



EAA Chapter 32 News

Jim Bower, Editor



October, 2009

Don't forget the meeting on Saturday, October 17 at 10:00 am!



Thinking
of building? Lots of
folks are doing it, but is it for you?
See one person's opinion in this issue.

September Meeting Minutes

by Dave Deweese, Chapter Secretary

September's meeting began with the Pledge, Karsten Kessler presiding.

Mr. Bill has finished painting the flying surfaces of his VP11 and moved the last few pieces to the hangar. He has used the process as a teaching example during the last few YE events. Thanks to all for use of the ARC.

Dave McGougan debriefed us on the Trimotor event. It was very successful, with lots of volunteers from the chapter. Volunteers got rides if a seat was empty of paying passengers (some got several). There were 27 flights total, national EAA was happy with the number on Thursday and Friday, though we had a little less than expected on Saturday and Sunday. The Press Division of National sent information to local media outlets, and Bill Doherty gave an interview on channel 5. A newspaper from Centralia ran an article, netting us some riders from that direction. Tuesday's Post had a quarter page ad. In hindsight it was noted that the best press may be an overflight of populated areas. Many flights, however, were over wooded areas and the river.

Food sales are estimated at \$110 plus extra food left over. Dan Frishman, a volunteer all the way from Washington, went to fetch hamburgers and buns, Doug Killibrew was the chief cook.

Robin did a fantastic job with the motel. Fred donated his car, therefore the chapter incurred no expense for that. Bob Dooley and Rich Emery did cargo transport duty, Don Doherty helped move signs several times. Dave also mentioned Gale as especially busy during the event. Bill Doherty reported that one passenger, a paraplegic, arrived on a motorized scooter. With pilot Sam Bass's OK, Dave and Bill carried him onto the plane.

Dave next recognized new members and visitors. Jim Norris is a new member, he just came back from Michigan with a partially finished ultralight FBI Sport Lite 103. It needs engine, prop, etc. Todd (sorry for the lack of last name) visited the meeting. He is getting back into aviation, and is already an A & P. He's worked on race cars for years.

It's time again for a change of guard, the nominations are as follows:

President - Dave Doherty,
VP - Bill Doherty,
Treasurer - Don Doherty,
Secretary - Dave Deweese,
Membership Chair - Dave McGougan.

The election will be held next meeting, a ballot will appear in the newsletter.

The newest generation of the Doherty dynasty introduced themselves, and have been kicking around some ideas. They'd like to see weekly, versus monthly chapter activities with more family involvement. This could include some non-aviation activities as well. Don reviewed some family history, having been around the chapter since the age of 6, watching his dad work on the SkyCoupe. He was even allowed to build some parts, though these were typically reworked soon after. He left, then came back to the chapter after school, learning flying from Hal Christianson. He's been involved in a subdivision association and helped deal with a former treasurer who helped herself to the funds, and will keep a careful eye on our finances. There's lots of stuff going on with GA that need our voices heard. The Dohertys plan to work with other organizations such as CAF.

Gale mentioned that whenever a treasurer changes, a very basic, general audit is to be done by another member of the chapter.

Rick May covered YE business. We had to cancel Washington, moving the event to 11/7, this is a Boy Scout badge event as well. Turnout was small for the Silver Swallows event. We're winding down for the year, having flown about 250 kids, down from last year. On a positive note, lots of new pilots have come on board as the year progressed. Rick would like to have an 'Old Buzzard' event next meeting, weather allowing.

Miscellaneous business included a warning. A witness reports seeing the CAF defuel the B-25 into the tanks down by their hangar, so be careful of buying fuel from there: it may be 'used.'

Rob Burnett has Dierbergs and Shop/Save cards available.

Gale announced his new project, a Rans 6S with Rotax 912 power.

Finally, we have some tables out and don't know where they are. If you have borrowed any please remember to note this on the sign out sheet near the door.

A Few Thoughts on Building

Jim Bower

Way back in the dawn of time (1999), I was the newly-minted newsletter editor for EAA Chapter 32. I think it was that job and my apparent serious commitment to the EAA that persuaded my dear wife to give in to more than a year's worth of whining and allow me to order my RV-6A tail kit. Up until I got the kit, my only exposure to aircraft construction was the assembly of tiny plastic replicas of various flying machines. I happily put away my modeling supplies and made ready to join the big boys. A few months into the new year the tail kit arrived, and I began work on it in my immaculate workshop that I had spent most of the winter preparing for its arrival.

Fast forward to nearly 10 years later, and my slow but steady progress is about to bear fruit. "**TEN YEARS?**", you say. "What the heck? I thought these things went together like greased lightning!" The answer to that, like everything else in life, is "it depends". Most of the newer kits can be assembled lots faster than mine (all other things being equal), due to newer technology like CNC machining, more accurate molds, etc. Your learning curve, available time, disposable income, dedication, and spousal tolerance will greatly affect the calendar time it takes you to finish your baby. In my case, I have had four (count 'em, four) major home improvement projects (not counting a couple of months to insulate and drywall my garage and install a suspended ceiling). I've been on four (4) week-long vacations, numerous out of town weekends, saying "the hell with it", and those days when I decided to play hookey and hang with my honey. Illnesses, injuries, family issues, work, and outside obligations also played a part in the great delay.

In other words, sometimes life gets in the way. Therefore, your creation will take many months (or years) longer than you first imagine unless you have a very unique situation.

As for money, get ready to spend more than you think. Don't believe the kit makers' predictions of total costs. Kit prices are well advertised, but there are lots of variables. The engine will cost you plenty, so you may want to put that new car on hold for a little while. Other expenses are flexible depending upon your needs, wants, and scrounging ability. On top of that, there will be bunches of little things you've never even heard of (like fuel tank sealant).

Unless you are an experienced aircraft fabricator, you will definitely need to learn several new skills. The length of time it takes you to do that is not predictable. You will also be buying a boatload of new and special tools that you probably won't know how to use very well. Seek the help of an experienced builder.

Spousal tolerance is a highly important factor. Be dang sure your significant other is genuinely behind your project and understands the possible pitfalls. That way, when the poop hits the propeller, he or she won't blame you for sugar coating your potential project. If you get your spouse involved in the construction process, things will go much easier (provided you don't crab at them too fiercely when they goof up something). My wife learned early on how to run a rivet gun and has done primo work (provided she gets a little practice before doing the important stuff). You will also occasionally need a second pair of hands to hold stuff, turn a wrench, or lift things. Most importantly, be receptive to their need for a weekend getaway, shopping trip, or Caribbean cruise (ask me how I know this).

Despite all the delays and the occasional temptation to chuck it all and buy a spam can, I stuck with it and am fairly confident I'll be flying next spring. I can't wait...it's going to be so sweet, and I know it will be worth it.

I invite any other folks to share their thoughts and experiences with our readers who are looking at that long road and wondering whether to take the first step.

Drag

by Bud Cole

DRAG is important to any aircraft and comes in four varieties although most of us only think of it as two types: induced and parasite. In estimating performance in small aircraft the other two, profile and interference drag, are usually lumped together with parasite drag.

INDUCED DRAG is the drag we produce in wings and anything else inducing the lift we need to fly. By pulling a wing of airfoil shape and maybe a lifting body through the air we induce lift by pulling the surrounding mass of air downwards a short distance. Overcoming the air mass's inertia and actually moving the air mass some small distance uses up energy. This is induced drag and the faster we move the less angle of attack is required for the wind to provide sufficient lift. Thus the induced drag is reduced roughly by the square of the velocity and as we slow down it increases at roughly the inverse square of the velocity up until we approach the stall. When the aircraft slows below the stall speed the induced drag goes crazy and the airplane stops flying. In a longitudinally balanced aircraft the horizontal tail is essentially a small wing flying upside down to produce a downward force, or upward in the case of a canard. It is possible to make an airplane stable with positive lift on both wing and tail but balance is tricky and critical and it will be difficult to fly.

PARASITE DRAG constitutes all the rest of the drag put together. Light plane builders can rarely afford either professional wind tunnel testing or the extreme math required to make accurate predictions on performance. On most homebuilts and even small production aircraft preliminary performance numbers are usually estimated based on experience and using the 100-mph parasite drag numbers published in books. There are good and simple computer drag and performance programs. You simply list every item that causes drag at the 100-mph value, add 25% of the wing and tail area for profile drag, total these as 100-mph parasite drag value. Then you add 10% for interference drag.

PROFILE DRAG is that part of the total drag of a wing or airplane caused by skin friction and the profile shapes of the airfoils. It is very dependent on how smooth and perfect the airflow is over the forward portion of the aircraft where we are trying to have laminar flow. Any early disturbance of the laminar flow creates turbulent flow behind it and grows. Even tiny particle and bug strikes, rivet heads, access doors, propeller disturbances, joints, etc., etc., etc. At some point, usually just behind the front spar or the maximum thickness, the air ceases to be pushed aside by the wing or vehicle. It is dependent on atmospheric pressure to be pushed back in behind and this is far lower than the pressure the moving object can apply so the air separates from the surface losing its laminar flow creating a low pressure area and turbulent flow with much higher drag. Because there is now higher pressure under the wing, air flows around the trailing edge and forward generating vortexes like rolling bearings to help the atmospheric pressure fill in behind the wing or any other object moving through the air. Because profile drag increases at the same rate as parasite drag as does interference drag, both are estimated as part of parasite drag and in a sense they are.

INTERFERENCE DRAG is to a great extent ignored in designing small and slow speed aircraft and normally taken care of by adding 10% to the total parasite drag which works well enough. Any designer should be aware of what it is and what it does. Any object forcing its way through air, (or water,) generates a boundary layer of pressure around it because inertia does not allow the fluid to move away instantly. When any two or more objects come up against each other at steep angles, like a wing or tails and a fuselage their boundary layers meet and interfere creating higher pressures and more drag. This is not critical at slow speeds but about Mach .7 becomes serious and at Mach 1.0 creates the drag rise. The WW-II XP-67 eliminated it.

Product Review

BrightLine Pilot Bag

by Jim Bower

Every once in a while something comes along that knocks my socks off with its extraordinary value (and "cool factor"). Such a product is the Pilot bag from BrightLine Bags (\$129.00 on the web).

(www.brightlinebags.com/)

Only about 4 days elapsed between the time I saw the writeup for this bag in the latest issue of "*Plane and Pilot*" magazine and when I had it in my hands. I would have had it sooner, but I needed to ask them if it would hold my rather large Lightspeed headsets as instead of the David Clarks shown on the website. This bag is only 12" high, 10" wide, and 9" deep, but it holds all my stuff (and there's plenty of room for more).

Over the years, I've used several different bags to carry my flight-related things. Some of those had pockets on the ends to hold my headsets, but the rest of my junk just rattled around inside the duffel. Said duffel was really too big for all that stuff, which made it awkward to carry and a little embarrassing (as if I was going on a safari).

NOTE: Neither Chapter 32 nor I was compensated in any way for this product review. It was done solely for the purpose of informing my colleagues of a product well worth their consideration.



The bag has zippers galore and 25 specialized pockets that are generally meant to hold specific items like a handheld radio, flashlight, cell phone, etc. but you aren't really constrained to use the pockets as designed. There's even a separate pocket for your fuel tester so it doesn't drip on anything else.

As a bonus, the bag unzips into two separate bags so you can leave some stuff (charts, XC paraphenalia, etc.) at home, or fit them into very small spaces in your airplane.

You absolutely have to check this out if you're looking for a compact, extremely efficient way to carry all the stuff you take along on a flight, whether you're going for an hour's worth of instruction or a 3-day cross country. If you have any questions, don't hesitate to send an e-mail to the guys at BrightLine. They're very friendly and helpful.



Learning As We Go

"This Ain't Right, We Are Outta Here!"

or

"Pitch, Power, Performance"

mr. bill

After a couple of brutal fall weather days of flying on my last four day airline trip it was now the last leg home from New York City. The O'Dark thirty flight from Nashville to New York's LaGuardia Airport (LGA) went quick. The 105 mile per hour tailwind helped make the flight a pleasant one.

Upon leaving New York for St. Louis the LGA outbound ground traffic was only four airplanes. It is usually 15+ planes and due to the criss-cross layout of the runway (one northeast/southwest and the other northwest/southeast) configuration it is the routine of one plane lands and then one takes off. This in, out, repeat routine takes 3 minutes per cycle. So when there are several planes waiting to depart the lengthy delays are just NORMAL for LaGuardia.

Captain "Sully" cleared the departure path just the day before on his first flight back in the saddle! Both Sully and co-captain Skiles have signed on to be the new Young Eagles Chair persons for the EAA Young Eagles Program just days earlier. Thank you gentlemen!

As we approached St. Louis the surface winds were 240 degrees at 24 miles per hour (mph) gusting to 38 mph. The plan was to use runway 24 at Lambert but approach control had thoughts of us using 30 left. A Boeing 737 was spotted on the five mile final for runway 30 Left and we were told to follow it. The next 10 minutes of flight were a classic wind shear scenario. The McDonnell Douglas DC-9-80 auto-throttle system was sliding the throttles forward and back on the throttle quadrant trying to keep up with the airspeed changes. After lining up on final for 30 Left the auto-throttles were disconnected so I had some "control" of the airplane's speed. The increasing wind shear caused the airspeed indicator to increase 23 mph. Landing reference speed was 145 mph. We add 5 mph (for safety), plus half the wind gust amount is also added to the landing reference speed, up to 15 mph. One must remember that for every extra mph of airspeed the plane will float an extra 100 foot down the runway.

Here is the situation: At 1,000 feet above the ground the landing gear is down and the wing flaps are 40 degrees and the plane weighs 128,000 pounds (max landing weigh is 130,000) and the airplane was climbing and gaining airspeed with the throttles at idle! Do we see a problem here?!? The wind vector at 800 feet above the surface was from 240 degrees at 55 mph. The "plan" was to push the airplane down toward the runway to force it over the touch down zone and place it on the concrete. But with the plane climbing at idle power AND THE AIRSPEED INCREASING, my little brain knew that this is all wrong! I PULLED back on the control yoke to PITCH up, pushed the throttles up to full POWER, and called for flaps 15, to reduce drag. Assuring a POSITIVE rate of climb PERFORMANCE, I called for GEAR UP, and we climbed to 3,000 feet and raised the flaps up.

I mention all of this to the EXPERIMENTAL crowd because during one of my early (Biennial) Flight Reviews it was a big factor. During my flight reviews I always have the pilot do a go-around. Several amazing responses have occurred when I say "go around!" Because we rarely do the maneuver it needs to be done right. Sometimes you do not have time or worse yet, Altitude! Practice makes perfect.

This EXPERIMENTAL man with his retractable landing gear airplane had never been taught how to do a go-around in his flying machine. Using the PITCH, POWER, PERFORMANCE we can evaluate what should be done.

First, will the plane fly with the landing gear down?
Yes!

Will the airplane climb with the landing gear down? Yes, if we PITCH up and pull the nose up!

Will the airplane climb with the landing gear down at idle power? NO, so we must add full POWER.

Will the airplane fly with the landing gear down and full landing flaps? Not well, so we must get the correct configuration for the flying machine to get the maximum PERFORMANCE out of the airplane in this crucial situation.

Each airplane is different. With full power, this airplane will climb with the landing gear down and with the wing flaps at 15 degrees down. So it would make sense to get the airplane in that configuration so we can climb out and get away from the runway. It also makes sense to leave the plane in that configuration if one is going to stay in the landing traffic pattern so as to not forget to put down those black round rubber discs that make it so easy to get over to the terminal.

That said, you can see the excitement when, while flying in this retractable gear airplane, I made the call to "GO AROUND!" and this man first reached for the landing gear lever and quickly raised it to the UP position. The flap handle was flipped just as quickly to the UP position as the landing gear lever. The pilot THEN reached for the throttle but I had already pushed that full forward while pulling back on the control stick and just as fast as the landing gear switch went up I flipped it back in the DOWN position! Just in case we did "touch" the runway, we had those black round rubber things out to hopefully bounce off the runway.

Back to the DC-9-80 story. At 500 feet above the ground my fun meter was pegged and I pitched the nose up, advanced the throttles to full power, called for flaps 15 degrees, positive rate (yes we are climbing away from the runway) landing gear up! We climbed to 3,000 feet and started a tour of the area. It was a beautiful tour of St. Charles Muni Airport at 3,000 feet. Then we cruised by Smartt Field. Next was a quick trip over the Jamestown Mall so we could turn final for runway 24 at Lambert Field. The touchdown was smooth and when the nose wheel touched I placed the thrust reversers out to the idle thrust position. With the 48 mph headwind right down the runway the airplane was easy to land and easy to stop! As we turned off the runway I heard a noise in the back and was reminded of those 143 souls on board who are relying on our skill and judgement to do the SAFE and right thing. I think the end of the flying performance was acceptable because there was actually applause. We lived to fly another day and we get to use the airplane again too!



[Click here to see full video](#)

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 Chapter happenings!

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