

Silent Knights Soaring News

Editors Note.. Remember, this is your Newsletter so put forth a little effort and write an article for inclusion in the next issue. Send me an email at robertB578@aol.com or call me at (302) 376-7517. Bob Bickerton

President's Corner

“Well it’s cold outside. I’m thinking that I have to start wearing socks, and it’s time to put away my planes and reminisce about the summer. It was a great flying season after all. We couldn’t have had a better day for our fun fly. If you weren’t there, you reeeeeeally missed a great time. The food was great, the flying was great, and the camaraderie was great. Did I mention that it was great! We had so much fun we forgot about the contests! I’m already looking forward to next year.

I can’t remember when we had a season where we had so many good thermal days. There was one day in particular where several of us specked out and made speed runs only to return to altitude for another speed run. I think we did this four or five times in a 30-minute period. When was the last time that happened?

We had a great electric season. I was even an electric convert! Wednesday nights were fantastic, with a great turnout.

I even went to an indoor event. I’m almost convinced to try my hand at it. If you haven’t been, you should go take a look.

You know what, after all this flying talk, I decided I’m going to put my socks on and go flying. I think we still have a couple of months left in the season.” Terry Lisansky

Sailplanes and

Fall is here and time for leisurely soaring is growing shorter and the winter building season is fast approaching but we can look back on some great soaring this past summer. Included in those great soaring days was the second SKSS hosted ESL contest on August 2nd and 3rd. The possibility of rain was forecast but rain held off until the final round on Sunday. The CD for both days, John Jenks, ensured that all went smoothly and the event was a big success. Below are pictures of the winners for both days. Congrats to all!!!



Thermal Duration - Electric Powered Sailplanes. "...thermal duration contests are currently not about flying, they are about what happens when the plane hits the ground." This quote from Darryl Perkins (Quiet Flyer, Nov. 2003) refers to the fact that landing points are what win TD contests and not flying skills. Darryl also says in that same article that TD for the future will need to be based on 'man on man' contests and that we need to figure out how to make that scoring system work everywhere. Flying skills need to be in the scoring equation. Anyway, the article prompted me to reflect on our own activities in thermal duration. It seems to me that most of our new members begin with an electric powered aircraft and never get into thermal duration with sailplanes. True, we have two Spirits with a buddy box and a new Eclipse transmitter. While Spirits are graceful flyers and will thermal, they get flown more by old timers than by new members. Then too, it takes someone with a mastery of the winch to launch a Spirit without breaking a spar. Perhaps it's time for us to consider replacing one of those Spirits with an electric powered sailplane. A sailplane that can be flown by beginner (with or without the buddy box) or expert but also one that will soar; not a park flyer with great gliding characteristics! There are a number of ARF candidates that might fit the bill. It might be a way to introduce some people to the joy of thermal duration. Would such activity make winches and high starts a thing of the past? I think not, for many enjoy the quiet and grace of unpowered flight, but for some, electric powered sailplanes is an enjoyable option. And, why not? Full scale powered sailplanes or motor gliders have been around for a long time. Currently, the "Antares" is being developed in Germany as a full scale electric powered motor glider and many models are being offered as 'pure' sailplane or electric powered. In my view, the motor in an electric powered (EP) sailplane serves only one purpose and that is to replace the winch or high start; to be the power which allows one to climb to altitude, switch off the motor and go thermal hunting and just soar. This is not to disparage 'hotliner' or other 'powered sailplane' aspects of the hobby/sport but rather to emphasize that, in my view, the grace and beauty of sailplane flying is not lost when an electric motor is a power source. Bob Muma's EP 'Graphite' is as graceful and svelte when soaring as the unpowered original, Tom Sutor's 102" wing span 'Elegant' soars beautifully and is beautiful to watch and, several 1.5, 1.8 or 2 M electric powered Omega's owned by club members are graceful flyers. Anyway, just some rambling and something to think about.

ELECTRIC



First Annual DEFF (Delaware Electric Fun Fly). September 6th was the date and Dick DuPont was the

honoree for the first scheduled annual Delaware Electric Fun Fly when 50+ pilots and spectators gathered for a day of

Silent Knights Soaring Society	
President -	Terry Lisansky
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AMA Chartered Club No. 950	

relaxed fun flying and barbeque at the SKSS Big Pond field. Guests from other area clubs ensured a variety of planes from LiteStiks to large Old Timers and scale. Glider guiders had their fun too, as a winch was set up to allow all to have fun. The highlight of the day was the presentation by Prez Terry Lisansky of a laser engraved Walnut plaque to Dick DuPont in recognition of his many contributions to SKSS in particular and to model aviation in general. Terry also presented Dave Godwin with a check in appreciation of his efforts for SKSS (those of you who don't know Dave now know who keeps the grass nicely cut for us and who hauls tables and chairs to our contests-that quiet man behind the scenes). The picture shows Terry with Dick and Dave just after the presentation. To Dick and Dave, a big "Thank You" from all of us.

NEAT FAIR 2003. The Northeast Electric Aircraft Technology Fair is held each year in the middle of September at the Peaceful Valley campground in Shinhopple, N.Y. The event, hosted by the Silent Electric Flyers of Long Island (**SEFLI**), was held on September 12th, 13th, and 14th. Having been to previous events we knew that an early arrival was the only way to ensure finding a convenient camping place so Dave DeGroot, Bill Groft, Jack Alderson and me left Newark on Thursday, September 11th, about noon in the motor home we had rented. The trip takes about 4.5 hours and Dave, as driver, performed yeoman duty and we arrived safely in late afternoon. There were already many RV's and campers there but we did find a convenient hook up for water and electricity. Flight activity was ongoing when we arrived so we watched some 3D flying of a BlueCor fanfold foam airplane that was impressive – the wing is flat foam, no airfoil! Later, we watched this same plane fly in total darkness with lumilite (?) wires outlining the wings and fuselage. But, the event didn't officially start until the next morning so off to bed and a good nights sleep then up at 6 AM Friday to find many planes already in the air. So, just what is NEAT? An event where everything and anything related to electric powered flight can be touched, talked about, observed and bought, and flying of models from 4 inch wing span to quarter scale electric power goes on continuously. All major vendors to the electric power enthusiast are there as well as some of the best pilots in the country. There were eight pilot stations in continuous operation. Flight demonstrations were presented everyday at noon when some impressive piloting was to be seen. Jason Shulman flew the complete F3A pattern with his electric powered Acro-2 with a precision that has to be seen to be appreciated. Interesting to me was that the Hacker C50 motor was receiving power from a 10S3P (10 series, 3 parallel) lithium polymer battery; that's about 40 volts and the motor only drew about 30 amps. Gary Wright flew every 3D maneuver imaginable with his electric powered helicopter including 'cutting the grass' while hovering inverted. Gary also flew his new E3D XL, an 80-inch wingspan 3D model impressively. Keith Shaw flew his F8F 'Bearcat' and his beautiful Fokker D-VIII; very scale-like in performance; he also displayed his Bugatti with contra rotating props. Matt Keenon flew his little 10" span P-38 and his 8" span P47. Both were fast and difficult for me to see in flight but very impressive. The practicality of electric aerotow was also demonstrated when a large electric powered Super Cub towed a 4 meter wing span scale sailplane aloft and released it after one circuit around the field. One thing in particular that impressed me was a sign at the entrance to the flight stations. In large letters it said "Pilots! Please limit your flight

times to 10 minutes”; lithium polymer batteries have certainly had an impact on electric flight duration! It was only last year that pilots were happy with 5-7 minute flights. Space doesn’t permit a detailed review of all that was there but if I were to generalize I’d say three elements were in obvious abundance – lithium polymer batteries, brushless motors and 3D style flying. In addition to the blue foam plane, there were a couple of white foam ‘Ultimate’ biplanes (flat airfoil) flying 3D. With Jason Shulman at the sticks the flights were impressive indeed. They were so ‘cute’ I just have to build one. Excellent piloting skills weren’t the limited to old timers either. There was a 13 year old, John, who was exceptional in piloting his Miss June 3D model as well or better than some of the older experts.

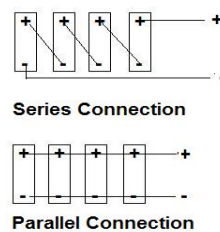
Vendors were in abundance too, and many not only displayed and sold their products but demonstrated them as well. Hobby Lobby, Northeast Sailplanes, Hacker Motors, and Mountain Models, to name a few, had flight demo teams showing off their products. You could watch it fly then go buy it if you wished. There were show specials and one that caught my eye was a six pack of Coke for \$125 with a free mini airborne camera, transmitter and ground receiver - Airborne video for the masses. Lectures, seminars, discussion subjects -- it was all there.

Is it worth it? A definite YES! If you’re interested in electric powered flight, a visit to the NEAT Fair next year should be on your must get there list.

How To! Lithium Battery Packs! Again!!

My last ‘how to’ on lithium battery packs created a number of questions for some so I thought I’d take this as an opportunity to attempt to answer. First,

some basics. A battery is composed of one or more cells connected in series or in parallel. Serial connections are positive to negative; parallel connections are positive to positive and negative to negative. (See sketches). When connected in series the voltages of each cell add together and the capacity of the cells remain constant; when connected in parallel the capacity of the cells add together and the voltage remains constant. In the example, if our cells were 1200 mAh lithium cells at 3.7 volts/cell, the four connected in series would give us a battery of 14.8 volts and 1200 mAh capacity. The four connected in parallel would give us a battery of 3.7 volts and 4800 mAh capacity.



Battery capacity and discharge capacity. Our single cell lithium battery has a stated capacity of 1200 mAh. This means that it should deliver 1200 mA for 1 hour; if our motor draws 1200 mA of current our battery should run it for 1 hour and this would be referred to as a 1C discharge capacity. What if our motor draws 2400 mA of current? Our battery should run the motor for $1200/2400 \times 60$ or 30 minutes. Will it? Probably, and this would be referred to as a 2C discharge capacity. What if our motor draws 3600 mA or 3C of current? Will it run the motor for the 20 minutes it should? It depends on the battery chemistry and manufacturer. The early Kokam lithium batteries were only rated at a 2C discharge capacity so discharging them above this rate would result in a delivery of much less than the stated capacity, perhaps only 50% or 600 mAh. We would get then $600/3600 \times 60$ or 10 minutes and not the 20

minutes we expected. Additionally, this higher than specified discharge rate could cause the battery to heat up and possibly destroy it. (The matter is further complicated because there is a voltage decrease with higher current draw but we'll ignore this for now.) Newer lithium polymer cells have higher discharge rates; Etec at 7C, Thunderpower and some Kokam's at 8C and a 340 mAh Kokam cell that is rated at 20C!

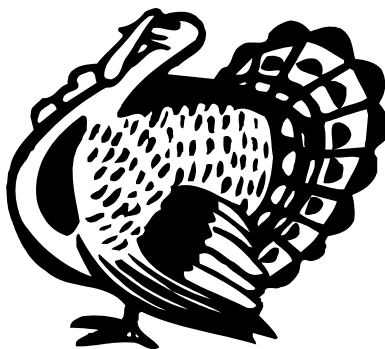
If we know the current drawn by our motor and the discharge capacity of the cells we want to use, we can put a lithium pack together. We'll use two motors for our example; one, larger brushless motor (Hacker C40) that draws 35 amps at 11 volts at full throttle and the other, a small coreless motor (DC5.24) that draws 900 mA at 7.4 volts at full throttle.

Pack parameters	Large Brushless – 35 Amp	Small Coreless – 900mAmp
No. of cells to get needed volts (series)	3X3.7=11.1 volts	2x3.7=7.4 volts
No. of 8C 1200 mA cells to get needed Amps. (Parallel)	35/8=4.375 (pack amps) 4x1200mA=4.8A	0.9/8=0.11 (pack amps) 1x1200=1.2A (more than we need)
Total number of cells	12	2
Pack Configuration	3S4P	2S1P*
Projected Flight Time full throttle	4.8/35x60=8.22 minutes	1.2/.9x60=80 minutes

*Although 2S1P is used so that multiplying the two numbers together will give you the total number of cells in the pack, the 1P is not necessary and the pack could be referred to as 2S.

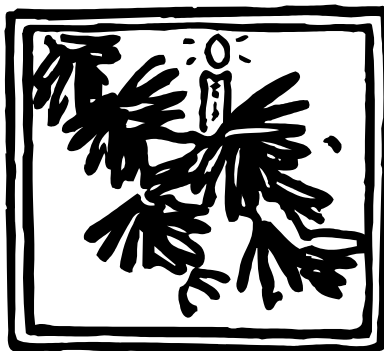
SKSS Scheduled Events – There are no further scheduled flying events during the winter months.

SKSS Scheduled Meetings Regularly scheduled meetings are held the second Tuesday of each month at 7:30 PM, Location to be announced.



Have a Happy Thanksgiving

AND



A Joyous
And Happy New

holiday season
Year