

Silent Knights Soaring News

Volume XVI I
January 2004

Issue No. 1

Editor's Note: We need articles for future issues of SKSS Soaring News. Please email me with items you would like to contribute. RobertB578@aol.com

Presidents

"Wow, It's hard to believe that 2004 is here already. The political campaign for the SKSS was hectic and hard fought and the elections are finally over. After arguments about hanging

chads and 2 recounts the new officers are:

Bill Groft, President

Bob Muma, Vice President

Bob Bickerton, Treasurer

Jim Faassen, Secretary

We want to thank Terry, Ed, Frank, and Bill for their efforts last year. THANKS!!!

2003 was a very good year. The lease on the field was renewed for another 5 years, the first annual Delaware Electric FUN Fly recognizing Dick duPont was a great success, we had two ESL unlimited glider contests, and our membership grew to over 70. The Wednesday night fun fly's were always well attended and everyone attending seems to have a great time!

An aggressive agenda is planned this year to encourage more of our members to come fly with us and have FUN. There are a lot of experienced, dedicated modelers in our club that are excited to share their knowledge with others. For example, Bill Brenchley has volunteered to head up a new flight-training program. Members will be able to schedule private lessons to learn, or bone up on, all aspects RC flying. Our stable of club planes will grow with the addition of an electric trainer and a hand launch flying wing. We are planning show and tell demonstrations at all of our club meetings and clinics throughout the year. The clinic topics need to be driven by you. If you need instruction on building or any other technology associated with soaring or electric flight let me know and I will see if we can arrange a clinic.

One ESL contest and the Delaware Electric Fun Fly are already planned. We also want to arrange some other FUN events throughout the year for members and their families. Email any suggestions to me at bill@eft-inc.com. Come fly with us." Bill Groft

How to Clinics

There is a wealth of knowledge available from the many members of the club and all are willing to share. Want to know how to repair crash damage or how to use Motocalc to select a motor or maybe you'd just like to talk about sailplanes and airfoils just

Silent Knights Soaring Society

President – Bill Groft
Vice President – Bob Muma
Treasurer – Bob Bickerton
Secretary – Jim Faassen
News Editor – Bob Bickerton

AMA Chartered Club # 950

to learn what the experts do or would you like to see a demonstration of covering with plastic film. SKSS will be sponsoring a How To Clinic for members but before setting a firm date we'd like to get your input on what you'd like to learn about. The session will be held at the home of a member and Bill Brenchley has volunteered to do the first one. PLEASE, to make this as productive as possible, email bill@eft-inc.com with your wish list.

Sailplanes and More

It's January and the winter building season is here; I hope all have your projects scheduled. For me, one of those projects is getting servos reinstalled in my 'Whisper' and programming my new Multiplex Royal Evo transmitter for it. Yes, a new sailplane radio. You know that I like to fly electric power as well as sailplanes and I've longed for a transmitter that would allow me to do both. A radio that would allow for the complex setups required for full house sailplanes and yet provide for equally complex setups on a powered plane. Having read the specifications for the new Multiplex Royal Evo™ transmitter, I thought it just might be the thing. With a birthday close at hand, my wife now knew what to buy me. It was difficult to find one; they are not yet readily available but I was lucky and found a 12 channel one for \$499 at Hobby Horse in Wisconsin. Having used it for a couple of months now, I think it's a



winner so thought a little review might be interesting. To begin, my Royal Evo (RE) is the 12 channel synthesized version meaning that the frequency is electronically synthesized rather than being controlled by a single crystal (the frequency is selected from within the software). A single transmitter can be used on all legal channels from channel 11 through 60. It has 36 model memories with model names up to 16 characters, dual or quadruple or more rates, exponential on all flight controls, flight modes (4) and all the switches and controls (called 'widgets' in Multiplex vernacular) are freely assignable. The transmitter has two rotary/pushbutton combined switches called 'digi adjusters' which can be used for programming or, when assigned to a control, can be used for making in flight

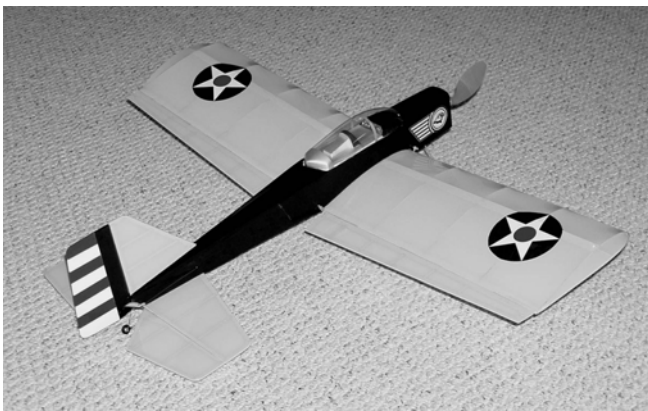
adjustments (i.e. the amount of elevator to flap compensation or aileron differential, etc.). It has 14 mixers with 5 being factory preset (but changeable if you want), adjustable gimbals (length, tension and angle), three types of stick assemblies including one which has two switches built in, and the transmitter is powered by a six cell, 1500 mAh NiMH battery which gives an operating time of about 10 hours (yes, 10 hours). A nice feature built into the transmitter is a charge monitor. If you charge the battery while in the transmitter (you can remove it to fast charge it), a circuit monitors the input charge and then monitors it also during use giving, on one of the status displays, real time capacity, voltage, estimated residual operating time and total operating time. The transmitter software is upgradeable by downloading the most recent version from the Internet then uploading to the transmitter. The RE is VERY different from transmitters with which I was familiar. Take it out of the box, turn it on, turn on the receiver in a model on the same frequency and nothing happens when you wiggle the sticks - it has to be programmed first. This is because, among

other things, the receiver channel outputs are NOT hardwired like most other radios. You must assign a servo to a receiver channel - nice, huh? Want two aileron servos with a 4 channel receiver? Easy, just 'tell' the RE that channels 1 & 2 are ailerons, channel 3 is motor and channel four is rudder; or that channels 1 and 4 are aileron, channel 3 is rudder and channel two is motor. No more fixed receiver channels!!! And, each receiver channel (and, thus servo) can, through a mixer, have up to five separate inputs. Mixers are quite different as well. There are no 'master and slave' channels so mixing is limited only by your imagination. There's lots more, like servo speed and symmetrical or asymmetrical mixers and 3 point and 5 point curves, but how's all this work for flying. Great!! I will admit that after reading the manual I decided to program a simple electric model as my first attempt. It took me about 5 minutes. Emboldened by this I set out to program my Omega full house sailplane on the RE. I had been flying the Omega with an Airtronics Stylus and used rudder, elevator, ailerons, flaps, launch mode presets, aileron differential, dual rates, flap to elevator compensation and thermal full span camber adjustment. To be honest, it took me several hours to get this all set up, not because it was difficult but because it was so different. - I just didn't think the Multiplex way (you have to unlearn the Asian radio programming you've done). The transmitter has factory installed templates for a full house glider and an assignment list for gliders. However, I didn't like the assignment of widgets to controls and when I tried to change them I got a caution that any changes I made would affect any model that used that assignment - I was intimidated to say the least. Ultimately, I made my own assignment list in one of the blank ones available and went on with it. The result was success! I have three presets (launch, normal and reflex) all on a three position switch, flap and rudder on the left stick, aileron and elevator on the right stick, thermal camber adjustment on a slider, dual rates for all controls on one switch, and elevator compensation with flap deployment. Now, if I was a competent pilot!! You can tell I like the RE. Are there any negatives? Just one that I have found so far and that is that different amounts of exponential cannot be associated with different rates. Though probably not critical for most applications it is for others. For example, with my little WingE on high rates I use 60% exponential but on low rates I use no exponential. With my RE, when I set 60% exponential in high rate I also get 60% in low rate. There may be a solution but I haven't been able to figure it out yet so I hope it gets changed in a future software upgrade. How does the RE compare to other high end transmitters? I don't know enough about the Futaba 9Z series or the JR 10X series to make valid comparisons; it is as fully capable as the Stylus and is more flexible in many ways. Anyway, if you're in the market for a high end transmitter, give the Multiplex Royal Evo a look. I really like mine.

Electric Corner

Mountain Models Switchback Sport. One of my purchases at the NEAT Fair was a kit of the Switchback Sport by Mountain Models (www.mountainmodels.com). With this cold winter weather I've had a chance to build it and

decided a mini review was in order. The kit is very complete and comes with laser cut balsa, all hardware (wheels, canopy, pushrods etc) and a covering material called Doculam. Doculam is a transparent self adhesive heat shrink material; it is water clear when shrunk.



The laser cutting is superb and all parts fit well. Building the Switchback is a little like putting a puzzle together. Each joint is cut differently so you need only find the mating part and glue it together. Building goes quickly because of the accuracy of the laser cutting and it designed to be very light. I didn't use the clear Doculam (I have enough trouble seeing my planes anyway) but chose, instead, to use Solite from Balsa Products. When covered, but with no motor or battery, my Switchback weighs 7.5 ounces. I've got Razor Micro Heli motor with a GWS 6.6:1 gearbox installed and plan on using a two cell Thunderpower LiPoly battery pack. When finished you have a low wing sport model with a Clark Y airfoil (see picture). Negatives? Only one for me and that is the wing attach method. This uses the traditional rubber band over wooden dowels method. The problem is the single aileron servo is mounted in the bottom of the wing so to put the rubber band on you need to run them underneath the aileron push rods - a pain I think. Anyway, haven't flown it yet because of the weather but will report back when appropriate.

22" Depron Foam Ultimate Bipe A thread on the Ezone reported on and provided plans for an Ultimate Bipe made of Depron. There are also plans for a 3DX monoplane also made of Depron. Several of us have downloaded the plans and built them. These things are unbelievable flyers so if you already have some micro sized radio equipment and want to have a ball, buy some Depron and email me for the Ultimate Plans (robertB578@aol.com). These planes have flat plates as flying surfaces and profile fuselage and with the GWS DXA motor and a 3 cell Kokam 340 lithium you can get 3D performance or, reduce control surface throws, and fly leisurely around for nice long flights.

Resources for electricists. There is lots of resource available to the electric flight enthusiast but one I like and use frequently is the Ezone (www.ezonemag.com). Just click on 'Discussion' on the left column and you're taken to a wealth of information: general discussion, batteries, motors, radios, the workshop, indoor and micro RC; there's a vendors forum where you can ask questions about specific products and receive answers from the company, and it's free. Try it, I'm sure you'll find something useful to you. Just explore!

How to: Micro

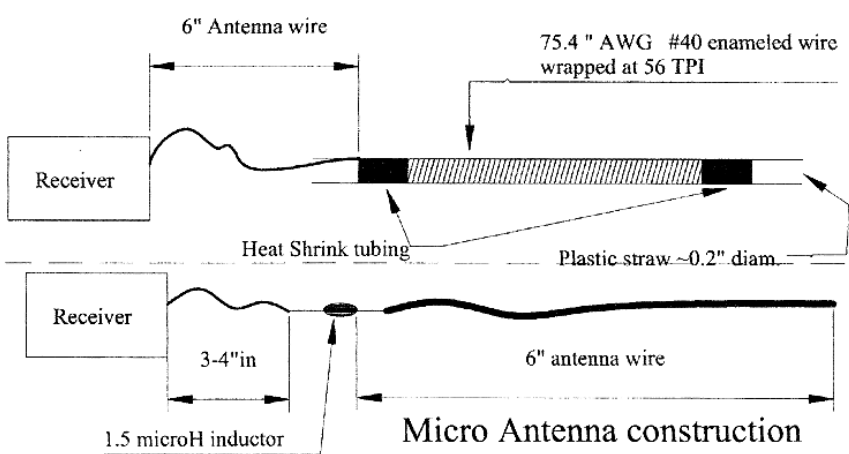
Most of you know that I fly small electric planes as well as sailplanes and, with the small electric powered planes I dislike having that long receiver antenna trailing behind. I've searched for small antenna's that I might use to replace the factory fitted 36-39 inch one. There has been a Deans base loaded antenna available for some time but it's rather heavy though used a lot by the helicopter flyers. A couple of years ago some people at the NEAT Fair showed me some simple ones they had constructed with 1.5 micro Henry inductors and 7 inches of music wire. I made some; only about 1 out of 3 worked. More recently Azarr has introduced his M72 and M72L antennas, which I have used and they work well, but they're \$12.00 each. Jim McPherson sells a similar one, the Litenna, for \$6.00 and it too works well. They all look simple enough so, can we make them. You bet and here's how.

The Azarr M72 antenna always intrigued me and I thought it was just 39 inches of wire wrapped around a plastic tube. I made one and it didn't range check at all. Azarr wouldn't tell me how they were made. But member Jack Alderson bought one and brought it over to my shop and began a dissection. We found that it was 40 gage wire. Jack counted the number of turns in one inch and, knowing the diameter of the plastic tube calculated that

there was about 78 inches of wire on the tube and there were 56 winds per inch.. Aha, that is close to a 1/2 wave antenna for the 72 mHz frequency so we set out to make some. Microsoft's Encarta reports the speed of light at 299,792,458 meters per second Our transmitters broadcast at 72 mHz or 72 million cycles per second so 299,792,458 divided by 72.5 million (the middle of the 72 mHz band) is 4.14 meters (162.8 inches) for the wave length of one cycle. Half this is 81.4 inches for a half wave antenna. So, all we need to do is wrap 81.4 inches of 40 gauge wire on a plastic tube at 56 turns/inch. To do this easily you need a thread cutting lathe set to 56 TPI. I shopped around and found some plastic drinking straws that were about the same diameter as the Azarr antenna. I mounted the straw on a mandrel in the lathe, coated the straw with post-it glue (to hold the wire neatly) and wound 75.4 inches of wire on the straw at 56 TPI. I used 75.4 inches so that I could add 6 inches of regular antenna wire between the receiver and the antenna and end up with 81.4 inches. We've made several of these antenna's now and they all seem to work well for the smaller models. Would I trust one in a sailplane? No, because I know very little about why this antenna seems to work but I know the manufacturers supplied one works to speck out distances. For the small park flyer kind of plane they're nice though and you don't have that long dangling antenna to step on accidentally.

The other, more easily made, micro antenna is similar to the Azarr M72L or the Litenna. It's simply a 1.5 micro Henry inductor soldered to 6 inches of wire and connected to the receiver. As noted above, I had tried this before and was not very successful. I couldn't understand why some worked and some didn't. I still don't know but I do know the inductor used seems to be important. The first ones I bought were made by Delevan and were + or - 10% tolerance - some worked some didn't (the Deans uses a Delevan 5 % tolerance but it's larger) . The inductors I now use are Miller and are 10% tolerance but seem to work

consistently (DigiKey part no. M7815-ND). But, please, please if you do make a micro antenna do a good range check before you fly and don't fly if you don't get almost the same ground range as you did with the normal receiver antenna.



There are no guarantees on any of this so go forward at your own risk! They have worked for me. (Note!! Just read the December issue of RC Microflight and therein John Worth on page 15

describes a micro antenna built by Eric Schellenberger. He reports 4 inches of receiver wire soldered to a 1.5 micro Henry choke (inductor) then to 6 inches of music wire. The inductors are available from Cloud 9 RC for \$1.00 each!!)

SKSS Scheduled Meetings/Events for 2004- Regularly scheduled winter meetings are held the second Tuesday of each month at 7:30 PM, Location to be announced. Our next meeting is February 10th at EF Technologies on Sandy Brae Dr. in Newark. The March meeting will be held on March 9th. Reminders will be sent.

March 14th - general cleanup, winch maintenance

April 10th - Club meeting at Big Pond Field

May 8th - Club meeting and planned interclub sailplane contest/swap shop at the field.

June 12th - Club meeting at the field

July 17th - Club meeting with afternoon picnic for families and AMA Cubs for the kids to build and fly

August 14th - Club meeting at the field

August 21,22 - SKSS hosted ESL Contest at the field

September 18th - Club meeting and Second Annual Delaware Electric Fun Fly (DEFF)

October 9th - Club meeting at the field

November 9th - Club meeting

Happy New Year