




Arion Hangar Talk

The Arion Aircraft “Lightning” Newsletter.

October 2008

Volume 1, Issue 9

Welcome to issue # 9 of the  Newsletter. The goal of the newsletter is “to get the word out” on happenings at Arion Aircraft, and “to give a voice” to Lightning builders and flyers. It is your **Lightning “Hangar Talk”** sessions put into print. To be successful we will need the inputs from Lightning flyers and builders in order to meet that goal. So it is not only a way for the factory to provide Lightning news, but it is your newsletter as well, and as such its success will depend on you getting involved to spread the word and to help other builders and / or flyers with their project airplanes. So think of this newsletter as an “exchange of information publication”. Send your inputs directly to me at N1BZRICH@AOL.COM.

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And now, the rest of the news:

Lead Story:

2008 Lightning Fly In

The second annual Lightning Fly-In is now history, and what a great event it was. I guess I should say "Lightning / Esqual Fly-In" as **Nick** says it is really for both types since both aircraft types are closely tied together in their history with the SYI group. Below is a short recount of the event with several photos included.

The fly-in was scheduled on the same Saturday as the EAA breakfast at Shelbyville Airport, so needless to say, there was a good turnout of people to look at all the Lightnings parked on the SYI ramp during the breakfast.

Pete & Barb, Nick & Dana, Mark & Claire, "Moostang" Mike, and all the Lightning team did a wonderful job of making everyone feel welcome and provided outstanding hospitality. There was lots of fun hangar talk and "BS" sessions, plus we enjoyed some great flying which included demo flights, fly bys, and a Lightning formation photo mission. **Katie Bosman**, the newest member of the Lightning team, was the formation flight lead, with **Nick** on the left wing and **Dick Cleavinger** and **Buz** on the right wing. **Ben** was the photo "mission commander" and flew his Rans as the photo ship with **Dana** as the photographer. We will have to see how all the photos came out.



Dick Cleavinger flew his Lightning from Colorado so he gets the prize for flying the longest distance.



Dick "High Altitude" Cleavinger



Jim "I don't need no glide speed" Goad

John Krizman from Sacramento, California, actually came the longest distance, but he utilized the airlines. I took **John** for a demo ride and he certainly seemed to have a fun flight. **Jim Goad** flew up from Florida, "**World Record Earl**" flew up from Atlanta and **Joe and Linda Mathias** flew in from Virginia as did I. **Earl** won the contest for the most colorful socks, **Jim** won hands down for the "cutest" negligee, and **Joe** won the contest for "who can seem the most interested in raising goats". **Craig Sumner** was up from Alabama (his Esqual is now in phase 1 testing), and **Charles Gallagher** was down from Nashville (he will be writing an article on the Jabiru engine seminar for the newsletter). All total we had seven flying Lightnings there including **Lynn Nelsen's**, which **Katie** flew down to **Lynn** on 30 September. Seven Lightnings in attendance represents about 25% of flying Lightnings worldwide. Not too bad.

Start your planning now to attend next year. I guarantee you will have a great time.
Blue Skies,
Buz



Joe and Linda Mathias discuss the finer points of dining at the Bell Buckle Café with "**Moostang**" **Mike**. **Pete** treated all fly-in attendees to dinner at Bell Buckle Saturday evening. Thanks, **Pete**.



Katie gets ready to taxi the 3 ship formation of Lightnings to the runway for the Saturday morning photo shoot and SYI EAA breakfast. **Katie** is in **Lynn's** "jet", number 2 is **Nick** in the demo, and number 3 is **Dick** and **Buz** in the "Pike's Peeker".

Earl "World Record" **Ferguson** and **Katie** "Early Riser" **Bosman** get ready for a flight in the demo so **Earl** can try out the new extended wing tips





Nick “having some fun” in the prototype which just keeps getting better and better. It currently has a new Sensenich “FK” blade profile prop which is 62 inches in diameter and probably at least 59 inches in pitch. A 60 inch pitch prop is on order for it. As currently equipped, it will indicate 150 mph at 5,000’.



Photo right - **Mark** “The Potentate of Kits” gives an informal engine briefing to **Dick and Jim**. That’s **Dick’s** engine they are looking at.



Is anyone ready for some more Wisconsin “brats”?



John looks on as Dick works on his engine. I am not sure if it is powered by a large rubber band or a small hamster.

Below are some more photos from the fly-in weekend. On the left is **Dana** holding the newest member of the Lightning team. That is “**Cleco**”, a Tennessee “Bob Tail”. **Cleco** is just the size to take a flight in one of **Nick’s** large radio control models. Watch out Cleco, Nick has been known to fly upside down.

The center photo shows **Pete and Dawn**, **Pete and Barb’s** daughter who now works for the Jabiru side of the house.

And of course, if you have been to Shelbyville, you have met **Chastity**, the “telephone voice” of Lightning. All the folks there are great friends, ready to help in any situation.



News from the Factory:

Newest member of the Lightning team

Katie Bosman is the newest member of the Lightning team. **Katie** is originally from Wisconsin but now calls Murfreesboro, Tennessee, home. She is a corporate pilot and flies a PC-12 Pilatus as her “real” job. But her “fun” job is now flying Lightnings for Arion Aircraft and helping fly off the phase 1 testing hours; she also is available to deliver Lightnings to their customers after the time is flown off. I flew several flights with **Katie** while I was in SYI and I can attest to her stick and rudder skills. We flew together in both the Lightning demo and my modified Esqual “Lightning Stuff”, as well as on several formation flights. She is a good pilot who enjoys general and sport aviation and even knows her way around the shop.



The above photo shows **Katie** in **Lynn Nelsen's** “jet” as we sit number one for takeoff at SYI. **Katie** was getting ready to lead me (in the Lightning prototype) on a formation sortie around the Lightning test area.



In the photo on the left, **Katie** is riveting nut plates on Lynn's wheel pants. When she completed this job she helped install them on Lynn's Lightning.

Latest update on the new wing tip extensions

I mentioned in the last newsletter that **Nick** likes the new wing tip extensions so much that he is even considering putting them on the current 2008 Demo aircraft. Well, guess what? N324AL, as you can see in the photo below, is now sporting a new look – it has the new wing tips installed. .



When I first got back to SYI on 17 September to help **Nick** with the performance testing on the new tips, N324AL had the new tips installed, but they were not painted yet. I flew several performance data gathering sorties with N324AL before **Chad**, the “gifted” painter, finished the new look by completing the painting on the new tips. It looks better than ever as you can see in the photo above.

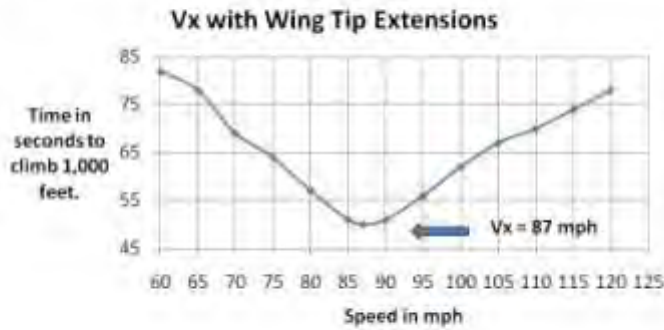
The photo on the right, with the SYI airport “down below” (that sounds like an Aussie term) shows the new wing tips before they were painted.

Nick has now flown four Lightnings with the new tips, (the prototype, the demo, Wayne’s and Lynn’s) and provided the following performance report for Lightnings so equipped. Climb rate has certainly gone way up with takeoff roll being shorter and cruise better. Cruise at 5,000 msl using 2950 RPM is 153 TAS which is better than before; we use to only see 150TAS at 3000RPM with N324AL. He reports that at 10,000 msl, the new tips provide about a 5 mph speed increase at cruise RPM.



I have only flown the prototype and the demo with the new tips, but I certainly like the overall performance improvements they provide. All of my flights in the demo during this trip to SYI were to gather performance data for determining V_x , V_y , and best glide speeds for flaps up and for 30 degrees of flaps. I have finally graphed out all of the multiple data points that I recorded and can report that, in the demo at 1300 pounds gross weight and using a 62FK58 prop, V_x is 87 mph, V_y is 93 mph, and the best glide speeds (to cover the most distance) are 85 mph clean, and 73 mph with 30 degrees of flaps. For some specific examples of best glide in the extended wing Lightning, you can expect to cover 2.5 miles for each 1000 feet of altitude lost when gliding with flaps up at 85 mph. With flaps down to 30 degrees, use 73 mph and you can expect to glide 2.4 miles for each 1000 feet of altitude lost. Some of my performance graphs are shown on the next page; hope you can read them.

Lightning Vx (Best Angle of Climb)



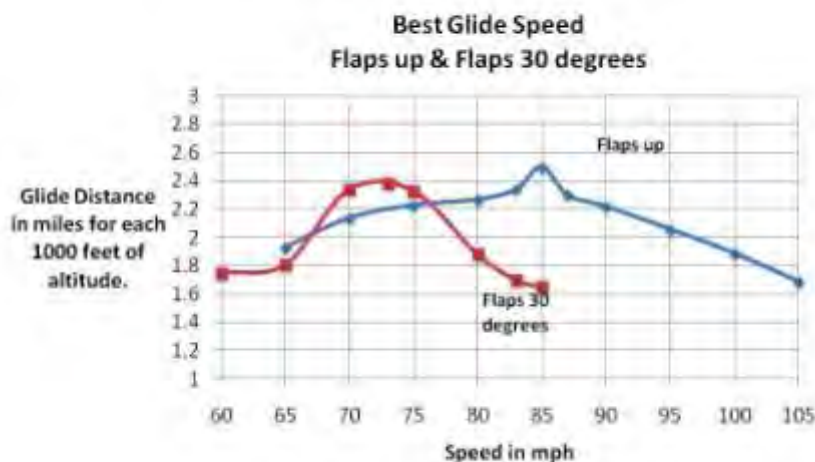
Notes: 22 September 2008, 4 degrees warmer than standard day. Climbs were between 2,000 and 3,000 feet. Aircraft weight 1,300 lbs. Propeller used was Sensenich 62FK58.

Lightning Vy (Best Rate of Climb)



Notes: 24 September 2008, 4 degrees warmer than standard day. Climb started at 2,000 feet and was timed for 1 minute. Aircraft weight 1,300 lbs. Propeller used was Sensenich 62FK58.

Lightning (with wing tip extensions) Best Glide Speed



Note: 25 September 2008, 5 degrees warmer than standard day. Aircraft weight 1,300 lbs.

Factory Assist Build Update

Paul “Bear” Bryant is building his Lightning at the SYI factory and, as of 29 September, it was almost ready to go to the paint shop. “Bear” should finish up in October or November and begin to enjoy his new “jet”.



Above you can see “Bear’s” engine being hung and his wings with the new tip extensions ready for paint. This will be the third customer Lightning built at SYI with the new longer wings. They obviously are being well received as they not only lower the stall speed and takeoff roll, but raise climb rate, service ceiling, and cruise speed. What a great design.

Sales Update

The latest Lightning kit owners are **Pat and Carl Beatrice** (shown below in the demo).



They both are pilots and are from New Hampshire. After researching all the light sport aircraft available and flying nine of them, Carl and Pat narrowed their choice down to the Lightning or the Jabiru. They visited Shelbyville in mid-September and finally chose the Lightning after a flight in the demo in which I had the pleasure of flying then both. They will be receiving Lightning kit number 78 and will be starting their build in February, earlier if Mark has a change to the current build schedule. The build should go relatively fast since Carl and Pat have previously built an RV-6.

Other Factory News

Below is part of an informative message that **Nick** wrote concerning the weight savings on the Lightning since the original prototype was built. I thought it might be good to include it because it shows the improvements that the factory guys go through to continue updating the Lightning. **Nick's** comments:

The first fuselage shell, everyone knows as the prototype, weighed about 140 lbs. The current shell weighs 106 lbs, a savings of 36 lbs. The flying surfaces in the tail section, i.e., rudder, elevator, and stabilizer, have been lightened by about 1-2 lbs apiece, which resulted in saving around 6 lbs in the tail. Other structures like the wings are down from 98 lbs panels on the prototype to 78 lbs on current models. The average weight decrease from the prototype has been about 80 lbs. Most of the weight savings came from new core materials, better use of resins thru vacuum infusion, and, yes, somewhat lighter lay-ups because on the prototype the lay-up schedule was not what was specified in the design due to a miscommunication long before production began.

Nick Otterback, Arion Aircraft, LLC

More factory news - **Pete** had his newly completed Zenith 701 there which drew lots of interest. The

Lightning/Jabiru team built this 701 in order to develop a firewall forward kit so this aircraft could be easily completed using the 85 HP Jabiru 2200. Pete graciously let me fly the 701 during its 40 hour phase I testing and I must admit I had a ball. Would you believe slow flight (with power) at 28 mph. Impressive!



The photo to the left is a shot of the 701's cockpit.

And if you believe that, I have some oceanfront property in Arizona, near **Gregg Hobbs's** place, that I would like to sell you.

News from the Dealers:

Lightning Australia

Hi Buz, I not sure about modeling the Speedo suit not really cut out for that one ,but I hope all of you guys have a great time at the annual Lightning Fly In ,wish I could be there to join you but unfortunately its a bit too far away. Builder assist Lightning No 58 had its inspection today, so we are just waiting for the paperwork to come back & the owner **Peter Mitchell** can get air borne.

Best Regards, **Dennis**

Lightning Southwest

N881WP (#55) is about ready for airworthiness. The inspection is planned for October at Greg Hobbs facility. Attached are a couple of pictures.

Walt Mefford, Silverton, OR



Here are two photos of Walt's jet – N881WP

Green Landings Flight Center

Maybe next year we will really pack the house in Shelbyville. Just a picture of a few almost ready to fly Lightnings at Green Landings.

Ryan Gross
Green Landings Flight Center, Inc
Sky Ranger Aircraft
Arion Lightning
304-754-6010



Current Lightning Dealers:

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

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

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

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

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

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

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

“Centerfold” Buildmate of the Month



Well, if you didn't make it to the second annual Lightning fly-in, you missed a great time as evidenced by the “Centerfold” photo above of the “Buildmate” of the month. We never did get **Mark** to model that top secret test pilot Speedo, but as you can see, he had no problem putting on a tiara and going topless for the camera. As one of Shelbyville's most eligible bachelors, Mark met his lady friend, Claire, when she went to the lumber yard to get a stud and came back with Mark. As the saying goes, the rest is history. Congratulations to Mark “Studman” Stauffer as this month's (the first and probably the last) “Centerfold Buildmate” for the Lightning newsletter. If you want more centerfolds in the future, you will have to send the photos, because I don't want to be seen photographing any more “studs”.

News from Builders and Flyers:

This first article is from our high altitude expert, **Dick Cleavinger**. He tells us about one of his recent flights around the beautiful state of Colorado. As a side note, I had the pleasure of flying **Dick's** "jet" during the recent Lightning fly-in. I thoroughly enjoyed the experience and must say it is one of the best I have flown – light on the controls and excellent throttle response, so important in formation flying.

Hi Buz,
You asked for documented flights for the newsletter. Here is one to Leadville, Colorado.

In mid August I took off from Boulder Colorado (KBDU), flew over 11.6k Rollins pass (on the Continental Divide) to Kremling Colorado (20V), about 50 miles. There I picked up my flying buddy Gene Eggert (building an RV6A). We took off from Kremling (7.4kft) flew up the Blue river valley to Dillon Reservoir, past Copper Mountain Ski area, over Fremont pass (11.3kft) to Leadville. The first picture is from the base to final turn to runway 34 at KLXV, elevation

9927ft. The power lines in the picture are well below the runway elevation. When landing at high altitude you should remember to fly the approach at your normal indicated air speed. The ground speed will be greater than at low altitude but the airplane wants the same indicated air speed. The second picture is the south end of the KLXV FBO building with N213RC. The third picture is of Mt. Massive (14.3k) across the valley to the west southwest of the airport.



Leadville was a silver and gold mining town in the 1880s and 1890s and was the home of "unsinkable" Molly Brown of Titanic fame. There is still some mining in the area but the town is mostly supported by tourism. We had a great breakfast burrito at the Golden Burro cafe.

The area around Leadville is the headwaters of the Arkansas River. It flows south to Salida CO then turns east. A few million years ago it flowed south into the present Rio Grande River valley but some volcanic activity south of Salida blocked that path and made it flow east.

After breakfast we took off runway 34 and over Tennessee pass (10.4kft) and past the training grounds of WW2 Tenth Mountain Division, the guys that fought bravely in Italy and beyond. The barracks pads are still quit visible. We then flew over the Vail ski area, over I70, past Mt Powell (named for the leader of the first boat trip through the Grand Canyon, and the first director of the US Geological Survey) and to Kremling. I left Gene in Kremling and flew home to Boulder. A great morning.

Dick Cleavinger
N213RC
Lightning #42

Tex sent the following message and suggestion on 27 August.



Here is a new product that fits great in the landing light cutout in the wing of the Lightning. It's an LED landing light and also works as a collision avoidance light. It's made by Areoleds and they can be found on the internet. I have tested it and it has quite a bright landing light and only draws 1 amp. In the flashing mode its much less. Tex

Editor's Note: The web site is <http://www.aeroleds.com/>

Below is a photo of **Jim Langley's** "jet" in flight over the Green Landings local area. Jim has been having some engine problems caused by some unknown gunk that was "baked" on his valve stems and valve guides. We all hope Jim will soon be back in the air and enjoying his beautiful airplane.



Upcoming Events:

Jabiru USA's last Engine Seminar for 2008 is set for November 7 – 9. Class size is 10 and there is only one slot still available for this seminar, so better call right away if you are interested. The next engine seminar will be sometime in January or February 2009. Anyone interested in learning more about Jabiru engines (installation, operation, maintenance, or overhaul) is welcome to attend these seminars. You don't have to be a current Jabiru owner or customer. For additional information on the seminar, visit: <http://www.usjabiru.com/zenithseminar.html>



Lightning Skunk Works:

There are some interesting things currently happening in the Lightning Skunk Works as shown below:



The owner / pilot of the aircraft on the left apparently has a bad case of “propeller blade envy”.

And the guy on the right seems to be totally “propeller challenged”.

Technical Tips

The technical tips this month came from **Tex Mantell** and **Linda Mathias**:

Some time ago we were talking about the rudder cables. Enclosed is what I have done to lessen the binding and twisting of the cables and preventing them from touching the fuse. I have taken .050 stainless steel and made two straps (2 " long), which create a universal like connection for the rudder. I just cut then twisted in a vice to get a 90* degree in the strap. Now the cable end can tilt and rotate in all directions. **Tex**



Buz, I forgot to add to my note on the rudder cables that “the cables may have to be shortened, but a small price to pay for the change”.

Tex

Hey Lightning fans,

I have been fighting wheel shimmy for quite a while on N59JL; the shimmy would start at about 18 kts ground speed. I changed to highest grade Goodyear tires, tried aluminum angle on the main gear legs to stiffen the legs, tack welded some shim stock around the axles, etc. Some of it helped but it seemed to deteriorate again recently. Today I took the tires/wheels to a local motorcycle shop to get the wheels balanced; he found that both wheels were out of balance requiring 3/4 oz weight on one side and 1/2 oz weight on the other. After adding the weights and reinstalling the tires, I did some taxi testing with great results. I taxied up to 36 kts GS and no shimmy. Hooray!

If you are experiencing shimmy, you might try this first.

Linda

Reader Feedback:

This section will contain messages that I get from readers that really don't fit the News from Builders section.

Malcolm Ferguson malannx@bigpond.com, posted the following on the email list. It is excellent material and certainly worth including in the newsletter:

I have been avidly following Buzz's articles in the newsletters on how to handle emergencies, and it is fantastic stuff. I also subscribe to the Lancair list (not on the Matronics lists) and the Lancairs have an atrocious accident and fatality rate.

Three things stand out to me:

1. Flying into bad weather and thunderstorms is advance planning for your funeral and you would expect lots of your friends to turn up and very eloquent eulogies to be given.
2. Flying into the ground out of control or at speed is almost always fatal - more eloquent eulogies, and "he was an excellent pilot"
3. The Esqual/Lightning community has probably been lucky so far considering the performance of our planes. Unfortunately not lucky enough. Actually luck does not come into it.

No 1 is very easily fixed. Don't do it, ever. But we have all had a go.

No 2 and 3 are much harder. Let's try and address no 2 and 3.

Any accident at an altitude is almost never fatal except for the odd occasion someone dies on a mid air impact. It is almost always impact with the ground that kills you. Flying at altitude is inherently safe. If we do something stupid or are unfortunate to lose a wing etc we are not going to die straight away. So if the situation is recoverable we have considerable time to formulate a response. Eg. If we are flying at 7500' and have an engine failure, in my Esqual at L/D of 13:1, I will have over 500 square miles to pick out a landing area. At 3500' I only have 58 square miles. Allow 1500' for overflying and circuit.

So really an engine failure at altitude should have a satisfactory outcome.

So, I think the danger increases the lower we are (very obvious). At circuit height or below we are in the red light zone. Engine failures in the circuit should have a favorable outcome using Buzz's techniques.

The 2 biggest risks as I see it are an engine failure on takeoff or a stall/spin in the circuit. Spins in the circuit are almost always fatal. Both do not give you time to make considered decisions but require reflex responses instantly, not in 5 seconds. Reflex responses only come by consigning an action from short term memory to long term memory and that only happens by continually repeating the exercise until the response becomes automatic. If you want to stop suddenly in a car you just automatically put your foot on the brake. You don't have to think how to do it. That's a reflex response.

If you haven't practiced stall/spin recovery and engine failure on takeoff enough to have a reflex response, you have some work to do before you could consider yourself a competent pilot and you owe it to passengers to become more proficient. Now this is where the hand grenade comes in. I'm going to lob one into the group and shut the door till the dust and commotion has settled. I.e. leave my computer off for a day or two.

Hand grenade: - Ditch the gentle turns in the circuit and make them well banked. Gentle turns in the circuit are not as safe as well banked turns.

Most light aircraft will spin much easier off a shallow banked turn, slow and over ruddered. Bullshit you say? Try the following exercise:

At a safe altitude and under 60kts, throttle back to idle and begin a gentle turn of 5 degrees and not more than 10 degrees. Now ease back on the stick enough so the speed decays about 1 kt/second. About 5-10 kts above stall speed begin to feed in rudder gradually into the turn. Hey presto you will have done the gentlest most graceful spin entry, with absolutely no buffet and no warning. Well actually you have an excellent stall prediction device in every airplane and it is between your legs: THE CONTROL STICK. Now this is the important bit. During that exercise if you did it well, the attitude did not change, BUT the stick was progressively moving back to maintain the attitude. That is the warning sign and it will predict an impending stall/spin well before it happens.

In my earlier years as a gliding instructor all students were taught to have alarm bells go in their head if the stick was gradually coming back to maintain a given attitude.

Now do the same exercise with 35-45 degrees of bank and come back and tell me what you found. In a later email I will tell you another great advantage of a well banked turn.

EFATO (engine failure on takeoff). Read the following website. It has some of the best airmanship and safety info I have seen. It's the Recreational Aviation Australia website.

<http://www.auf.asn.au/safety/efato.html>

Mike Valentine was previously the national instructor coach for the Gliding Federation. He was responsible for changing operational culture that was claiming the odd life after cable breaks on a winch launch, so that they became a rare. His work transposed directly over to his work on engine failures on takeoff.

Malcolm Ferguson

Other Items:

In the May issue of the newsletter, **Nick** and I together wrote an article which covered some issues about landing the Lightning and made some suggestions about successfully transitioning into a new aircraft. As a follow up to that article I want to let you know that there are **three simple rules** for making a smooth landing: Unfortunately, no one knows what they are.

And on another front, there was a radio call, in a very authoritarian voice, from a lost student pilot: "Unknown airport with Cessna 150 circling overhead, identify yourself."

Final Thoughts:

For those of you that might be new to the "Lightning" world, just a reminder that I don't work for Arion Aircraft or Jabiru, I am just a happy customer. Yet, because of my long association with them as friends, I often get "in on" new happenings ahead of time, and they graciously let me fly all their aircraft. But by not being part of their company, I feel free to tell it like it is and that is good for the Lightning customers and newsletter readers. And of course, I also feel free to tell them what I think, good or bad, and they seem to appreciate my inputs. Overall it is a great relationship and I enjoy helping them in any way I can. I see them as a group of friends that are helping others achieve their dreams of building a sporty aircraft.

And finally, this is the ninth issue of the Lightning newsletter and I hope all of them have been informative and useful to the Lightning community. I get feedback on the newsletter that varies from "they are great" to the other end of the spectrum, such as, "what newsletter" or "I have never read one". My point here is that it takes some time and effort to produce one every month, and with all the other aviation activities I am involved in, I am getting kind of "burned out" and would certainly appreciate some help from a "wingman". Or you be the "flight lead" and I take over. Any suggestions will be greatly appreciated.

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.)



Choir practice at the Church of the "What's Happening at Arion Aircraft".

