instructor Pilot and Transitioning Pilot must be aware of and ensure the following: each person's responsibility in the cockpit, the existence of a positive exchange of flight controls technique, and awareness that the Instructor Pilot is responsible for safe training in the aircraft but the Transitioning Pilot is PIC in the aircraft and responsible for the safety of the flight.

I. Basic Flight Maneuvers

- ☐ Climbs
- ☐ Descents
- ☐ Turns
- ☐ Combinations

II. Slow Flight

- ☐ Flaps up @ 70knts IAS
- ☐ Flaps up @ 55knts IAS
- ☐ Flaps down @ 65knts IAS
- ☐ Flaps down @ 50knts IAS
- ☐ Proper transition from slow flight to cruise. Same as a go-around recovery.

Note: Before practicing stalls, become aware of the stall- and spin-recovery technique outlined in the POH for the LS-1. Stalls and spins can be ppotentially hazardous in any aircraft and must be treated accordingly.

III. Stalls

- ☐ Power on (Partial Power) flaps up to buffet only.
- ☐ Power off flaps up to buffet only.
- ☐ Power off flaps down to buffet only.
- ☐ Power on (Partial Power) flaps up full stall.
- ☐ Power off flaps up full stall.
- ☐ Power off flaps down full stall.

Lesson 3 2.0 Hours. Airport Operations

I. Takeoffs

- ☐ Normal takeoff

a. Rudder only for directional control, no brake!
b. Rotate 50-55knts with smooth slow pitch application.
c. Pitch for the horizon not an airspeed, let the aircraft accelerate.
d. Climb out at 90knts IAS once established.

- ☐ Short field

a. Same as above but rotate 45-50knts.
b. Pitch for horizon and accelerate.
c. Climb at 70knts until clear of Obstacle.
d. At safe altitude, accelerate to 80knts and retract flaps, than accelerate to 90knts.

- ☐ Soft field

a. Same as short field.

II. Approaches

- ☐ Normal approach

a. 80-90knst IAS on Downwind.
b. Abeam touchdown point power reduced to near idle.
c. Carb heat out.
d. Slow to 80knts IAS and deploy 10 degrees flaps.
e. 70-80knts IAS on Base 20 degrees flaps
f. 60knts final
g. 55-60knts short final with 30 degrees flaps.

- ☐ Short field

A. Same as above but 50-55knts short final with full flaps.

- ☐ Soft field

A. Same as short field.

Pilots must have good stabilized approaches and approach speeds on short final near 60knts IAS consistently before being allowed to land. This is in no-wind

situations. Rely on the Instructor's discretion in windy conditions.

III. Landings

- ☐ Short final

a. Stabilized approach speed near 60knts on short final.
b. Power to idle over the numbers.
c. **Full stall landing on the mains! Do not force the aircraft to land! Do not land in a 3-point stance!**
d. Nose wheel should be held off as long as possible.
e. Brake as required.

IV. Go-Around

- ☐ From anywhere in the pattern up to short final.

a. Go around procedure is same as slow flight recovery.
b. Fly the aircraft first than clean up slowly.

- ☐ From short final to runway.

a. Advance full throttle and fly the aircraft to avoid the problem
b. Hold the nose on the horizon to establish a climb.
c. Carb heat off.
d. Flaps retract slowly until accelerated above 80knts IAS.
e. Climb away normally at 90knts IAS

Most bounced landings in the LS-1 are caused by excessive speed on final. The aircraft most likely has sufficient flying speed and is in no danger of stalling. Avoid hard forward stick pushes as in a stall recovery, as a PIO may result. Try to re-flare or go-around from a bounced landing.

a. If sufficient speed, reestablish the flair and land in a full stalled condition on the main wheels.
b. If slow add full power and climb away.
c. Recover when at a safe altitude in the same manner as described above for a short final go-around.

Lesson 4 1.5 Hours. Emergency operations

In all situations involving emergency procedures, some of the most important things to remember are:

- Always fly the aircraft first.
- Do not try to save the aircraft; having to trailer an aircraft out of field is much better than trying to make the airport and not succeeding.
- Your responsibility is to you and your passenger, if that is accounted for, then maybe you can save the plane.

I. Engine out procedure

- ☐ After Takeoff below 1000' AGL

a. Establish best glide of 75knts IAS
b. Pick a field straight ahead or no more than 30 degrees each side of runway centerline.
c. Approach and land.
d. If sufficient time remains while gliding try a restart.

- ☐ If above 1000' AGL.

a. Establish best glide of 75knts IAS.
b. A return to the airport can be attempted
c. Practice 180 degree power off approach and determine the altitude needed to turn the aircraft around and still have good altitude for an approach.

- ☐ All other situations at altitudes above 1000' AGL and where sufficient time is available attempted a re-start. **Refer to the POH for that procedure!**

II. Power off Gliding

- ☐ Best glide clean is 75knts IAS
- ☐ Best Glide flaps at 30 degrees is 64knts IAS
- ☐ Best loiter time (Longest time in the air) is 50knts IAS.

a. Practice the following with your aircraft to get an idea of the minimum sink that can be achieved by each speed.

III. Key Position

Can be described as the position from which you can assure a power off approach and landing to the desired runway or field. Normally this is a point abeam the touchdown area at about 1000'-1500' AGL.

- ☐ Practice power off approaches from this spot near the airport.

a. Set up the aircraft between 1000'-1500' AGL abeam the touchdown area.
b. Reduce the throttle to idle and apply carb heat.
c. Attempt to land at the airport on the runway within a given range.
d. If must add power you have under shot and should try again.
e. If you over shoot the spot you must try again.
f. Practice this until proficient at hitting the touchdown area using normal landing techniques.

- ☐ Once good at the above set the aircraft up in different positions near the airport.

a. Start at 5000' AGL above the airport.
b. Fly the aircraft in a glide to set up in the Key position.
c. Repeat until proficient.

Lesson 5TBA. Review

I. Review of topics at instructor's discretion

Lightning Skunk Works

This month's Skunk Works is so secret that it is classified DBR. And that is just what we did—Destroyed it Before Reading.

Other Items

The current issue of the FAA *Nuts and Bolts* Newsletter, which is written by aircraft mechanics and is intended for aircraft mechanics, has an interesting article about corrosion in a Bing carb that was installed on a Jabiru 3300-powered experimental aircraft (not a Lightning). This internal corrosion in the Bing led to an accident. You can read the article by going to the web site listed below.

https://www.faasafety.gov/files/notices/2010/Apr/10-01%5B1%5D.pdf

Once you get to the web site, go to page five (see p. 5) to read the article, which also includes some good photos of the Bing carb parts showing the corrosion to go along with the explanation of what happened. In addition, there are some good thoughts on conditional inspections on the Bing carb.

Final Thoughts

Since this newsletter is being written just before Memorial Day 2010, I thought the following might be appropriate. I don't know who the author is, but I have seen it in print several times, and it always rings true every time I read it. Too often Memorial Day is ignored by those who are the beneficiaries of military members who gave the ultimate sacrifice to insure we have the freedoms that we enjoy today.

It is the VETERAN, not the preacher,
who has given us freedom of religion.

It is the VETERAN, not the reporter,
who has given us freedom of the press.

It is the VETERAN, not the poet,
who has given us freedom of speech.

It is the VETERAN, not the campus organizer,
who has given us freedom to assemble.

It is the VETERAN, not the lawyer,
who has given us the right to a fair trial.

It is the VETERAN, not the politician,
who has given us the right to vote.

One final thought. Why is it that it is often only the Veterans who stand and place a hand over their hearts or salute when our Flag goes by in a parade or is presented, along with the National Anthem, at some sporting event? It really gets to me (and not in a good way) when I see some people just meandering around at Oshkosh during the playing of the National Anthem and presentation of our Flag at the start of the afternoon airshow. Please don't be one of those morons.

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.)**

Made in the USA.