Hangar Talk

The "Lightning" Newsletter

April 2010 - Volume 3, Issue 4

Dave Stanley's Lightning of the Month and 50th to Fly

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 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

Welcome to the April 2010 issue of the Lightning Newsletter. We appreciate you reading the newsletter as we try to provide an informative and entertaining publication on the Arion Lightning aircraft. We always welcome and encourage your comments, criticism and suggestions, and hope that you'll become active members of the Lightning community and contributors to future newsletters. Tell your fellow pilots and friends about the Lightning and our newsletter.

In this issue I am happy to report that Denis B., from central Iowa, has taken up the challenge of providing an index of past newsletter issues and has provided one that will soon be published on the web sites that host the newsletter. The index that Denis compiled will allow you to more easily find articles or specific information that has been covered in past issues. Future upgrades of the index may include a searchable index based on key words. But for now, you can read about Denis in the Reader's Feedback section. Thanks, Denis, we really appreciate your hard work.

Also in this issue is a nice article about the Lightning of the month, N297S, built by Dave Stanley, which is also the 50th Experimental Amateur Built Lightning to fly. So let us start out by offering congratulations to Dave for his momentous achievement and to the guys at Arion Aircraft in Shelbyville for offering such a great kit. I think you will enjoy reading about Dave Stanley and seeing some additional photos of his beautiful jet.

Additionally, this issue will feature a brand new handheld GPS, the iFly 700, by Adventure Pilot, LLC. After flying with the iFly for about a month in order to write an evaluation, I am convinced that it is going to be a big hit in the Sport Aircraft market. I hope you enjoy reading about this new product.

Now a little more information on the April 2010 Lightning of the Month. I asked Dave to provide us some information on himself and his new "jet". Even though he is a pretty humble guy, I was able to get the following out of him. Below are Dave's words about his Lightning, his career, and where he now lives.

I started work on N297S in September 2008. It passed the DAR inspection in November 2009. Weather and getting to know my GRT panel delayed first flight until 1 March 2010, just two weeks past my 80th birthday. This is my third completion. I previously built a Q2 and a Pulsar. I worked alone and completed all work except the panel which I got from Arion. Assistance via phone and email from Mark Stauffer at Arion was invaluable. I might never have completed the project without his help. Some pictures are attached.

N297S, Dave Stanley's Lightning and the 50th Lightning to fly.

I retired from the military about twenty years ahead of you. I live in Shallotte, North Carolina, on highway 17 about half-way between Wilmington and Myrtle Beach. We have an airport at Ocean Isle Beach and I live about four miles from it. However my plane is in Whiteville (Columbus County) because I could get hangar space there. In time, after I get all the problems ironed out of my new-fangled glass panel, I might move the plane to Ocean Isle.

I started out in the Air Force but decided I *wanted to be in the military so I switched to the Army*.

(Editor's Note: OUCH, Dave. I can't believe you left the USAF to join the Boy Scouts (just kidding of course). At least you didn't join the Navy (sorry, Earl). But I'm guessing you changed because you thought those Army dress uniforms were snazzier that the plain Air Force blues.)

I was a teenaged radio operator on B-29s during the Korean era. Wanted to drive rather than ride but had to get a commission. The Army needed paratroopers and I volunteered. When Army Aviation started expanding I went to flight school in 1957. Just in time for all the experimental work on weapons, target acquisition, vertical lift, etc. They were interesting years, with lots of flying in many different types. Two tours in Nam flying Hueys; gunships the first year, then had a battalion the second year with lots of desks, desks, desks assignments after that. I got stuck with the nickname “boy colonel” by some good friends. I rather think it had more to do with my conduct than my age. If you come to the beach, we can visit and tell lies about how great we used to be.
Dave Stanley

Thanks for the great rundown, Dave, and a belated happy birthday to you. I think being 80 years old and flying a Lightning puts you into a pretty exclusive club of Lightning flyers. Tom Herbert, who recently bought the very first Special Light Sport Aircraft (SLSA) LS-1 Lightning, N325AL, is a very spry 82 years old. And the overall leader of this league of extraordinary and impressive Lightning gentlemen is Joe Mathias, who turned 87 years young on 21 March. Happy birthday Joe. He helped his bride Linda (many many, many years younger) build their Lightning, N59JL. You guys are my heroes!

This following article, on the iFly 700 GPS, is a product evaluation that I recently had the pleasure of doing for a relatively new aviation company in Allen, Texas. The company, Adventure Pilot, is owned by Walter Boyd and Bill Strahan. You might remember that Bill built Lightning kit # 75. Adventure Pilot has recently (January 2010) introduced a moving map aviation GPS that I think will be an excellent and more affordable alternative to the currently available small handheld GPSs. Here are my thoughts on their product after flying with it for a month.

How would you like a portable aviation GPS with a big 7-inch diagonal screen instead of the standard smaller 4-inch screens that are normally associated with portable aviation GPSs? Or, how would you like to always have current sectionals in your airplane regardless of where in the US you might be flying to (including Alaska and Hawaii)? If your answer to either of these questions is yes, then the new iFly 700 GPS by Adventure Pilot might just be the perfect portable GPS for you. As far as I know, it is the first truly affordable moving map aviation GPS that uses actual FAA Sectionals as the map that shows your aircraft"s position. And guess what, it also uses touch screen technology, so there are no push buttons or rocker switches to take up space; the entire face of the unit is the screen. And the 7-inch touch screen interface is incredibly simple to use. Sweep your finger across the screen to scroll through the maps or along your route of flight. A quick tap on an airport will get you detailed information, or you can drag your flight plan route line to avoid a TFR or to add another way point. It is fast, easy, and intuitive to use. It is big and bright enough to read easily in flight and yet small enough to

manage comfortably. It comes with a suction mount that has multiple articulation points which provides lots of mounting options. I am really impressed, but let me tell you more.

Photos above show front and back of the iFly 700 unit (note small speakers) and the multi- articulating / adjustable mounting rig.

Before I get into some of the design features of the unit, let me first try to answer some of the questions that you probably have when looking for a portable aviation GPS. The most obvious question is "What does the screen look like (the brightness) with a bubble canopy like the Lightning has?" Answer – overall, no problem. I will include some photos I took while flying with the iFly 700, but just let me say, you can see the screen on a bright sunny day. However, don't expect to see the bright contrast of colors that you see with one of the smaller and higher priced Garmin units. The reason for that is simple. The iFly 700 is using real FAA sectionals, and the contrasts of colors on those maps are really not all that contrasting. A good example of that is right here in my part of Virginia. The water on the map is a light blue and the land (close to sea level) is a light green on the Washington Sectional; therefore, not very contrasting. The colors that Garmin uses are bolder or "cartoon-like" with the water being a darker bright blue and the land being a vivid green. Those colors are certainly much more contrasting. So just let me say, I have flown with the iFly 700 on a bright sunny day and you can still see the map. It is easier on the eyes on an overcast day, but you can still see it in the bright sunshine. Where you mount the screen will make a difference and with a 7-inch screen, many Lightning builders may want to mount it directly on the instrument panel. That way, the glare shield will probably do its job and prevent some glare. But if you want to use the mounting rig that comes with the iFly, you can mount it basically anywhere on the canopy, and then take it with you if you want to use it in another aircraft.

These inflight photos show how well the iFly 700's sectional map shows up on a bright day. The 7-inch screen really is easy to use and the display looks almost exactly like a paper Sectional. The glare on the screen in these photos is from the flash on my camera.

The next question that you probably have is "How about a battery backup power supply?" The iFly 700 comes with a cigarette lighter jack, so just plug it in and you are ready to navigate. There is also a house current power supply for using it at your home for flight planning. However, if I wanted to use it in my J3 Cub, I would have to have some source of power (anywhere between 12 and 24 DC volts) for it to work. Several rechargeable battery packs are commercially available, but the company will begin selling one in April that is designed specifically to work with the iFly. It provides 4 hours of power, and can be charged via the cigarette lighter jack while in use. It's about the size of a pack of cigarettes.

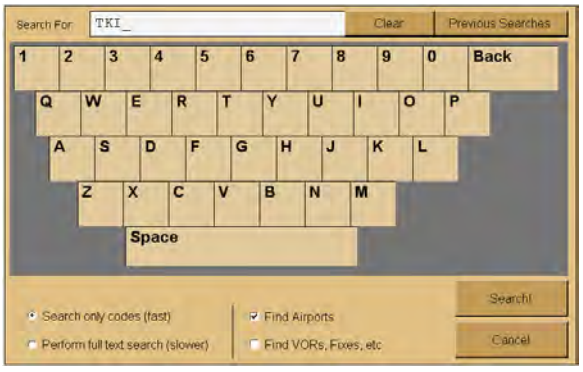
The other question that many people will probably ask is "Can you select a track-up display instead of the North-up display?" The North-up display is currently the only display available. However, a track-up display change to the software is in the works and should be available later this year. The reason for the standard North-up display is that is the way the Sectional maps are oriented – meaning if you want the information printed on them to be right side up, so you can easily read it, then they must be oriented the way the maps are printed. Until the track up software change is completed, the multi- articulating mounting rig will allow you to adjust or swivel the screen so that your track is up. Heck, that is what I do when reading a flight plan course line on a paper sectional. So until the track-up software change, just swivel the actual screen so that your track is up if that is what you like to use.

How is this for a simple solution for a track up display? The iFly 700's mounting rig allows a full 360 degree swivel and easily mounts to the inside of a curved bubble canopy.

When the demo iFly 700 GPS arrived at my door, it was packed in a nice travel case as shown in the photos to the right and below. Although there was a short Quick Start Guide, I purposely did not read it. One of the advertising points on their website was that the unit was intuitive and easy to operate. I figured the best way to evaluate that feature was to just plug the thing in and try to use it. So I took it near a window, plugged it in, and sure enough it quickly came up, found where it was, and I started touching and scrolling on the screen. Hey, this really is easy to use and to enter a flight plan. You can either touch the map to select another airport to fly to, or you can call up the menu and display a keyboard to enter the airport (and flight plan) you want to fly to. Simple.

Included in the case are the 7-inch screen, the multi- articulating mounting rig, the two power cords, and believe it or not, a remote control unit. I can just see some pilot intently map reading when all of a sudden, his passenger "changes channels". In reality, I am sure the remote control unit would be very useful during a bumpy or turbulent flight.

After I had flown with the iFly 700 several times, I finally read their on-line manual and found other neat features, but as they said, it really is intuitive and you can use it without any intensive manual study.



Enter a destination or flight plan by touching the map, or by touching the keyboard menu page.

Below are some photos of the iFly 700 in my cockpit. The first photo shows the iFly mounted on the glare shield next to the Garmin Aera 500. I am holding a local area sectional to give an idea of how closely the iFly reproduces the map data. Again, the glare is from my camera flash.

These next two photos were made in-flight. I was able to easily see the iFly display where ever I placed it in the cockpit.

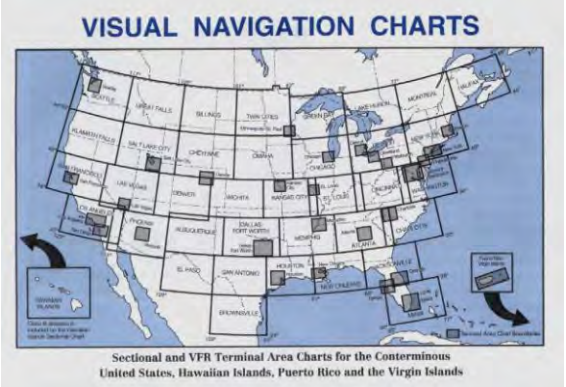
The features of the iFly 700 GPS are:

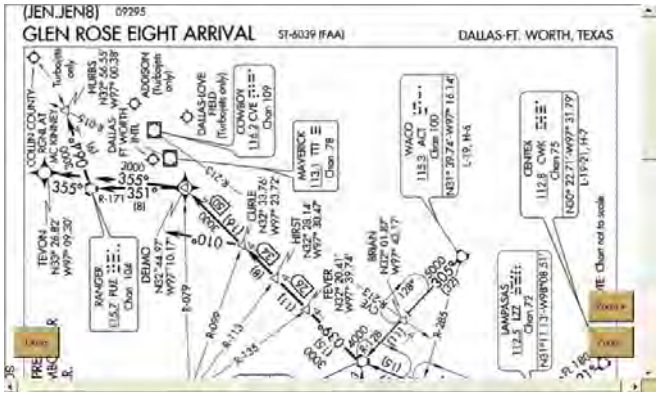
Intuitive operation, uses actual FAA charts with all airport information, easy flight planning, flight instrument information displayed on the screen, and simple data updates.

The intuitive operation means that it is designed to work the way you think and is very easy to figure out how to accomplish the task you want it to do. The touch buttons on the screen fade away when not in use in order to maximize the map visibility. The buttons are large enough to use even in bumpy flight conditions, but you have the remote control to use if you would rather use that method to change the display. The map display can be zoomed in from 2 nautical miles per inch or out

to 100 nautical miles per inch. There are clear warnings if any sectionals are out of date and any TFR areas will show if you have recently downloaded that data.

Not only are **FAA sectionals** shown, but the iFly 700 also includes all STARS, approach and departure charts, and airport taxi diagrams at large airports. It is simple to toggle between the map and the last viewed chart. One touch on the screen will center your current position on the chart and you can also scroll to other parts of the map and zoom in or out with just a touch.





Flight planning is easy with one touch "direct to" your destination. You can also have multiple flight plans. Your route line is shown with a bright magenta line. If you need to change your route, just touch and drag the line of flight to your new waypoint. Flight plans are automatically saved and restored between power cycles, so you can plan a flight at home, turn the unit off, then when you power it up in the aircraft, you are ready to go.

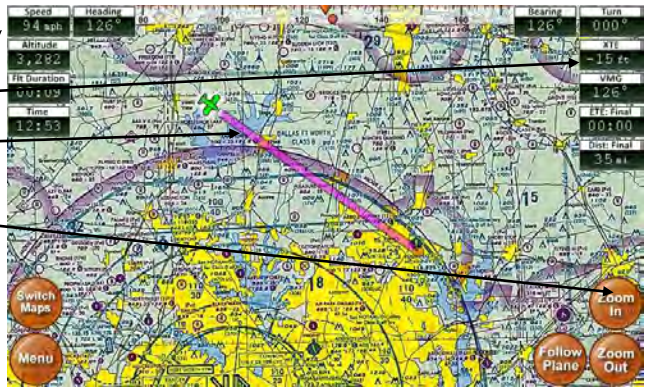
Flight instrument data shown on the map includes ground speed, heading, altitude, flight time, current time, bearing to next waypoint, cross track error, velocity made good, estimated time enroute and distance to final destination and waypoint. There is also a heading tape or "follow the dot" style of navigation.

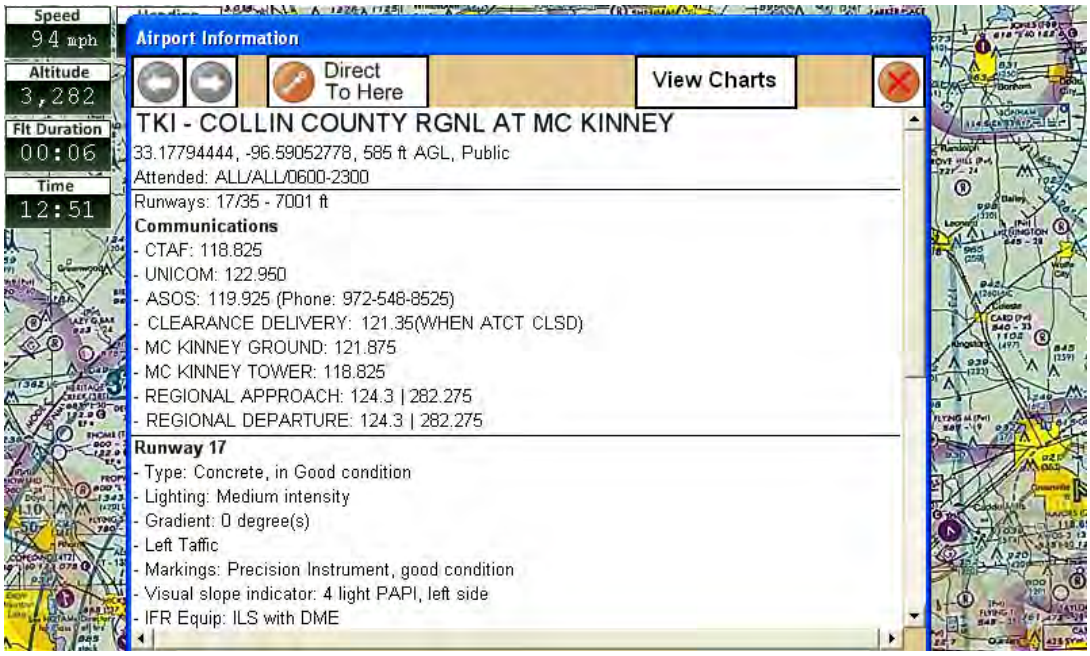
The iFly 700 GPS provides **unprecedented situational and spatial awareness** by showing your position on an actual FAA sectional map. Every sectional is pre-loaded and even the "border of the map" information is available – just like having every paper sectional in your cockpit. You can touch the map to see a distance and heading from your current location – the ability to show the distance and radials from your current location. There is a "find nearest" option to find the nearest airports, frequencies (ASOS or AWOS), and navaids. When you have the map zoomed out, all airspaces are highlighted, and FAA published TFRs can be seen on the maps. A single touch will change which sectional is displayed.

Flight instrument data:

Magenta flight route line.

Touch buttons.





The chart above is an example of the FAA airport data that is available. This airport is TKI which is the airport in MC KINNEY, TX.

<u>Data updates are simple</u> and unlimited from the Adventure Pilot web site by using your USB flash drive. With a low cost annual subscription of only $69, you will always have the latest sectionals, all FAA airport databases, TFRs, and charts. Any software application updates are also included when you update your data base.

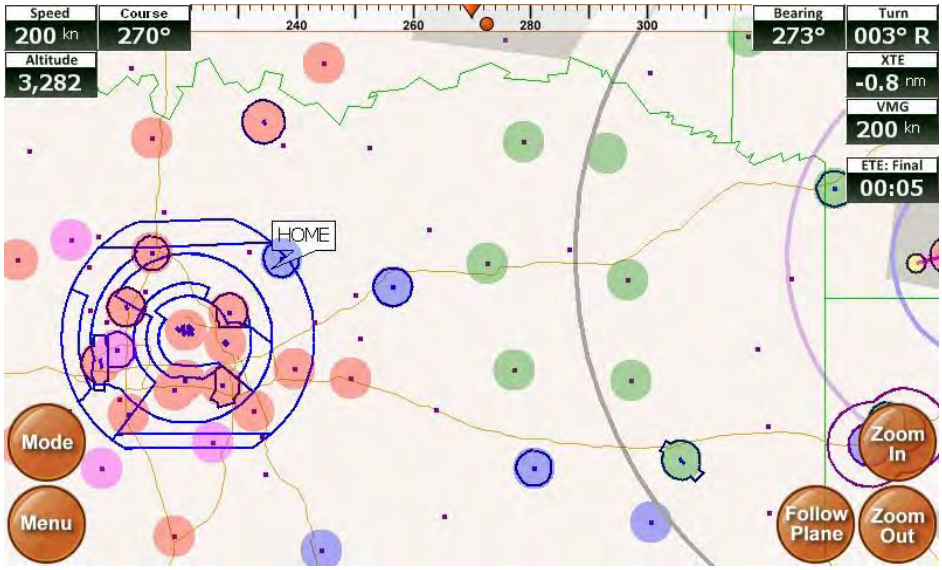
The information below covers the next scheduled software update and was copied from the iFly web site: <u>www.ifly.adventurepilot.com</u> Photos show some of the changes to the new version.

A major iFly software update is in development and will be released in April. (All iFly owners will be able to easily upgrade their units to this version). Following are the features we are currently targeting for this release:

Low-enroute charts: Will include the entire continental US Low-enroute IFR charts in the moving map.

Customizable Instruments: Ability to customize the location, visibility, and size of the instrument data

Pre-flight weather: Ability to download latest METARs during your pre-flight, similar to how the TFR process currently works. Circle colors are coded to weather at those locations.



Customizable Waypoints: Users can create, name, and search for their own waypoints

Darker route lines

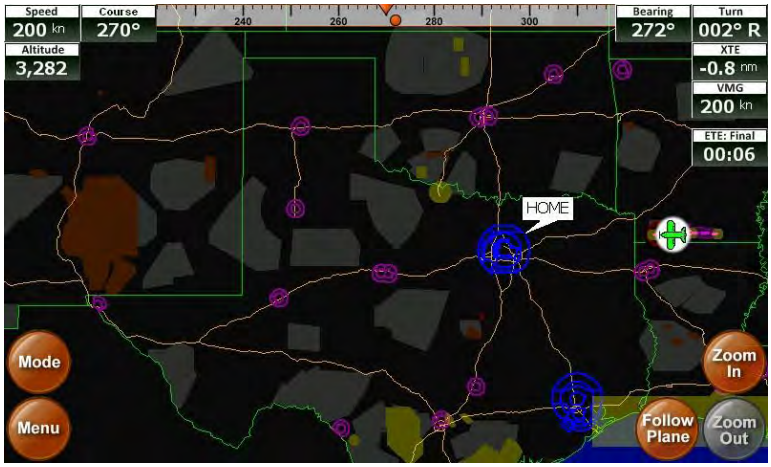
Ability to rename flight plan

Nearest Airport Hot button: Create an on-map hot button to find the nearest airport (this feature is currently imbedded in the main menu and requires a few touches)

Enhanced Remote Support: Ability to scroll airport info and charts with the remote and to close pop-up windows.

Lat/Lon as waypoint: User can add a waypoint by entering a latitude/longitude

Night mode: Vector mode with darker coloring designed to reduce screen brightness for use at night



Auto-delete update files after updating

The following features are also planned for this release, but additional research is required before they will be *committed* to being included.

Ability to "Roll Back" to previous versions: If a user wants to roll-back to a prior version, users will be able to do this by downloading prior versions through the website.

Airspace Warnings: Automatic detection & warning when a route line or heading crosses certain airspace

SUA Info: Ability to touch and find data on special use airspace

Battery pack: This is not a software enhancement. An official battery pack will be made available through the online store. (Note, all the currently documented 3rd party battery options will remain viable choices)

Next is one more piece of the iFly story; some additional information that I gleaned from their web site. If you want to know even more about their company and product, go to: www.iFlyGPS.com

Our product, the iFly 700 GPS, is the culmination of our years of expertise in the travel and technology industry. So what makes this product different from our competitors? First of all, $499 makes the iFly 700 the most affordable GPS unit solely dedicated to aviation. Not only that, the annual subscription to keep sectionals, approach plates, airport diagrams, software, AFD data and etc. is only $69 a year. Now, any pilot can afford to own an aviation GPS. But that is just the beginning. The 7" touch screen blows away the competition. The iFly 700 background map is a sectional: exactly like the paper maps pilots are trained to use. The iFly 700 user interface is simple and intuitive: Swipe your finger across the screen to scroll, “Rubber–band” your route by touch and drag, touch an airport to get all the AFD data or approach charts, and much more. New capabilities are already in development; such as low enroute charts, XM weather, and audible terrain and SUA warnings.

Our goal is not to turn the industry upside down. We just want to provide like-minded adventure pilots with a state-of-the-art GPS that is affordable in the current economy. The aviation market is full of GPS units that are expensive, small, slow, and complicated. The iFly 700 is fast, inexpensive, an ideal size, and contains the most essential features for an aviation GPS. I’ve heard it said a few times that “this sounds too good to be true” or “is this for real?". I am happy to say that it is not too good to be true and it is for real. It is amazing how a clever idea, a little bit of time and a need in the market can take two guys to a place they never imagined. And now a world of pilots can reap the benefit.

One other thing I will mention that might help you decide you really do "need" an iFly 700 GPS is that the unit is designed to support a future XM weather accessory. Timing and pricing for that is not yet available, but the unit you buy now will be able to support XM weather in the future.

OK, so what is my bottom line on the iFly 700 GPS? I really like it. The two things that impressed me most were its ease of use and the fact that it uses real FAA sectionals. That alone is a great feature as far as I am concerned. And as I mentioned above, for only $69 per year, you can always keep them current with unlimited data and software updates. As a comparison, at today's current sectional price (plus tax) you pay about $10 for each sectional. For me, when I fly to Oshkosh and to Sun-N-Fun, I have to buy five new sectionals for each trip in order to insure I have current information. Those two trips cost me about $100 in paper sectionals. For the $69 annual fee, I will always have every sectional immediately available on the iFly 700.

That Garmin Aera 500 that you see on the photos in this article cost me $799 when I bought it just before Christmas 2009 – a present to myself. I just wish I had known at that time that the iFly 700 was going to be available in January 2010. I could have saved myself $300 and had a much larger screen and always current Sectional charts. Yes, the iFly 700 GPS by Adventure Pilot is only $499. I want one.

That's an easy decision.
Adventure Pilot, LLC
www.iFlyGPS.com

News from the Factory

The first input in the News from the Factory section is a new Service Bulletin for the Lightning LS-1 SLSA aircraft. However, all EAB Lightning owners and builders need to read and comply with this LS-1 Service Bulletin as there is the possibility that it could develop into a potential safety of flight issue if not corrected. Due to the nature of EAB rules, this Service Bulletin letter cannot be made mandatory to EAB aircraft, however it is "STRONGLY"

recommended that builders/owners of experimental Lightnings accomplish this Service Bulletin as well.

1. Applicability: This Service bulletin applies to all Lightning LS-1 aircraft manufactured by Arion Aircraft, LLC. It also is strongly recommended to builders and owners of EAB Lightning's as well.

2. Background: Attached are 2 photos. These pictures are taken of the lower control sticks output arms. Specifically, the photos are of the joint where the rod-end bearings from the long aileron pushrods and the mixer rod between the two sticks attach to each stick. We have noticed that in some aircraft the geometry of the lower stick attach location for the push rods will cause the rod-end bearings themselves to bind and not swivel when at full travel. This does not affect controllability of the aircraft, but will cause the push-pull tubes to rotate instead of the rod-end bearing. This then may cause the jam nut to back off. The jam-nut becoming loose and backing off is the issue, not any type of control system lock up or binding.

This potential situation is most apparent in the full aft stick (or full up elevator) position of the stick. The rod-ends themselves are designed to swivel about 12 degrees, but with them bolted to the output arm directly, and with large area washers right next to them to hold the assembly together should the bearing itself fail, this limits the rod-end to only being able to swivel a few degrees. Thus the push pull rod will then turn and possibly loosen the jam nut.

3. Compliance with - Implementation Schedule: An inspection must be made before the next flight. If the aircraft does not exhibit the problem explained above than no other action is needed. If, however, the problem exist than compliance with section 4 is required. Notification to Arion Aircraft, LLC before beginning the service is required for the SLSA Lightning LS-1.

Note: It is recommended that after the service has been performed a periodic inspection of all rod-ends and jam-nuts be done at annuals.

4. Procedure: To remedy the issue it will be necessary to use a longer bolt, AN4-16A, to accommodate the two push pull rod end bearings and the washer arrangement shown in the photos. By adding two AN960-4 washers (AN4 standard washers) between the rod-end and the output arm, the rod end ball is allowed to move its full range. Also, you must always use a washer larger enough to capture the rod-end in the event of a bearing race failure (as mentioned above); so, in this case, also use a washer between the large area and the rod-end to allow the ball full range on the other side. Note that the front push rod is attached in the same fashion.

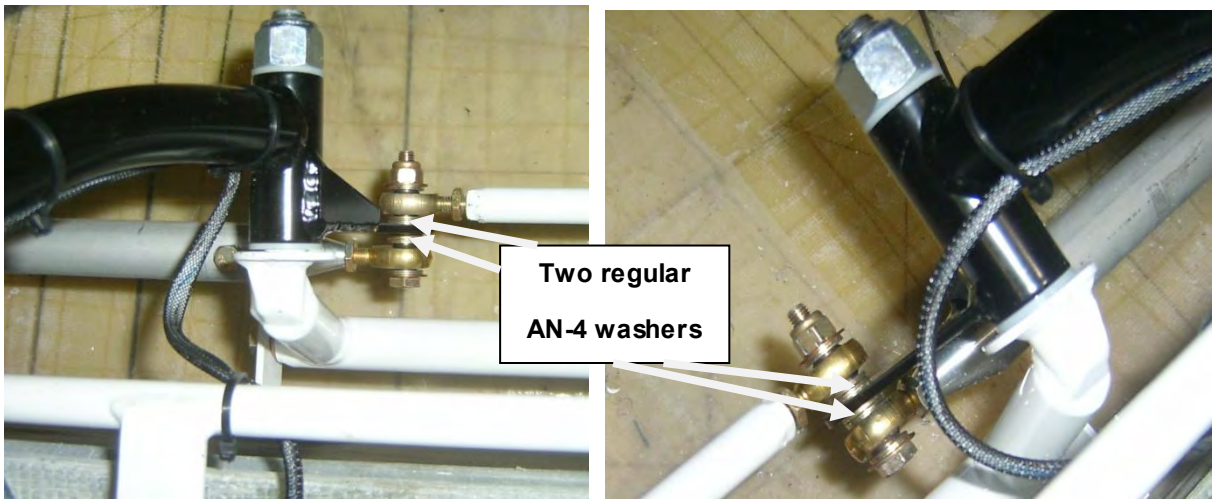
a. Remove the AN4 bolt that is currently installed using 7/16" wrenches. Make note that the pushrods are connected to the lower hole in the control stick's output arm.
b. Install the AN4-16A bolt and associated hardware in the following order; AN4-16A bolt, AN970-4 large washer, AN960-4 washer, push rod end, 2 of the AN960-4 washers, stick output arm, 2 of the AN960-4 washers, stick mixer rod, 1 AN960-4 washer, 1 AN970-4 large washer, AN365-428 elastic stop nut.
c. Complete the above for the opposite stick assembly as well.

If this does not remove the rod end binding, then it may be necessary to also put 2 washers between the rod-end and bell-crank at the aileron as well.

Once finished, check for binding by moving the stick to all "4 corners" of stick travel and wiggle the tube by hand while doing so to check for freedom of movement.

5. Level of certification required for SLSA Lightning LS-1: Any work called for by this letter must be carried out by personnel holding a Light Sport Repairman / Maintenance rating or a licensed A&P mechanic. On completion of the work, the authorized repairman must note the completion of the actions required by this letter in the aircraft's maintenance logbook. This note should specify what work was

carried out, reference this notification, indicate the date of the work and the identity (including license number where appropriate) of the person carrying out the work.



Note that there are two regular AN-4 washers on the inside of the rod end bearings next to the stick lower push pull tube attach point. Then on the outsides of the rod end bearings, there is one regular AN-4 washer and one large area washer.

Information in this Service Bulletin provided by Nick Otterback.

Next, Mark Stauffer, Arion's Production Manager, sent me the following information.

Ed Ryan's LS-1, N346BR, received its initial inspection on Friday evening, 19 March, with DAR Gary Meuer once again doing the honors and presenting the special airworthiness certificate. This certificate will allow Arion to perform production flight testing which should be accomplished during the week of 22 March. After those flight tests are completed the airplane will be inspected again by Gary and he will issue the airworthiness certificate for Special Light Sport Aircraft.

N346BR is outfitted with a GRT Dual Sport SX EFIS system with the new synthetic vision, GRT EIS, SL-30, GTX 327, PM 1000II, and Tru Trak DigiFlight IIG autopilot. This plane will be at Sun-N-Fun and Ed Ryan, its new owner, will take her home after the show.

Look for Bravo Romeo at Sun-N-Fun.

Mark also reported that by the end of March they will have delivered a total of 92 airframes, and as soon as Ed"s LS-1 flies, there will be 51 flying – that will mean a 55% completion rate for the Lightning. Super! But they are not resting on their laurels; Mark mentioned that "Moostang Mike" is going up to Wisconsin to pick up two more kits next Monday. One will be for Ken Wilson and the other will be their new 2010 LS-1 Demo that they will start building Wednesday of next week.

Construction photos of Philip Beeson"s LS-1, N897PR.

Thanks for the inputs, Mark.

Several issues ago we announced that Nick had officially retired the Prototype Lightning, N233AL. Nick had completed all the planned tests and evaluations that he needed in the development and operational program for the Lightning and instead of continuing to pay extremely high insurance cost on a prototype experimental (could only be flown single seat due to insurance regulations) he chose to retire N233AL. I fully expect that, based on the success of the Lightning design to date and continued future sales, at some time in the future N233AL will eventually find itself in some aviation museum. Until then, it is partially disassembled and resting in the Arion Lightning hangar as shown in the photos below. Pete sent me these photos about a week ago, and as you can see, N233AL is in a strategic place to "look over" all that goes on in its hangar.

She still looks beautiful in her current resting place. I feel extreemely fortunate to have been able to fly N233AL on many many flights and numerous hours over a period of about four years. My last flights in the prototype were when I was doing all the various spin tests for ASTM certification

for the Light Sport Lightning. As far as I know, Nick and I are still the only people to fly N233AL. Nick, you sure designed a great airplane. My hat is off to Pete, Ben and Nick for making their Lightning dream a reality and for continuing to help other EAAers realize their dream of building an airplane. Great job, guys. Keep it up.

The photo below, taken in mid March, shows some other Lightnings and even Mark's Zenith Zodiac 601XL, the "Canzer". That affectionate nick name came from Nick; so that makes it a Nick nickname. He says it flies like a tank (Panzer) compared to the Lightning and since it is made of tin, it became the Canzer. And now you know the rest of the story.

The two Lightnings are John Krizman's in the foreground on the left and Jim Johannes' in the center rear location. Both are currently undergoing phase one EAB flight testing. Looking great.

The other current activity at the Lightning factory in Shelbyville, other than their normal daily busy activity, has to do with getting ready for the upcoming Sun-N-Fun in Lakeland, Florida. Opening

day for Sun-N-Fun this year is Tuesday, 13 April. Lightning forums are scheduled for Tuesday and Friday (13 and 16 April) at 1300 in Forums tent # 11. The annual Lightning get together for anyone interested in the Lightning and in meeting builders and flyers will be at the Lightning booth on Friday, 16 April, probably at 1100. After the informal meeting at the booth, everyone can go with Nick to the Lightning forum in Forums tent #11 at 1PM.

Hopefully, many of you will be able to attend this year's Sun-N-Fun. With the winter we have had in Virginia, I certainly am ready for some warm Florida sun. So start planning your trip now; you will be glad you did.

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, 847-414-5928, ww.moonshineaviation.com

News from the Dealers

From Lightning Australia

Hi BUZ,
Just a short note at this time. We have 2 aircraft almost finished in our build program, upholstery finished & avionics being installed. Our 3 new kits are still on the water somewhere between USA & AUSTRALIA. Hopefully they should be here in approx. 2-3 weeks. We are waiting for Arion to forward all paperwork to

Recreational Aviation Australia to get their approval & acceptance of the LSA into Australia which would be super. Great newsletter again; on page 17 there is a photo of a tool called a canopy breaker. I have never seen or heard of this item. Can you tell me if it works OK & where it is available from? When I have some more news I will let you know. Keep warm old son, it sure as hell looks cold in your corner.

Best Regards, Dennis

My answer back to Dennis

Hi Dennis,

The canopy breaker tool photo you mentioned from the newsletter was sent in by Tex Mantell. Tex found the tool at the Sebring show and paid $29.95. Actually the tool is available from several aviation sales sites, at various prices. For example, Aircraft Spruce has the same one that Tex found and it is available from their online store at:
http://www.aircraftspruce.com/catalog/pspages/canopybreaker.php

A photo of the tool from their web site is to the right.

Blue Skies,
Buz

From Lightning West

Dear Buz,

Greg and I sold the Esqual, "The Dove of the Desert". It has been for sale but not listed for 3 years. Greg was taking adoption applications rather than trying hard to sell it. Thanks to the engine school in Phoenix, he found the right home. It will only be a few hundred miles away so hopefully visiting often (it was an open adoption). The couple has no children so we know it will be loved and cared for. Greg flew it about an hour a year after the annuals. This plane was ready to show her stuff when she flew out of our strip. Anxious to start new adventures with her excited new owners, we waved goodbye for now.

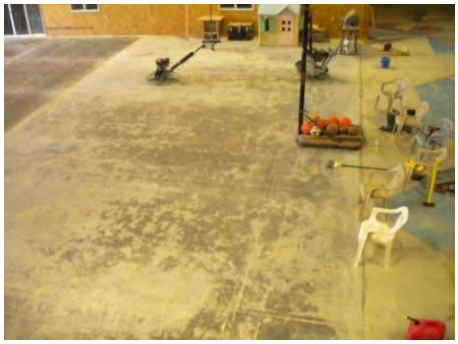
This last month we completed work on a shop bathroom and avionics room. Now, thanks to the sale, we are pouring over 50 yards of concrete for our indoor basketball, showroom, volleyball court area. This will also include some approach areas. Greg does the work himself, so the 4 pours are every other day with the help of his brother Dan, Cousin Steve (he winters here with his wife Glenda), and of course, Johnny Thompson, our first builder and now lifelong friend. By the way you don't judge friendship by who will drive you to the airport. You know you have a true friend when they help you pour and finish concrete. Thanks Johnny!

The weather here is a sunny 70 degrees. We have had enough rain to make the desert green and lush without washing away the airstrip. A new kit was sold to a gentleman in Nevada that will begin his project after Sun and Fun. Ralph Marsh will be arriving to complete his final inspection the first of this month. We complete our annual Casa Grande Airshow the first of March. Many are interested and coming to check us out. We sent many of these snowbirds to other Lightning dealers in their areas. They will be coming to see you when they return.
Thanks for all you do.
Crystal Hobbs
Lightning West

A request to Crystal for some photos resulted in the following:

Here are pictures you requested. The floor under construction will be done by the date of the newsletter. The big joke is Crystal finally gets a floor in her house. The approaches outside will be much longer than shown to allow the cutting and sanding to be accomplished outside and also those crazy run ups inside my building that scare me to death! I imagine runaway airplanes with spinning props chewing up everything in their path. That must be a "woman" thing! Now it can occur outside in the desert setting with birds singing, sunshine, and a more peaceful atmosphere. I know my life expectancy will increase 5 years. Crystal

Next is the interior shot with the entrance into our living area. Now not fighting the dirt that would be tracked into my house. I should have hours more a week when not shoveling dirt, time is more enjoyable.



This is a picture of Ralph Marsh's airplane. There will be more pictures after the first flight. He has dark paint on the entire bottom of the airplane so it will show up in the blue skies of Seattle, Washington. Inspection will occur in the next few weeks.

This is Ralph's panel. Greg's cousin, Steve, did the panel and wiring in our new avionics room. Of course he had to help build the room before he could do the panel.

Crystal Hobbs, Lightning West

From Lightning Northeast

Hi Buz,

I wish I had some exciting news, but I'm still doing battle with the Registration branch of the FAA at Oklahoma City. Maybe when the dust settles and I actually understand all that has transpired, I can write about what not to do if you're planning on building an ELSA. I am hoping to have all the issues resolved in time to fly off the required phase one tests and bring it to Sun-N-Fun.

A quick update on my Lightning; N81DJ is ready to fly. All I need is to attach the data plate, turn on the ELT, and place that elusive document from Oklahoma City in the clear plastic pocket in the interior of the plane. Here are a few pictures of it.

Dave Jalanti, Jabiru Power Solutions, LLC

Great photos, Dave.

From Lightning Florida

Hi Buz!

Just stopped by the paint shop - see the picture attached. The Moonshine Lightning is presently very.. well.. White. Few things to finish up, but we are mostly on the track.

Flew from WDR to DED in a Tomahawk this morning. Can't wait for those 40 hrs in a faster airplane. All the best!

Max

Now that really is a "White Lightning"; therefore, it's "Moonshine".
Good job, "Moonshine" Max.

For You Other Lightning Dealers

I can't print your news if you don't send me any news. Remember this is your newsletter too, so use it to get the word out on what is going on at your Lightning dealership. Lots of future and potential Lightning buyers read the newsletter and this is inexpensive advertising for you. So put down those golf clubs and tennis rackets, take off those snow skis, grab a beer while you sit down at your computer and send me something to report – "Toot your own horn, so to speak".

News from Builders and Flyers

The first "flyer's news" comes from Tom Herbert who keeps his new Lightning at Titusville, Florida. Tom bought the very first Lightning LS-1, N325AL, and is now enjoying flying this beautiful airplane. I flew many of the ASTM certification test flights in this aircraft and I can attest to what a great airplane it is.

Greetings from TIX:
Glad I finally got through. Since taking delivery of N325AL last month, from the capable hands of the other Nick, Al Voss (my CFI) and I have been shooting a lot of landings, and I have been doing a lot of polishing. Little Pat (name of the plane and that of my wife for 52 years) shines like a diamond and races like a Mustang. Since I lost my wife to ALS a couple years back, life generally sucked. Then I came across the LS-1 from Arion, and it has brought me back. My CFI (who owns an RV8) enjoys the plane and is hell-bent to teach me to fly it like it was made to be flown.

I first soloed in an Aeronca Champ, back in 1954, and have held a Private license since. Fifty years of family and career kept me grounded, but when I was alone again and with time on my hands, the bug crept back in. Al checked me out in a 172 last year and it was solo time again! I went back to Ohio for the summer but returned in December, let my medical expire in January, and started getting a serious LSA itch. I had studied all of the LSA I could find, but when I looked at the stats on the Jabiru 3300, the decision was easy. Putting that engine in the LS-1 was pure genius. It makes the little plane just leap into the air, and the fuel economy is stunning. After an hour of shooting full stop landings, we dipped the tanks…..3.1 Gallons were used. Now that's ridiculous.

Since I'm 82 and was out of flying for so long, the insurance company wants me to get 10 hours of dual and 20 full stop landings before solo coverage in the Lightning. No problem. Al and I get along so well, and both enjoy the airplane so much, we may just keep flying it together forever.
Fly safe,
Tom Herbert

Next, Ray Gage from Spruce Creek, Florida, checks in.

Buz:
I agree, the time and effort that you invest in our newsletter is an asset to the entire group. I am having gear fairings installed on my Esqual-Lightning, which should be accomplished in about three weeks. I will send some updated photos, the results of our annual 100nm Spruce Creek race, and some other items. One of my best friends and neighbors (two taxiways away) has purchased a factory Lightning; so that will give us three Lightnings here at the Creek. Since more and more of us are aging, there will be additional Light Sport pilots. We are all ex-airshow pilots, so we plan to form a 3-5 plane demo team here. There are around 600 planes stationed here, and the Lightning seems to be the preferred plane. A German Company is also building a Light Sport factory here called "MySky". I allowed their test pilot to fly my plane, and he came back with about 6-7 changes for them to re-engineer their design.
Thanks again for all of your hard work.
Ray Gage
(386)304-6808

Next is the latest from our British "contributing editor", Clive James.

Hi Buz,
Checkout this guy in the photos; it's an old carving on a hill in South England. Apparently women sit on a "strategic spot" to help with fertility issues. We managed a couple of nights away in the Jab when a high pressure came in. Esqual LS cowlings are with the paint shop at last. I am just fitting the heater box.
Regards,

Clive + Shirley



I wonder if Clive had Shirley sit on that "strategic spot".

Reader Feedback

In the opening section of this issue, I mentioned that Denis B., from Iowa, had taken on the task of writing an index of all the past Lightning Newsletters for us. I am sure this will be a tremendous help for readers in the future when they want to look up information on some subject that has been covered in the past. The index will be published on the three Lightning websites that currently post each newsletter issue.

We all owe Denis a great thank you for his very time consuming work. He is a member of the Lightning Matronics email list, so send him a note of thanks. If you want to contact him directly, write him at: denisbflying@yahoo.com

When I asked Dennis to provide some information about himself, he sent the following message. His words on how he became interested in the Lightning and choosing an airplane based on mission requirements are "spot on". He captured the true philosophy about Arion Aircraft when he said that they were, "people who enjoy many facets of aviation first, and an airplane that was derived from that." I think you will get a great feeling about Denis and the type of aviation enthusiast he is by reading his inspirational words.

Glad to help. Compared to all you do, it's a trifle; I'd be happy to maintain the index. I'm completely open to suggestions on distribution, but putting it up as a file on the Lightning site alongside the newsletters sounds like the best idea. I'll probably continue to update it every time a newsletter gets published, but I'll leave it to the Arion gang as to how often they upload it. You could include it in the newsletter if you'd like -- though the whole index might be a bit long. Perhaps each December issue from here on out could have the index for the prior 11 months?

Nick and Mark might remember me, since I bug them about the website and build manuals now and then, and I harassed them a bunch at Sun-N-Fun and Oshkosh last year; Nick took me on a demo ride out of Brennand the day before AirVenture. I actually spoke with you really briefly at Sun-N-Fun '09, asking about the Lightning's spin characteristics. I'm not a builder/owner yet, but I'm very close.

I'm more of an avoid-the-spotlight, lurk-in-the-shadows, anonymous-benefactor kind of guy, but here we go.

Denis B
Central Iowa
EAA Lifetime Member
Got my PP-ASEL in high school flying 152s and 172s. After quite a few years off, I'm getting back into flying again operating under Light Sport rules. LSAs for rent (and instructors that cater to/understand Light Sport pilots) have been tough to find around here, but I discovered a CFI with a Champ nearby that I should be working with this year once his grass strip dries out. Returning to currency (and getting my tailwheel endorsement as a bonus) is the next stepping stone.

What do I think of the Lightning? I love it. Why? Long story.

When I was young, a family friend knew I had the flying bug, so they would give me their EAA Sport Aviation magazines. This was right around the time of the Star-Lite (which became the Pulsar), the Lancer 200 (which became the Lancair), and the Stoddard-Hamilton Glasair I. They were beyond me at the time, but the images became ingrained, I guess. Went to school, worked with composites, wood/tube/fabric and aluminum construction while getting my A&P... and never really used my ticket once I got it. When the flying itch came back in late 2007, Light Sport was gaining momentum, but with few local LSA options (and sporadic dual in a 172 being unsatisfying) building my own made the most sense. There's a wide array of aircraft to choose from now, and information is readily available online.

Sonex was my first pick out of the gate: inexpensive, fast, quick to build and the Jabiru meshed with my idea of what an aircraft engine should be. I was within days of making a down-payment when I actually sat in one and couldn't imagine long flights in it. The search opened up again, and I cast a wide net.

I explored a lot of options, including:
Zenith 601
Zenith 701/750
Skykits Savannah
Kitfox (EuroFox/Aerotrek/ApolloFox/Avid Flyer...)
Rans S-6, S-7, S-19
Vans RV-12
Thatcher CX4
Titan Tornado
Hatz Bantam
Murphy Rebel
Pulsar
Personal Cruiser
Sport Cruiser
Mermaid
SeaRey
Cub/Champ/Luscombe/other Standard-category LSA-compliant
Flight Design CT

In researching so many aircraft, I got a really good idea of what I didn't want, just as much as I figured out what I did want. Had you asked me up-front what my "mission" was, I wouldn't have had a clue much beyond, "to fly." Looking around - online and at fly-ins - helped me understand what was important to me. The Lightning reminded me of those first composite kits, and turned out to be the best fit for my mission. The Arion team and community were fantastic; seeing how they communicated and how they were using their airplanes was incredibly valuable. The availability of the test info was very reassuring, and the depth of experience and insights were encouraging. In meeting Nick, Mark, Tom and Buz (and after getting a demo ride from Nick) - the enthusiasm, fun, openness and camaraderie between them (employees, dealers, and non-employees alike) represented to me what Arion is: people who enjoy many facets of aviation first, and an airplane that was derived from that. Their approach and creative inputs resulted in the design that aligned with my list of important features and struck a chord with me. Recent articles seem to validate that impression.

There is no "perfect" plane... and none of the planes I decided against were "bad" - but they weren't what I was looking for. The Lightning has many positives for me: speed to the LSA limit, good range, push-pull tubes, decent usable load, enough room, comparatively short takeoff/landing roll, designed and proven strength and the Jabiru engine. It can be built as an LSA-compliant EAB, comes fairly complete but with sufficient and appropriate options, has the build manuals available online for free preview, has several flying, boasts a solid completion rate and looks good. It flies well - predictable, solid, balanced, harmonious, stable but maneuverable - and is set up in a simple, conventional and logical fashion (fuel in the wings, toe brakes, dual sticks). It was slightly more expensive than some of the other kits I looked at (which, unfortunately, requires me to delay my purchase)... but to me, it was the best overall value and could cover 95% of the flying I want to do at this point.

Someday, if there's to be a second build in the future, I may go back and explore other missions - so I may be asking Pete for a firewall-forward package for, say, a Savannah on floats at some point - but first things first.

Takeaways:
1. Your mission is (probably) unique to you
2. The "perfect" plane for your mission may not exist
3. If you're not sure of your mission, look at several options to see what resonates and what doesn't
4. If at all possible, try before you buy

5. Small companies' personalities are closely tied to the people involved with them
6. Share your old magazines - you may plant a seed

Denis

As I mentioned above, I get a great feeling about Denis by reading what he wrote; a true aviation enthusiast. We owe him a big thank you for his work on the Lightning Newsletter index. And he certainly has the right plan for preparing himself to enjoy sport flying for the future. I can think of no better or enjoyable flight training than checking out in a Champ (or Cub) on a grass field. Keep up the great work, Denis.

Next, another Lightning newsletter reader, email list participant, and Esqual owner checks in.

Hi,

This is Jay Schmitt in Tijeras, New Mexico. I own Esqual N117DA. My seat is out right now and my center section is beautiful. This is a 2004 completion. I haven't had any trouble with my rudder pedals either. I just put on the 6 ply tires, and new brakes. I'll report on my gear shimmy soon. Good luck and clear skies to all. I hope to fly over to see Greg Hobbs in the next month or two. I love his canopy lock; I plan to copy it.

Thank you, Dave and Clive and all. All information is appreciated, especially safety issues!! We Esqual owners are lucky to have the Lightning group as a resource, research and development, and builder group. It is to everyone's benefit to have so much interest in these wonderful airplanes. I appreciate all of you as I continually try to improve the safety of my aircraft.

Thank you Buzz! I have really enjoyed the newsletter as I have learned so much. I'm ordering the manual lean valve for the Bing carby and I'm making other changes suggested by you as well. There won't be a single Esqual that isn't "LS" Lightning Stuff. You have contributed to the safety of all Esqual owners and probably saved lives as well. I'm so very pleased that the Lightning organization is so progressive. Oh yes, I'll try to get a picture of N117DA to you.

Jay - Esqual 117DA

Jay's Esqual, N117DA. Beautiful airplane.

Upcoming Events

Sun-N-Fun, Lakeland, Florida, 13-18 April, 2010

Lightning forums are Tuesday and Friday (13 and 16 April) at 1300 in Forums tent # 11.

The annual Lightning get together at the Lightning booth will be Friday, 16 April at 1100 or 1130 – TBD.

Virginia Regional Festival of Flight, Suffolk Executive Airport, 22-23 May, 2010

Sentimental Journey, Annual Cubs return to Lock Haven, PA, 16-19 June, 2010

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

4th Annual Lightning Homecoming and Fly-In, Shelbyville, ?? September 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

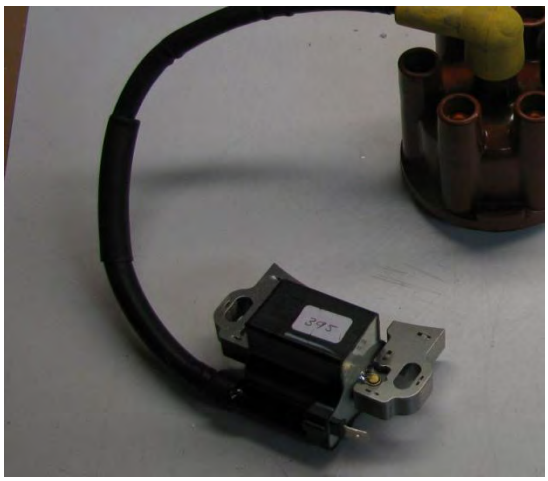
The Jabiru Engine Ignition System by Pete Krotje

Jabiru uses a rather unique ignition system for their aircraft engines. Most competing experimental or LSA aircraft use a CDI or Capacitor Discharge Ignition system. Jabiru uses a modern version of a magneto instead.

In the CDI system there must be some electrical power from some source to charge the capacitor. From that point it is a very simple process to trigger the capacitor to discharge and deliver a charge (spark) to the spark plug. The electrical source to charge the capacitor usually comes from the aircraft battery or from the aircraft electrical charging system. This system is very economical to produce and install and is generally reliable as long as the outside source of electricity is supplied.

The Jabiru system uses a true magneto. Magnetos generate a charge when a magnet is moved across a coil. This excites the coil and a charge is produced. Generators and alternators work on the same principle of moving a magnet across a coil (or moving a coil around a magnet).

In the Jabiru engine the magnets are located on the flywheel. Jabiru uses powerful rare earth magnets attached to the flywheel in groups of three. There are two groups in the 2200 engine and three groups in the 3300 engine.



The coil is mounted on the back of the engine and positioned close to the flywheel. It is a round shaped plastic module with layered metal sheaves protruding from it. The metal sheaves serve as the coil in the magnet moving past the coil scenario. Inside the round plastic module is solid state circuitry which condenses the charge produced and converts it to a useable ignition charge.

The charge is then delivered to an automotive type distributor and from there to the spark plugs where the charge becomes the spark that ignites the fuel charge when it jumps the spark plug gap.

To jump the gap in the spark plug the charge must have a certain strength to overcome the resistance of the air gap. The strength of the charge produced by the ignition module is dependent on three factors: the strength of the magnets, the speed that the magnets pass the coils and the proximity of the magnets to the coils.

The power of the magnets in the Jabiru system is fixed. Jabiru uses some of the most powerful magnets available in the size necessary.

The remaining two factors are a bit under the operator's control, though. To insure that a strong spark is produced operators must make sure that the coil is close to the magnets. The proper distance is .010 to .012 inches. This distance is especially important during engine start. If the gap is .016 or larger the spark will be significantly weaker.

The speed that the magnets pass the coil is not an issue once the engine has started. There is plenty of speed then. It is again at starting that the speed is crucial. 300 rpms at starting is the minimum required. Weak batteries may struggle to provide enough power to turn the engine over at that speed. Attaching the engine ground to one of the long bolts on the starter will help the starter turn more rpms and make starting easier.

Finally, the distributor cap, rotor, spark plug wires and spark plugs are the remaining components of the system. These are considered "consumable" items and should be replaced on a regular basis. We suggest every two to three years or 200 hours for the caps and rotors. Spark plugs are usually a 100 hour replacement item but if the plane is flown regularly plugs may last a good bit longer. Wires are replaced "on condition" meaning that if they are not causing an ignition miss they can remain in service.

To sum up – the ignition system will function well if the gap is right, the starter turns the engine over fast enough and the components downstream of the magneto module are maintained in good shape.

Technical Tips

Pete Krotje, Mr. Jabiru USA, replied to a recent email question on the Lightning Matronics list about condition and/or annual inspection requirements. Pete's email is below:

Don't forget that when you sign off an annual condition inspection you are affirming that you have inspected the aircraft "in accordance to the scope and detail of CFR14 section 43 appendix D". Since you are attesting that you've inspected according to Appendix D it would not hurt to take a look at it to make sure you are in compliance.

Appendix D can be found on line at the FAA.gov web site: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=9d5c15a45fd84776a463e6ae9f3932fa&rgn=div9&view=text&node=14:1.0.1.3.21.0.363.14.55&idno=14

Ever wondered why you need to do a compression check at the annual condition inspection? Look at paragraph (d) sub paragraph (3) in the appendix for the answer.

Pete

Since Pete mentioned compression checks above, here is part of a tech tip we had in the July 2009 issue of the Lightning Newsletter.

Engine cylinder compressions checked on a regular basis and compared to previous readings can help you determine the health of your engine as well as sometimes give an early indication of an engine problem. A differential compression tester as shown makes it easy to do the compression checks.

Compression checks on a regular basis for your Jabiru engine is also a good way to monitor the health of your engine's cylinders and you can use the same compression tester that you used for your Lycoming or Continental. However, the adapter that screws into the spark plug hole for those US engines will not fit your Jabiru spark plug hole. You will need an adapter with the same threads as the NGK plugs that the Jabiru engine uses, and that requires one with 12 MM threads. I was able to order an adapter at a local auto parts store. Then all you have to do is add the quick release male coupler plug (¼ " NPT) that fits your compression tester and you are in business. See the photo below.

Spark plug hole adapter w/ 12 MM threads

Some mechanics do the compression test on a cold engine and some prefer to do the test on a warm engine. I have done both, but if I test a cold engine, I think you can probably add a pound or two to your compression readings.

You might be wondering, what compression readings represent a healthy Jabiru engine? Although the engine manual indicated that above 60 over 80 is OK, I would suggest you might want to investigate anything less than 70 to see if there is any obvious problem. Perhaps the first thing would be to fly the airplane again and then accomplish another compression check. If it is still below 70, can you hear any air escaping from the cylinder? If that air is coming from the exhaust, you have an exhaust valve leak. If it sounds like the leaking air is coming from the intake system, you probably have an intake valve leak. And if the sound is from the crankcase vent, then you probably have air leaking around the piston rings. Of course, call the experts at Jabiru USA to get their expert advice.

And finally, here is one more tech tip; perhaps the most basic of all technical tips to remember when working on your airplane or car. If you can't fix it with a hammer, it's an electrical problem.

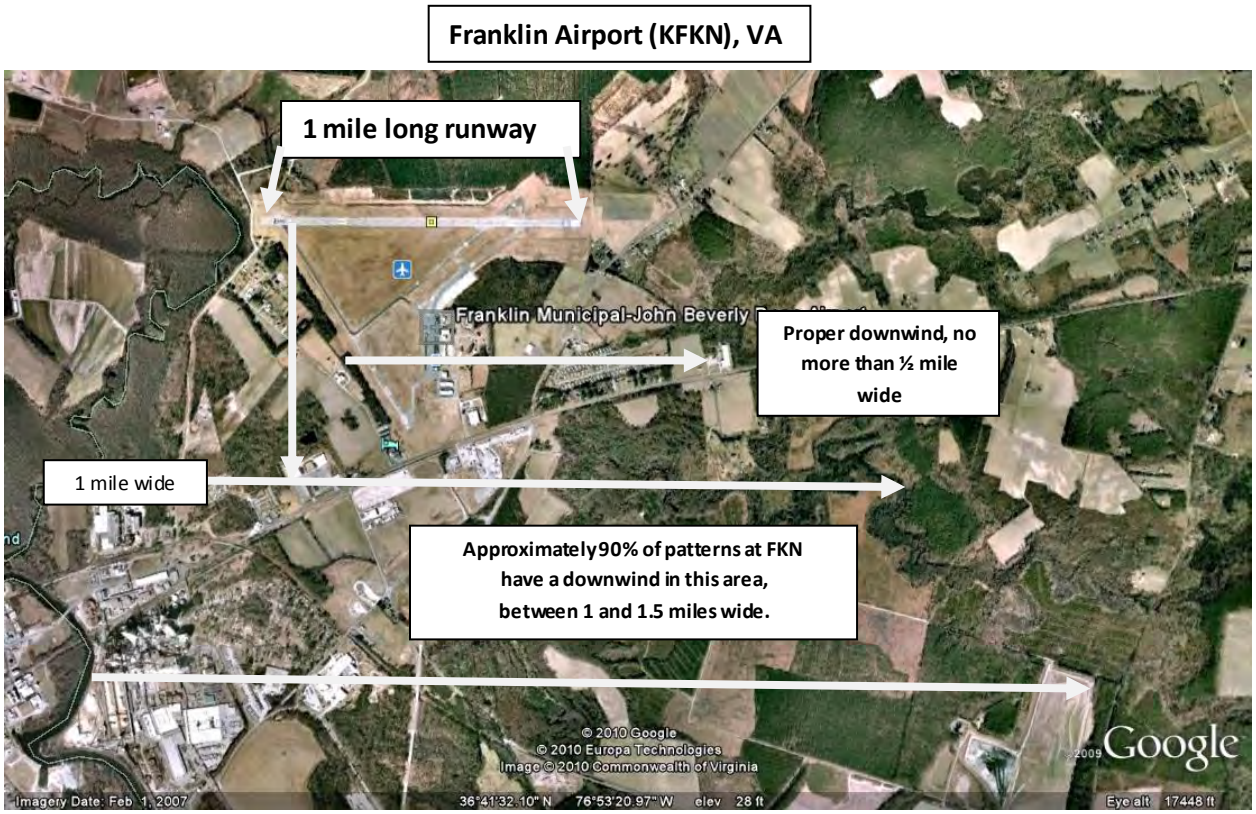
Flight Safety Tips

More on Big Patterns by Linda Mathias

I don't want to beat a dead horse but I want to offer my perspective of the traffic patterns Buz referred to in the January 2010 newsletter's safety article. I agree with him 100% about the huge patterns flown at most airports. I was conducting a private pilot practical test recently at a local airport; it so happened that this was a day when a local university's students were taking flight instruction (they all come together in a van from the school to fly at the same time). The pattern was filled with Cessnas making touch and go

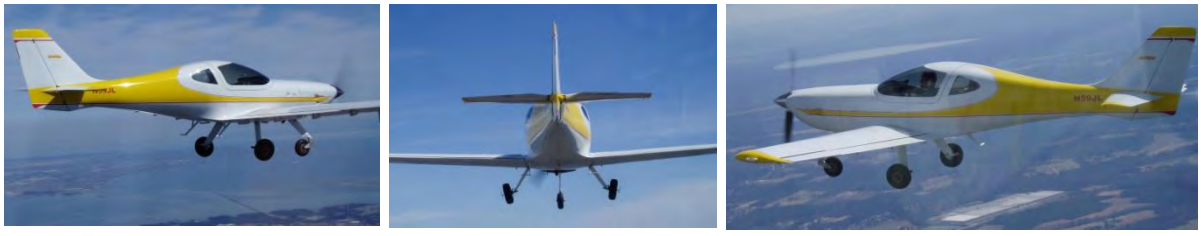
landings so we had to wait a while to depart; I commented to the applicant that every one of them was flying a very long final approach. The student said "Well, that's the way they teach us." He was obviously correct because every airplane had a different instructor in it and they all flew the same pattern. I have noticed this trend at other flight schools and at most airports; I have discussed the problem with the Chief Flight Instructors at more than one flight school but never see any real change. If you were taught the same "super-sized" final approach, I recommend that you make a conscious effort to shorten that leg; if you turn base when your selected touchdown point is at a 45-degree angle looking back over your shoulder (or even earlier with a stiff wind down the runway), you should be making a reasonable pattern. Not only will that keep you at a safe distance to make the runway if the engine quits but the pilots who follow you in the pattern will also be in a better position in case their engine gives up the ghost.

Below is an aerial photo of Franklin, Virginia, airport with notes on downwind locations.



As you can see, a wide downwind will result in a really long final when you look back at a 45-degree angle to start your base leg. So start your pattern with a downwind leg that is no more than ½ mile wide, judging that based on runway length. Anything wider will result in the long final. Either situation will make it impossible to make the runway if you have an engine failure.

Thanks to Linda for the Flying Safety article for this month. Linda built her Lightning, N59JL, kit #20 and it has been flying for about three years. Linda is a FAA-designated pilot examiner for airplanes and gliders. Below are some recent photos of Linda in 59JL.



Linda currently has the wheel pants off of Juliet Lima as she is preparting to install a set of new Sam James wheel pants. Jim Goad has installed these slightly narrower and more streamlined pants on his Lightning and they have been mentioned in several past newsletter issues.

This photo shows Linda in "taxi formation" with a local B-25.

Lightning Skunk Works

Not too long ago I was in an Officer's Club bar at a base in North Carolina talking with a group of active duty senior officers from various Air Force commands and a few "other special government agents". It was after duty hours, so we were having a few "brewskis" and not discussng any official business. Since almost all of us were pilots, of course the talk eventually turned to flying and airplanes. Being a big fan of the Arion Lightning, an airplane that all of us that read this newsletter love, I just had to tell them what a beautiful and great flying airplane it is. Also being a bit of a braggart I also had to tell them that actually the Lightning was a world record holder, having set a class speed record from Savannah to San Diego. I went on to tell a shortened version of how Earl Ferguson had built his Lightning from a kit, and then went through the steps of planning and then, after several aborted attempts, actually setting a new world's record.

For those of you that are somewhat new to the "Lightning Club" and maybe don't know Earl, let me provide a short recap about Earl and the world record he accomplished in his Lightning, N17EF. Earl's story is impressive – one of

initiative, strength of character, and dedication to "the mission". At age 70+, most pilots are willing to just play golf, tennis or bridge for excitement. Earl Ferguson is a little different. He is definitely a "get 'er done" kind of guy as well as being a double cancer survivor.

Taking off from Savannah on August 6, he made stops in Quitman, MS; Athens, Midland, and El Paso, TX; Tempe, AZ (where he spent the night since he was flying as a sport pilot and could not fly at night), and, finally landing in San Diego, CA on August 7, 2007.

The National Aeronautic Association approved Earl's flight as a national record and forwarded the record to the Federation Aeronautique Internationale (FAI), who then awarded a world record to Earl for Speed Over A Recognized Course: 107.27 kmh in Class C-I.b, Group I, from Savannah, GA to San Diego, CA. Class C-I.b is for landplanes weighing less than 1000 kg. This record represents the fastest speed of any piston engine landplane weighing between 1,102 and 2,205 pounds between Savannah and San Diego. As a retired Navy aviator and Sport Aviation pilot, Earl's story is an inspiration to all of us. "Sierra Hotel", Earl.

Now back to that O Club bar conversation. Basically I recounted Earl's story to the assembled group of Air Force aviators and they were all very impressed – just the reaction that I was looking for. But what happened next completely surprised me. When I mentioned that Earl was a retired Navy pilot the group of distinguished Air Force pilots immediately got pretty "offended" that a retired Navy pilot had a world record in the Lightning – they insisted that a retired Air Force pilot should have that honor. At that point their questions to me were fast and furious as to how they could help re-capture that record so that it could be rightfully owned by an Air Force type. Soon the group had come up with an ingenious plan that would not only beat Earl's record, but completely shatter it. Because their plan might have some "really high level" approval problems, they all swore complete secrecy as to how we were going to set the new world record. The top secret operational plan they came up with was code named "BEWORN", which stands for Beat Earl's World Record Now. BEWORN was put into immediate action.

A donor Lightning aircraft was soon acquired and the required modifications to the airframe were quickly completed and operational test and evaluation flights were planned and successfully flown. I really had a great time flying the modified Lightning and honing some skills that I had not used since my last flights in the F-4 Phantom II.

However, as you all know, keeping things secret is sometimes difficult, especially something as large as secret aircraft operations. Well, to make a long story at little shorter, during a recent operational test flight of the new modified Lightning, an escorting aircraft with a hired photographer in the back seat, took several photos of the test Lightning and at least one was "accidentally" leaked to the local media. I say accidentally because I believe that maybe the hired photographer that leaked the photo might have had some connection to the Navy many years ago. That was unfortunate, and explaining it to some of the "higher USAF brass" has so far delayed Operation "BEWORN" from being put into action. We hope to get approval to finally fly a non-stop coast to coast "Operation BEWORN" flight on 1 April 2010.

That "accidentally leaked" photo is shown below.

Operation BEWORN – Beat Earl's World Record Now.

Other Items

In the March Lightning Newsletter in this section we discussed how even a Light Sport Lightning that is limited to 120 knots at the max continuous RPM of 2850, can actually achieve some pretty impressive true airspeed cruise numbers if you fly at higher altitudes on a cross country. For example, at 10,000 feet (the max altitude that a sport pilot can fly unless he is over higher terrain), the Lightning can still maintain 2850 RPM and the true airspeed would be 144 knots or 166 mph TAS. That is pretty impressive. If you are flying with a private pilot or higher rating, you can cruise at even higher altitudes for even more increased true airspeeds. But remember, you might want to have oxygen on board. I carry a small portable oxygen bottle and often use it on long flights (over three hours) even when as low as 8,000. Many people are affected by the thinner air, and fatigue can be a factor. Long periods at high altitudes even though they're legal altitudes can be fatiguing. Oxygen will help keep you fresh and alert on long flights.

Whenever I am asked how high should you fly on a cross country flight, I always say that I think, weather and winds permitting, higher is better. You get the higher true airspeeds we talked about above, plus you get lower fuel flows. Also, since it is generally cooler up there, you get better engine performance (up to a point) and the ride is generally smoother. All good things. But there is also one more very important consideration, if you have any problem, you will generally have more options by flying higher.

Altitude can be a resource. For example, think about a cruise situation; an extra 1,000 feet, or an extra 2,000 feet can give you as much as three to four more minutes before you're actually facing an emergency landing. That additional 2,000 feet or even more, might possibly get you into an airport instead of a forced off-field landing. Or if you are not close enough to an airport, the extra altitude will give you more time to find a better field for that off-field landing. Another possible plus to flying higher, especially in remote areas, is that it gives you the ability for a larger area of communication; you know, for that mayday call, more people can

hear your distress transmission. Also, being higher generally means easier navigation as you can see a larger area.

So when planning your cross country, take a look at the winds at various altitudes, take a look at how far you are going, and take a look at the time to climb to your cruising altitude. Also, don't forget terrain considerations. For instance, if your route of flight crosses rough terrain or wilderness areas, the availability of emergency landing sites will probably be relatively limited. So that may affect your route planning as you may want to choose a route that crosses more hospitable terrain or crosses areas where more divert airports are available. And once again, remember that higher altitudes not only mean higher true airspeeds and less fuel flow, it can also give you more resources to use if you need to go to plan B for whatever reason. Have fun.

Final Thoughts

Today's avionics, meaning everything from hand-held GPSs to full featured multi-function display panels like many Lightnings have, often require significant programming before you go flying. It should be done before you begin to taxi, or if you need to change something right before takeoff, only make that change after you've come to a complete stop in the run-up area. Trying to make changes while taxiing should never be attempted. You need your head "out of the cockpit". Trying to change or update some GPS setting while moving is about as bad as texting while driving, and you know how dangerous that is.

As an interesting antidote, I wrote the above during the second week of March. Then on Saturday, 20 March, 2010, I had flown my Esqual down to Franklin, VA, to fly my Cub. While taxiing down the ramp that leads to my hangar there, I noticed a Bonanza taxiing out of the T-hangar area. I recognized the Bonanza since there so few aircraft based there. The pilot was pretty much following the yellow taxi line, so I moved right to give him plenty of room. That's when I noticed he was actually looking down at the instrument panel instead of outside. I then slowed down and moved as far right as I safely could without hitting a derelict aircraft tied down there. The Bonanza pretty much kept taxiing on the yellow line and I was afraid he was going to be way too close to my left wing tip. Just as I was getting ready to say something on the radio, I saw him look up and he immediately swerved right to finally give adequate wing tip clearance. As we passed I think he purposely did not look at me or wave as he normally would. I hope he learned a lesson.

Blue Skies,

Buz Rich

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