



Hangar Talk

The “Lightning” Newsletter

October 2009 - Volume 2, Issue 10



N59JL, Linda Mathias’– “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 happenings at Arion Aircraft, and **to give a voice** to Lightning **builders and flyers**. To be successful we need your inputs. So it is not only a way for the factory and dealers to provide Lightning news, but it is your newsletter as well, and its success will depend on you getting involved to spread the word and to help other builders and flyers. So think of this newsletter as an “exchange of information publication”. Send your inputs directly to: **N1BZRICH@AOL.COM**.

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And now, the rest of the news.

Lead Story:

The plan for the lead story in this issue (October 2009) of the Lightning Newsletter was to cover the Third Annual Lightning Fly-In at Shelbyville. However, as everyone knows by now, the extremely bad weather in Tennessee forced the fly-in to be rescheduled for the weekend of 10 October. Well, at least I will have something to write about for the November issue. And hopefully the new date will result in great weather and good attendance. So plan on being there, and pose for some photos so you can be in the November Lightning Newsletter. What a deal!

So now, what to do for a lead story for this month? Well how about some aeronautical history with a little modern fighter development thrown in. I am going to call this story – **Will the real Lightning please stand up?** Most of you know that the Arion Lightning is not the first airplane to use that name. Surely everyone remembers the famous P-38 Lightning from World War II. How about the British Lightning? And if you are up to date on modern aviation, you have probably heard of the F-35 Lightning II, a United States fighter that will have models for the Air Force, the Navy and the Marines, as well as some of our foreign allies.

Will the real Lightning please stand up?

When you mention to a fellow pilot that you fly a Lightning aircraft, the mental picture that comes to your listener's mind may have a totally different meaning depending on who you are talking to. If you are speaking to a very savvy current EAA member, he may immediately know that you are talking about the **Arion Lightning** from Tennessee. However, if you are talking to a WW II veteran, he may be thinking of the **Lockheed P-38 Lightning** from that era. Or be talking to a friend of Clive's or another of your European friends and they may immediately think of the **British Electric Lightning**. And finally, be talking to a current US fighter pilot and the brand new **Lockheed Martin Lightning II** fighter may come to mind. Below are several of the different Lightning photos to enjoy.



The famous Lockheed P-38 Lightning of World War II.

The **P-38 Lightning** was used in many different roles including bombing, strafing, photo reconnaissance, and as a long-range escort fighter when equipped with drop tanks. This Lightning gained fame in the

hands of Army **Major Richard I. Bong**, whose **40 aerial victories** were scored in the P-38, making him the highest-scoring American ace of the war.



Another P-38 Lightning photo.

Next, the **English Electric Lightning** was a supersonic jet fighter aircraft of the Cold War. It is remembered for its great speed and unpainted natural metal exterior finish. It was a British Mach 2 fighter aircraft that was designed for the interceptor mission. RAF pilots that flew it described it as like "being saddled to a skyrocket". Sounds like fun.



The UK's Lightning was designed as an air defense fighter to tackle the Soviet Cold War threat.





The Lockheed Martin F-35 is the latest military Lightning. The F-35 is hugely superior to previous Lightnings in every way. There will be a USAF model, a Navy model and a Marine model.

The **Lockheed Martin F-35 Lightning II** is a fifth-generation, single-seat, single-engine, stealth-capable multi-role fighter, that can perform close air support, tactical bombing, and air defense missions. The **F-35** has three different models; one is the conventional takeoff and landing variant for the USAF, the second is short takeoff and vertical landing variant for the Marines, and the third is a carrier-based Navy variant.

The **F-35** is descended from the X-35, the product of the Joint Strike Fighter (JSF) program. Its development is being principally funded by the United States, with the United Kingdom and other partner governments providing additional funding. It is being designed and built by an aerospace industry team led by Lockheed Martin with Northrop Grumman and BAE Systems as major partners. The initial demonstrator aircraft flew in 2000, with the first production flight on 15 December 2006.

And finally, our favorite Lightning, the one from **Arion Aircraft**, first flew on March 3, 2006.



While the British Lightning and the new F-35 Lightning do not have any aerial “kills” like the P-38 does, Nick Otterback scored one aerial victory over a turkey buzzard with the Arion prototype Lightning.

News from the Factory:

Mark reports that the new Arion Lightning website is up and running and most people have said that it looks great. It is still being developed so if you have suggestions, let them know. One problem that has come to light is that the current link to the newsletters is not obvious in that you have to search for them. Hopefully, a change will be made to add a direct link called Lightning Newsletters on the opening page index. If you are reading this newsletter, I hope you were able to find it by using the current link from the new site. Another improvement on the new site will be to add the price lists. Overall, the new site is much better than the old one.

During September “**Moostang**” **Mike** drove to Wisconsin to pick up two more Lightning kits. One of them is for their newest customer, **Jim Johannes** from Huntsville, AL and the other will be for a future S-LSA customer. The plan for that second kit is to build it up to where it is ready for paint so that a new customer can pick his/her paint job, avionics and interior.

Mark also reported that their new 2009 Lightning demonstrator is back from the paint shop and they will spend the next two weeks or so on final assembly. Since the annual fly-in was delayed, it may be flying by the time folks show up on 9, 10 October for that event. This demonstrator will have the same paint scheme as the first LS-1, but will be blue (see below) where the LS-1 was maroon. Should be another beautiful airplane.



The newest Lightning demonstrator (N326AL?) is back from paint and looking great. In the background you can see part of the steel fuselage of Nick's Skybolt project.

Both the Lightning and the Jabiru gangs are scheduled to head to Mt. Vernon, IL for the Mid-West Light Sport Expo on Wed the 30th of September. The Expo is 1-3 October at the Mt. Vernon Airport. They will have the S-LSA Lightning there and it will be available for demo rides.

Mark also sent out a notice on 22 September 2009 that the first Lightning in Russia made its initial flight on September the 19th. **Dmitry Shramenko**, the builder, is the Russian dealer near Moscow and his Lightning was the 45th one to fly. **Dmitry's** company is **AVIA-NIANIA** and can be contacted by email at avianiania@mail.ru, or phone + 7495518-62-75. Many congratulations to Dmitry! Below are two photos of Dmitry's new Lightning.



Beautiful Lightning, but I think it needs a Red Star somewhere on the paint job. ★



Champagne to celebrate the first flight. That looks like a Jabiru in the background.

Update on Mark's "Beer Can Special" – He flew it!!!!!!:



I received the following from Mark on 23 September:

Hi Buz,

The inspection went fine. The bigger news is I did the first flight tonight. I had considered it in the back of my head but really wasn't planning on it. At 4:00 I clocked out of work and started putting all the inspection plates back on, installed the cowls, cleaned the canopy and then updated the EFIS. About that time (5:45 or so) Pete came out and said "you know Mark, it's turning out to be a beautiful evening....." The winds had died down and the sky was fairly clear, so I thought I'd at least go out and do a couple of fast taxi runs. I did two runs, got the nose off, burned in the brakes and everything felt good. On the third time back I called departing 18 and off I went. Before I went full power I said a small prayer, please God don't let me f*** up, and off I went. The plane flew great with no surprises. To me, and compared to the Lightning, the controls were a bit stiff, especially the ailerons and rudder. I have both pitch and roll servos installed so that affects the stick forces. Also I made sure they were tensioned correctly and they are definitely rubbing against the nylon fairleads (normal). For the rudder it either needs to break in a bit or I need to loosen up the bolts that hold the two phenolic blocks together. I also need to move the stick forward. In other words full forward stick is about 2 inches from the panel and full back is in my crotch. I'd like to move that a bit forward so I don't have to hold the stick so far back to rotate and flare.

I got about an hour of dual with Nick Heintz this past Friday while in Mexico, MO. He has a very "unique" way of flying an approach so I was never really felt completely confident with my landings. I talked to Roger that evening at the dinner and he said "I knew I should have flown with you. Just fly a normal approach look for these speeds and you'll be fine". He gave me a couple of numbers to look for and that's basically what I did. I flew down wind around 85, added about 10 degrees of flaps, turned base to final added more flaps to about 1/2 and kept it around 65 mph over the fence. It felt and looked a little fast but that was fine with me since I had no idea how accurate the ASI was. I just let the airspeed bleed off and touched down. The nose does come down quickly so I have to keep an eye on that in the future.

Looking back tonight, was I as prepared as I should have been? I really don't know. I would like to think so. I kept the mantra of "fly the airplane" in the back of my head the whole time. I have a fair amount of time now in "light" airplanes and this one really didn't fly much different from a Lightning other than being heavier in stick forces. In subsequent flights I will use a recorder and flight cards like you suggest and start testing the limits and parameters of the airplane.

I hope to see you in the near future and let you fly my plane. I'm curious on how it compares to your chapter 601.

Thanks for all of your support over the past three years. Your words of encouragement have always been welcomed and have always kept me moving forward. I really appreciate that.

I hope to see you soon.

Mark



This photo was made just after Mark made the first flight. As you can see, it is a beautiful airplane and the flight must have gone well because that is a really big smile. Well done, Mark.

Lightning Sales Update:

Here are the latest kit sales numbers and flying status from Mark:

Customer	Fuselage #	Dealer	Notes	Flying
Prototype	1	Shelbyville	N233AL	Flying 3/3/06
Skipped	2			
Hobbs, Greg	3	Shelbyville	N430GH	Flying
Green Landings	4	Green Landings		Flying
Ferguson, Earl	5	Shelbyville	N17EF	Flying '06
Discher, Rick	6	Wisconsin		
VanHeeswyk, Jerry	7	Hobbs	N625JV	Flying '08
Hoffman, Tom	8	Wisconsin	N155AL	Flying 1/6/08
Mantell, Tex	9	New York		Flying 8/06/09
Sorenson, Duane	10	Shelbyville		Flying '08
Dewey	11	Green Landings		Flying
Sahr	12	Shelbyville	Damaged in Bonanza accident	
Number not used	13		Number not used	
Davis, John	14	Shelbyville		Flying
Bowen, Rick	15	Shelbyville	N727RB	Flying
Cooper, Joe	16	Shelbyville	N396JC	Flying
Borchart, Dennis	17	Lightning Australia	19-4962	Flying
Tholhuesyn	18	Lightning Australia		
Dunbar	19	Lightning Australia	8 cylinder Jabiru	Flying '08
Mathias, Linda	20	Shelbyville	N59JL	Flying 2/28/07
Keith, Charlie	21	Green Landings		Flying 4/30/09
Wachtmeister, Albert	22	Green Landings		Flying
Heavy Fuselage	23	Shelbyville		
Heavy Fuselage	24	Shelbyville		
Heavy Fuselage	25	Custom		
Thompson, Johnny	26	Hobbs	N8WN	Flying
Hubbard, Bill	27	Shelbyville	N316H	Flying
Pritchard, Ernie	28	Hobbs		Home
07 Demonstrator	29	Shelbyville	N323AL	Flying
Disher, Peter	30	Lightning Australia	VH-PD1	Flying 11/08/08
Keen,	31	Lightning Australia		
Morrison, Anthony	32	Lightning Australia	19-5301	Flying 6/2/08
Chesbrough	33	Lightning Australia		
Fry	34	Lightning Australia		
Belie, Steve	35	Lightning Australia		Flying 12/23/08
Borchardt, Dennis	36	Lightning Australia		
Grubb,	37	Lightning Australia		
Hacker, Steven	38	Wisconsin	N335CE	
Cleavinger	39	Shelbyville	N213RC	Flying
Nunes, Claudio	40	Brazil (Shelbyville)		
Goad, Jim	41	Shelbyville	N166JG	Flying
Jab Power Solutions	42	Shelbyville		
Langley, Jim	43	Green Landings	N730AL	Flying 7/26/08
Fisher, William	44	Hobbs	N838BF	Flying 1/6/08
Ricks, Ed	45	Ricks		

Applegate	49	Hobbs		Home
Ritchie	46	Shelbyville	ZK-TDT	Flying 8/15/08
Browns	50	H&S Aviation	N716MZ	Flying 6/24/08
Sundquist	48	Ship t Yakima, WA		Home
Carlisle	51	Green Landings		Flying 3/25/08
Kennedy	52	Shelbyville		
Eynon	53	Shelbyville		
Peters, Fred	54	Hobbs	N617BP	
Mefford, Walt	55	Hobbs	N881WP	Flying 11/13/08
Borchart Stock 3	56	Lightning Australia		
Borchart Stock 4	57	Lightning Australia		
Mitchell, Peter	58	Lightning Australia		Flying 10/26/08
08 Demo	59	Shelbyville	N324AL	Flying 4/1/08
Russia (Shramenko)	61	Russia / Shelbyville		Flying 9/19/09
Nelsen, Lynn	60	Shelbyville		Flying 8/20/08
Lenox, Wayne	63	Hobbs (build in TN)		Flying 6/27/08
Mendenhol, Walter	62	Hobbs	N8938T	Flying 9/5/08
Stanley, Davey	64	Shelbyville	(was LSA demo)	
Borchardt Stock 6	67	Lightning Australia		
Patterson, Wayne	65	Lightning Australia		
Ellis, Selwyn	66	Lightning Australia		
Borchardt Stock 7	68	Lightning Australia		
Borchardt Stock 8	69	Lightning Australia		
Borchardt Stock 9	70	Lightning Australia		
Hass, Bob	72	Green Landings		Flying 4/13/09
Pennington, Gary	71	Shelbyville	N34YZ	Flying 11/30/08
Corkum, Reginald	76	Shelbyville	N290AW	
Strahan, William	75	Shelbyville	N197RW	Flying 12/19/08
Winkler,	73	Green Landings	N428GW	Flying 11/11/08
Bryant, Paul	74	Shelbyville	N82PB	Flying 11/10/08
Beatrice, Pat & Carl	77	Shelbyville		Flying 4/4/09
LSA Demo	78	Shelbyville	N325AL	Flying 4/11/09
Krizman	79	Shelbyville	N104KJ	Flying 7/10/09
Hobbs (Fuselage only)	80	Hobbs		Fuselage only
Cudney, Richard	81	Green Landings	N325SC	Flying 9/23/09
Crouchley, Greg	82	Green Landings		
Demo	83	Green Landings		
Marsh, Ralph	84	Hobbs		
Hobbs Stock	85	Hobbs		
Dupont, Janin	86	Shelbyville		
Johannes, Jim	87	Shelbyville		
LSA Demo #2	88	Shelbyville		

Total Kits = 83 (fuselages #s 2, 13, 23, 24, & 25 were not used)

Total Lightnings flying = 45

Completion rate = 54%

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



Dominion Air Services – LS-1 sales, Skip Hartman, Gordonsville (KGVE), VA, 540-832-5515

News from the Dealers:

I received the following from Ryan Gross (Green Landings) on 23 September:

Another Lightning First Flight!!! N235SC went to the air for the first time today at Green Landings. It was an uneventful flight with perfect hands off controls. This Lightning has the modified wing tips and the modified elevator and I must say that the elevator modification is a dream come true. What a balanced aircraft!! Attached are a few photos

Ryan Gross

Green Landings Flight Center, Inc., www.greenlandings.com, 304-754-6010

Note: The elevator modification that Ryan mentioned above is where you cut off the aerodynamic counter balances on the elevators and move the central push rod to the next lower hole on the bell crank.





Beautiful overall view of Green Landings with N325SC just lifting off.



These photos show the first landing of N325SC. Does 325SC really stand for runway 32 and 5 at Spruce Creek in Florida? That is what I heard.



All you other dealers need to send in some news and photos from your business location. Bottom line – it is free advertising and lets potential customers know what you have available.

News from Builders and Flyers:

The first input this month for the News from Builders and Flyers section came from Stephen Hacker on 8 September. Steve's Lightning is being built with the help of his two daughters at Lightning North Central in Neenah, WI. By the time you are reading this, Steve's Lightning may have already been inspected and flying. Look for an update next month.

Buz:

This is not a submission for the Lightning of the Month because the plane has not yet passed its Airworthiness Inspection - hope to have it done within the next 2 weeks - awaiting some paperwork. But I thought you might like to see how "your" colors look on N335CE.

Tom, Allan, and their helpers Danny and Pete at H&S Aviation have been tremendous to work with.

Stephen Hacker



The next input comes from John Jenkins, an Esqual builder from Wisconsin. John was an early Arion customer when they were still in Wisconsin and the North American dealer for the Esqual. John came down to Virginia for some Esqual transition training before flying his airplane for the first time.

Hi, Buz,

I noticed in your fine newsletter you asked if anyone is using the Rotec TBI. I've been looking into it for the Esqual and have been in contact with Lynn Matteson, whom I assume you know from the Jabiru engine lists, who is using it in his Kitfox. The head mechanic at Morey's, among others, is also trying to help me evaluate it. Clearly there is very little out there about how well it actually works, etc., but I'm wondering at this stage how the Rotec promises strike you on the face of it. Any thoughts would be appreciated. Meanwhile, the cost isn't prohibitive, so I'm leaning heavily toward placing an order in the next few days and seeing how things work out.

By the way, I'm also putting together a pc-based system for using the (free) Waite's Flight Recorder System (IFLYEZ.com). It records data graphically and in spreadsheet form from my Dynon EFIS, my Grand Rapids EIS, and my 296. I did OK during Phase I watching the instruments and talking to my DVR, but still wasn't real pleased with the quality of the data. With this setup, I'll be able to get accurate speeds, temps under various conditions, and a bunch more. So far the toughest part has been to get my Apple laptop setup to run a Windows OS, which I accomplished yesterday. The rest should be simple--I hope.

The leaves are starting to fall in Wisconsin--not a good sign.

John Jenkins

Below is my message back to John.

Hi John,

Good to hear from you. The Rotec TBI interests me primarily because of its leaning capability. Personally, I like the Bing just fine, but I do know that on long flights, say above six thousand, it is running too rich even though it has leaned itself. I normally fly my cross countries pretty high, so I figure there is some fuel to save. The other aftermarket item I find interesting is the HACman leaning system that I have also mentioned in the Lightning Newsletter. That system is less expensive, but only tricks the Bing into thinking it is much higher than it actually is, thus leaning it more. It worked well on the Lightning LS-1 when I flew it just before Oshkosh. I hope to fly it some more during the annual Lightning fly-in and get a better feel for how well it works.

If you do get the Rotec TBI, be sure and give us a write up for the newsletter. I am sure others would like to learn more about it. By the way, how many hours on your airplane now?

Buz

Here is John response:

Buz, I am at 50 hours and climbing. I just ordered the TBI-40 and am told it'll arrive in around 10 days, with installation to follow a few days later, depending on wait times for parts from Spruce, etc. Then it'll be a matter of how much testing I can do before winter descends. Realistically, probably no good data until spring, but I'll try for much sooner. John Jenkins

Note: Hopefully John will do a future article for us on the Rotec TBI. I wish I had a photo of John's airplane to include. That's a hint, John.

Safety Items:

The following came in from David Bradshaw from South Australia on the 23rd of September. David is very interested in the Lightning and has sent us a great "I learned about flying from that" type of article. Dave's safety input is an excellent read and he includes an analysis of his mistakes and the lessons he re-learned from the experience. Dave, great article; thanks for sharing with all of the Lightning community.

Hi Buz,

I have been reading all of your Lightning newsletters over the last week. I really love the aircraft, and if I ever buy my own, it's looking like number one on the list right now.

I particularly like your safety articles, so I thought I might share an incident that I inflicted on an aircraft not so long ago. My article is a bit wordy, I'm sorry. However, you might like to share it with the Lightning community, should you see fit.

Keep up the good work. Very best regards,

David Bradshaw, South Australia

April 19th, 2009. What a great day! Great autumn weather for flying, and I got to fly my father-in-law to one of our local airshows. It is actually quicker to drive to the airfield where it's held, by half, but hey, flying on such days is why I got my Recreational (Australia's Light Sport equivalent) license in the first place.

I was flying an Evektor Sportstar, the actual aircraft I did all my ultralight training in. I had wanted to take the J230C I had been flying of late from my flying club, but someone else beat me to it and all I could find available was the Sporty. A bit further to fly, but the route gave me a chance to show Dad my place from the air. Beaut little aeroplane to fly. Superb visibility and handles nicely.

I expected it to be busy in the pattern on arrival, so planned to get there a little early. In the event, there was only one other, a motor glider, sharing the airspace with me. I'm a low-time recreational pilot, but with a lengthy military non-pilot aircrew background, so those two things see me spend a fair bit of time on planning. Well spent in this case, with a gentle landing on the up-sloping grass field with which to „show off“ to Dad.

A great, small country field airshow followed. Dad & I had a ball.

We let the mass departures get away first (that's part of the entertainment), then took our leave. Wind had picked up a bit during the day, but still an upslope take-off, towards the hills, with some cross wind. No worries there.

Flying over the hills near my home on the way home; great day out, Dad alongside me, and starting to think of my wife's roast and a glass of red to celebrate how good life is. *First mistake.*

Approaching the mandatory contact point with the tower at home plate, I dialed up the ATIS. I wrote it all down on my kneeboard, thinking, "Gee that wind's straight down 08, why are they using 03? And the

crosswind is right on the limit for this aircraft (but I've flown it in these conditions before....)" Then selected the tower freq, then made sure I was at the assigned altitude over the reporting point, airfield was now in sight, then thought over my call, then made my call to the tower. Got clearance for a visual approach to 03R (RH circuit), inserted the landing cassette into my brain, *and forgot all about my thoughts on the wind. Second mistake.*

I didn't give the wind another thought until I was on final and found I needed lots of aileron and opposite rudder to maintain centerline (slipping approach). Little messages were flashing across here, but didn't register with enough importance. *Third Mistake.*

On short finals, I ran out of rudder travel to balance my aileron input in the strong, gusty cross wind. "I'm about to round out, just a few seconds, I'll be right," I thought. *Fourth mistake.* I'm not entirely sure what happened in the next second or so. I think I stalled (well that *is* the intent at landing isn't it?), and with such crossed controls (lots of right aileron and full left rudder), the aircraft snap rolled to the right. In any case, we hit the runway hard on the right main gear. The aircraft bounced hard, and that right cross wind got under the aircraft and blew us like a leaf across the field. I remember the taxiway between the parallel runways passing left-to-right across the screen (well, actually top to bottom!). We were not flying at this point – the wind was strong enough and the aircraft light enough for us to blow like a leaf – almost completely sideways! My first thought was, "Roll wings level and put it down on the grass (remember to keep the nose up!), and suffer the indignity." Not much forward speed meant no aileron authority, so that didn't work. Nothing for it but to apply power and fly it out, then worry about damage later. So I poured on the coals. What does a really light aircraft, at or below stall speed, want to do when you quirt on 100HP? Torque roll and yaw to the left. From greater than 60° AOB and only a few feet up, I had little time to overcome this natural tendency! Right Rudder!!! Here's where the Sportstar looked after me. All that prop wash over the tail gave me enough authority, coupled with the secondary effect of rudder, to roll wings level and climb away, somewhere near overhead 03L! All controls appeared to be behaving normally. Phew!!

As I climbed away, the tower enquired whether I was okay. I replied, "Yes, but I'll need a gear inspection I think." Then I remembered that you have to „press to transmit"! The tower controller stepped in then and gave me his absolute attention. I briefed my passenger as to what was going on and my intentions. He nodded.

I arranged to get a couple of folks from the school where I hired the „plane (who had all landed ahead of me from the same airshow) up into the tower to check my gear out along with the controllers, and some slow fly bys of the tower, combined with a close-up inspection by a gentleman in his Cap 10, indicated my gear looked okay. I had more fuel than daylight remaining, so we decided to make a landing on 08R. The wind had shifted a little, meaning I still had about 6kts of right crosswind to contend with. Not my best landing, but I got it down, taxied off and shut down to do my own inspection before continuing the taxi in to the hangar, where *everyone* was waiting to see me. The owner was convinced that I just grazed the left wing tip across the ground – some scratches were in about the right orientation for what I presumed was the path I travelled. How that happened without cart wheeling in, I don't know.

Throughout, my Dad sat with his hands on his thighs and said nothing. I mentioned this to him later, to which he said, "You were busy, so I thought I shouldn't interrupt."

I got to fly some pretty close, non-standard patterns around the field (in GAAP airspace) and some low fly pasts of the tower out of this, as well as a bit of loose formation flying, something most sport pilots would never experience.

Importantly though, what did I learn from this?

1. Don't get too far ahead of the aircraft (roast dinner and red wine before the aircraft's put to bed).
2. Don't necessarily accept an assigned runway if a better option is available – ask. The controllers are usually accommodating. An extra few minutes in the pattern would have been better than the half hour with extreme pucker factor I experienced.
3. Know your aircraft *and your own* limitations.
4. Listen to what your aircraft is telling you (lots of opposite controls on final).
5. Even approaching the round out it's not too late to go around. Again, I should have listened to what that rudder stop was telling me, not pushed on.
6. Currency *is* important.

Soon afterwards, I spent some time in the circuit with instructors, both in this aircraft and in a J160 at my flying club, to refresh my crosswind technique. No real problem with technique. This confirmed what I thought as the real lesson from the whole episode. My poor decision making earlier in the flight meant that I put myself in a situation I shouldn't have been in. I exceeded the POH limits for crosswind in the Sportstar, as well as my own ability given my lack of currency in that aircraft, *and I didn't correct the situation, even when it should have been obvious that things were getting beyond my control.*

I beat myself up over this for quite a while. I have taught human factors to my military aircrew brethren, including pilots, for nearly 20 years as an Aviation Physiology Training Officer. I have *lectured* on this very subject so many times. Yet I still fell victim to many of those HF traps. I am lucky to have survived, and hope that by recounting this experience, I can help at least one other person to enjoy their aviation.

Upcoming Events:

9-10 October - Lightning Fly-In at SYI

13-15 November – Engine Seminar at SYI (Already full)

7-8 January - Engine Seminar in Phoenix



Lightning Skunk Works:

As mentioned above in the lead article, Richard Bong has 40 aerial kills in WW II. Nick only has one aerial victory against a turkey buzzard. Not to be outdone, Nick immediately started modifying a Lightning to help his attempt to beat Bong's record. His plan is to mount five 12-

gauge shotguns in each wing – a total of ten Model 12 Remington semi-automatics. The photos below show where the shotgun barrels will extend from each wing.



Turkey buzzards, beware!



During the upcoming Lightning fly-in, Nick will be practicing his aerial record attempt flying against several radio controlled aircraft at the same time. If you have an RC aircraft you don't really care for, bring it and see if you can out fly and out shoot Nick.

Technical Tips:

We have two Tech Tips this month, both good suggestions. The first comes from Randy Cotteleer and has a definite safety aspect if you have modified your Lightning brake system as suggested in last month's newsletter. The second is a building tip from Nick that should help builders understand one part of the rudder cable system. First, Randy's excellent suggestion:

Buz,

First of all, let me commend you on the newsletter, it is a tribute to you and to the Lightning community that it is as comprehensive and information filled as it is.

In the September 2009 newsletter, under the safety item heading, there was a discussion of changing the plastic brake line for copper tubing. I'd like to warn against using copper. The information I have (which is anecdotal) is that copper line is susceptible to fatigue cracking, especially when used with compression fittings which tend to put stress risers at the point where the tube meets the ferrule. It strikes me that a braided stainless brake line is the appropriate answer here.

BTW, most racecar sanctioning bodies outlaw copper brake lines for just this reason.

It is great that the lightning community not only continually seeks to improve their own planes, but that they actively work to educate others. I just wanted to add my perspective where I thought they could be of benefit.

I do not own a lightning, but that is a temporary malady.

Randy Cotteleer

Thanks, Randy. Good catch and I certainly agree. Aluminum has always been the standard for aircraft brake lines just for the reason that you mention. Of course recently the "plastic" lines have been used more and more. But as I said, I agree with your concern about the copper lines flexing then breaking. But more of a concern for me is that many of the new Lightning pilots have not flown aircraft that are steered with the brakes during taxi and thus they initially tend to ride the brakes and of course the heating process starts with the blister or ruptured plastic line being the result. I have had to caution most of the people that I have taken for demo flights for riding the brakes, especially if there is any kind of cross wind while taxiing.

By the way, where are you located? Hope to see you at the Lightning fly in this coming month.

If OK with you, I would like to include your email in the next newsletter.

**Blue Skies,
Buz**

Now, here is Nick's Tech Tip:

Subject: Lightning-List: Making Pulley U brackets

I have had a few emails lately on how to make a uniform U-bracket for your pulleys and rudder attach. Take a small block of hard wood. This should be 1/2" thick. Drill a 3/16" hole in the center as deep as you

need, maybe $\frac{3}{4}$ ". Run a bolt thru the pulley tang and into the block. Bend the bracket around the block. Simple and looks good too.

Nick Otterback, Arion Aircraft, LLC



Other Items:

As an EAA Flight Advisor, I recently had an additional discussion with an aircraft builder who had completed his aircraft (not a Lightning), had accomplished his initial flights and was now working on the remainder of his Phase One testing. We had talked several times before he made his initial flight and I had shared with him the flight test plan that I put in the June 2009 Lightning Newsletter (Issue 3-6). He was now interested in expanding his aircraft's flight envelop to include a larger CG loading range and wanted some inputs on what to expect as he accomplished these additional flights. Below are some of the things we talked about:

Just as an aircraft's performance varies with total weight, its flight characteristics will also vary as the weight increases. Where you put that "increase in weight" will have an effect on the aircraft's CG and how it flies. What you will probably notice is that the distribution of the weight will affect aircraft control effectiveness and pitch sensitivity.

With a forward CG you will probably find that:

- Stability increases
- Pitch forces (how heavy the stick feels) increase in all flight regimes
- Takeoff distance will increase because you have to accelerate to a higher speed to get enough pitch authority to raise the nose
- Climb rate decreases slightly because of a small increase in up elevator to hold the climb angle of attack (also more drag)
- Cruise speed decreases slightly because of slightly higher up elevator deflection and angle of attack increase for any given power setting

-Pitch force required to flare will be slightly higher

With an aft CG you will find that:

- Stability decreases
- Pitch forces become lighter
- Takeoff distance decreases and initial climb rate increases
- Cruise speed increases
- With pitch forces lighter, the airplane may tend to pitch up excessively (watch out for over controlling on takeoff, landing, or a go-around)
- A normal pitch input for landing flare may cause excessive pitch-up (watch out for a high flare or stall in the flare)

Some other thoughts: Spend some time working out various CG situations so you know ahead of time what effect a particular loading condition will have on your flight. Also be aware that in some airplanes, the CG can change as you burn off fuel. For example, some Bonanzas, depending on how you have the cabin and baggage area loaded, can take off within the allowable CG range, but can go to an aft CG condition as you burn fuel. For the Lightning, the CG generally moves forward as you burn fuel. The key is to know ahead of time what change you can expect to your CG as you burn fuel.

Weather, especially the wind, can also be a consideration when you are flying with an aft CG condition. Strong or gusting winds for landings may be more difficult to handle with an aft CG due to the more sensitive pitch forces. Also, if you have a passenger aboard with a “weak stomach”, you might want to avoid any turbulence when flying near an aft CG. I think you know why – it can be a bumpy ride in an airplane with a light wing loading and an aft CG condition will tend to make it worse. Have you got that barf bag handy?

The bottom line, always check your CG to insure you are within the loading envelope on every flight.

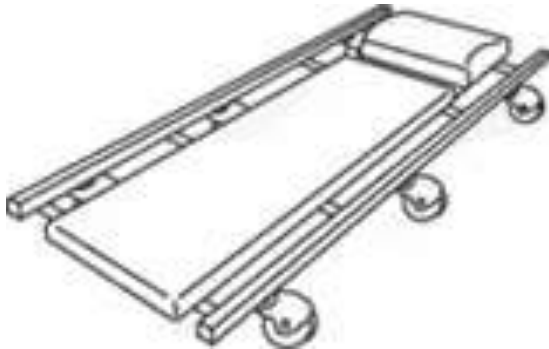
Final Thoughts:

As you know the Shelbyville gang had to reschedule the Lightning Homecoming due to bad weather in Tennessee. The new date is the weekend of 10 October (Saturday). For those arriving early, there will be some activities on Friday afternoon and evening (9th), for example we'll cook burgers and brats and have a few cold ones Friday night. See photo below:



Brat cooker, Tennessee style

After eating brats and drinking a few brews, we'll start the heats for the creeper races. There may be drag races, slalom races, or NASCAR oval track events. We might even have some two person crew races. For some photo examples, see below.



So bring your creeper and a stop watch.

And if you want to try some new Tennessee redneck innovations, check out the photo below:



We hope the weather allows for a great turnout on the 10th. Be there, or miss lots of fun.

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.)