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General Meeting

**Wednesday,
May 19th
7:30 pm
Verizon Labs
Sylvan Road, Waltham
Exit 27b off I95/128**

Entertainment



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May Raffle Prize



Hobby Lobby - Skylark

or



Esprit Model - Traper

WON
a
COOL TOOL
for
Show-n-Tell

President's Message



Well Springtime is here and along with yard cleanup, it is time to do some maintenance to those old planes so that they can be flown with minimal field repairs. Let's check linkages, batteries and anything else we can to make sure that they're airworthy.

We have had some great response as far as volunteers go. It is nice to see the newer members take charge and make things run smooth so us old guys can get some rest!

Thanks to Tony Davids who was the latest to volunteer to do more than his share!

The Millis club has done a wonderful job at the Bill Martin Field in Medfield. They have put in new fencing and generally have kept the field in great shape. Bob Scott has volunteered his services with his Bobcat in the next few weeks to smooth the road. Perhaps on that day, we can show up with some hedge clippers and trim the vegetation from the road!

It is never too early to plan for Summer events so if you can find the time, we can use volunteers for the two contest weekends at Davis Field. We are hoping that if we can get enough volunteers, it will be fun for everyone and not work!!

As for the next meeting, let's all come up and have as much fun as the April meeting which was fun for all. Don't forget the show and tells. There will always be someone to offer some suggestions!

Happy Flying!

- Ken Antonellis



MEMBERSHIP STATISTICS

At this time last year, we had 136 renewals and 10 new members. The number of members who did not renew in successive years is:

1999-2000 23
2000-2001 50
2001-2002 36
2002-2003 40
2003-2004 55 (so far)

Year	Renewals	New Members	Peak Totals
1999			135
2000	112	62	174
2001	124	50	174
2002	138	58	196
2003	156	40	196
2004	143	16	159

- Dick Williamson

TREE CLIMBERS

Tony Morais

A1 Tree Services- Framingham, MA
508-626-0088 800-657-7788

Kenny Greeno

Office Phone: **617-661-8591**
Cell Phone: **617-201-5300**

Brian Pikarski

Burlington, MA
617-797-2136

Paul Harrington

(508) 376-2573
[Medfield Area]

CRRC BUILDING AND FLIGHT INSTRUCTORS

This is our list of qualified and willing instructors. Power planes are flown only at the Bill Martin Flying Field in Medfield. Sailplanes and Electrics can be flown at the Davis Farm Field on Rte. 117 in Sudbury. For directions to the fields go to <http://www.charlesriverrc.org>. If you have any questions about the construction of your airplane, or want to have an experienced pilot preflight check your airplane before heading to the flying field, then call any of the building instructors.

BUILDING

Ruane Crummett

Wayland 508-655-2234

Fritz Bien

Concord 978-369-1720

Joel Foner

Natick 508-653-3560

John Weigel

Natick 508-655-2138

Pete Young

Watertown 617 923-4184

Derrick Veliz

Acton 978-266-1739

ELECTRICS

Bruce Schneider

Hudson 978-562-9900

Fritz Bien

Concord 978-369-1720

Dave Walter

Hudson 978-562-5400

Derick Veliz

Acton 978-266-1739

Pete Young

Watertown 617 923-4184

Lincoln Ross

Waltham 781-891-0332

HELICOPTERS:

- None Available at present-

POWER

Chief Instructor

Ruane Crummett

Wayland 508-655-2234

Bob Scott

Norwell 781-982-0268

Pete Young

Watertown 617 923-4184

Jon Leehey

Wayland 508 358 5721

Dave Walter

Hudson 508-562-5400

Fritz Bien

Concord 978-369-1720

Neil Kaufman

Sudbury 508-443-9647



SOARING

Dick Williamson

Sudbury 978 443-8549

Dave Walter

Hudson 978-562-5400

Bruce Schneider

Hudson 978-562-9900

Fritz Bien

Concord 978-369-1720

John Nilsson

Clinton 508-368-7136

Pete Young

Watertown 617 923-4184

Lincoln Ross

Waltham 781-891-0332

April 2004 Board of Directors Meeting



The PayPal account is now active, but it is not yet publicly accessible. The club web site will soon support PayPal for paying club dues.

The BOD discussed the use of the railroad right-of-way at Medfield. It is still club policy that the railroad path should not be used as a substitute for the normal entrance to the field. The railroad path is private property, it is unsafe to travel on, and use of it may jeopardize the Medfield flying site.

Competition plans:

- Tom Bauer will CD the Electric Fun Fly at Medfield on Saturday, October 16.
- The BOD is still looking for a CD to organize the Collings Foundation Fun Fly scheduled on June 19 and 20. We need to plan frequency control, coordinate glider and power launch activities, and work with the Crow Island club to avoid conflicts.

- The HLG contest in July does not have an official CD yet, but it is believed that Mark Drela is planning to do it.

Options were discussed for the entertainment for the May club meeting, but none had been confirmed.

Recorded by Dave Walter

TREASURER'S REPORT

Report Date 5/8/04

Starting Balance 3/31/04	
Checking	\$9,821.87
Savings	\$1,002.52
Cash Box	\$25.00
Total Starting	\$10,849.39
Income	
Raffle (March):	\$140.00
PayPal miscellaneous: Checking	\$0.27
Interest: Savings	\$0.49
PayPal account (test deposits)	\$5.22
Total Income	\$145.98
Expenses	
Derick Veliz -raffle prizes #1368	\$106.99
Monthly Bank Fees	\$5.00
Total Expenses	\$111.99
Ending Balances	
Checking	\$9,855.15
Savings	\$998.01
Cash Box	\$25.00
PayPal account	\$5.22
Grand Total Ending 4/30/04	\$10,883.38

- Scott Anderson



Secretary's Report: April 2004 General Meeting

Club President Ken Antonellis opened the meeting at 7:44 PM. Secretary's Report and Treasurer's Report were approved as printed in the April newsletter.

Field Reports

Davis Field, Sudbury

Davis Field is in wonderful shape, and not even soggy anymore. The field will be used for Lacrosse and Soccer this spring. Check the CRRC website for schedule details.

Bill Martin Field, Medfield

The road leading to the field is still under 18" of water. This has prompted some members to drive on the railroad property and park on the railroad side of the earth divider near the field. This is NOT recommended by the club.

A field cleanup was run by the Millis club in April. They did a nice job of sprucing up the flying area, and they installed new pilot stations. Thanks guys! Now we just need to fix up the access road when it dries out.

New keys to the Medfield gate are now available. Contact Ken Antonellis

Old Business

Dick Williamson reported that 157 members are currently signed up for 2004.

A PayPal account is being set up for the club to enable electronic payment of membership dues. A financial analysis showed that bringing in just 3 new club members would pay for the PayPal overhead.

New Business

John Leehey volunteered to attend the next two BOD meetings. The next BOD meeting is at the Sudbury Library.

Dick Williamson announced a change to the dues structure that was ratified by the BOD. Membership is now free to those who have reached their 75th birthday prior to July 1. This is meant to recognize our senior members' long dedication to the hobby.

Mitch Buckley requested a loan of \$600 from the club to help run the New England Scale Qualifier, to be held this summer in Gardner, Mass. The membership voted to approve the loan.

Derick Veliz is teaching a course in aerial photography at the Museum of Science this week.

Ruane Crummett will CD a hi-wing scale funfly in July.

David Spielman received his wings for performing his first solo flight this month. Dave recently started in the hobby flying a Defiant glider.

Visitors to the monthly meeting included the following:

- **Vince Massa** – Back from Ventura, CA for a brief visit, Vince was a club member in the 90's.
- Derick Veliz's cousin – Came to Boston to run the marathon, and dropped in on the club meeting.

Raffle

- 1st Prize – **Lee Arnold** – Skylark .40-size pattern ARF

Show-N-Tell

- **Pete Young** – Multiplex Sonic Liner, all foam delta electric. Canard, twin tail. Also, a Great Planes DC-3 with fiberglass fuse and 2 Speed-400 motors.



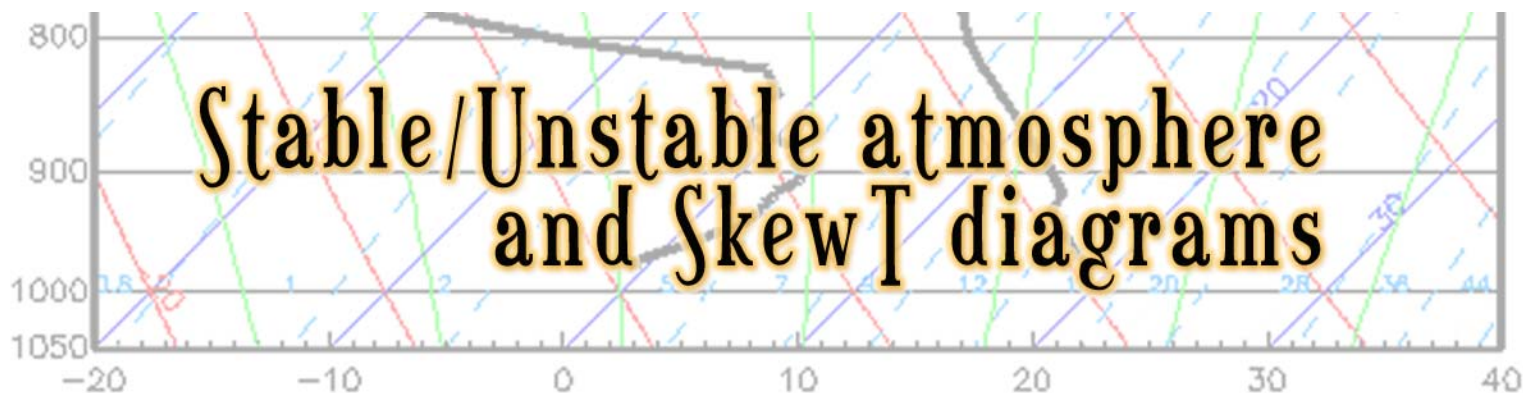
- **Tom Bauer** – Super Cub electric from Aerocraft Limited. Astro .010 brushless motor. Covered with micafilm and litespan.
- **Mark Drela** – T-IFO indoor electric, severely lightened, adorned with smiley face. Not much left of the stock kit.
- **Tracy Clark** – Sting electric ARF glider from Hacker Co. Speed 400 motor, 2M span. Had to redesign the wing tips to get acceptable performance.
- **Tony Davids** – Extra 330L electric with Cobalt 400 motor, Global Wattage planetary gearbox. Also, an RC transmitter tray that didn't work too well with Airtronics equipment, had to be modified.
- **Mike Cormier** – A tiny knock-off of a Lazy Moth. KP00 (geared M20) motor, JMP combo receiver for magnetic actuators. 17g with motor.
- **Jeff Newcum** – DG800 scale glider from Zb (Esprit Models). Hollow molded wings, first flown at Deer Island.



Entertainment

“The Making of Bill Martin Field” video. **Bill Martin** chronicled the planning and earth moving required to create the fine flying field we enjoy today in Medfield, Mass. Also starring Ron Floseur, Jack Squire, and a small army of RC landscapers.

Recorded by Dave Walter



If you *really* want to know when/where/why to fly on any given day, keep reading. This isn't theory of small scale thermals. This is about atmospheric stability and clouds, but it'll tell you a lot about whether there are/will be thermals during the course of the day.

Whether air rises or not depends on the lapse rate which defines how fast a parcel of air cools with decreasing pressure/increasing altitude, and the actual temperature of the air at various altitudes. As long as there is warmed/warming air (sun heats ground, ground heats air) and cooler air above it, the warm air will rise. It'll continue to rise, cooling as it goes (how fast it cools depends on how much moisture it's carrying and the dry and saturated lapse rates), until it encounters air above it that is warmer at which point it stops.

If you can find out what temperature the air is right now at various altitudes (or close to now), then you can use the lapse rate to determine whether the air is rising, how fast it's rising and how far it'll rise before it hits an inversion. Luckily for us, they take regular soundings of the atmosphere on a grid with points spaced every 20km-40km spanning the entire US from the GOES8 satellite every hour during the day, as well as supplementing them with balloon soundings at certain interesting areas (tornado alley for instance). The soundings show what the air temperature is, wind speed, wind direction, and dewpoint temperature, at about 50-60 different altitudes from

ground level up to 70 thousand feet. (links at the bottom)

Also, as the pressure and temperature of the air drops, the quantity of moisture it can hold at 100% saturation decreases (essentially "100% humidity" represents a smaller and smaller amount of water molecules per unit volume, at lower temperatures and pressures). If a parcel of air manages to rise high enough without first running into an inversion cap, it'll find an altitude at which the moisture it's carrying can no longer be contained (it reaches 100% saturation for that temperature), and the moisture precipitates out and forms clouds as the warm air continues to rise and cool. The altitude at which that can occur is defined as cloudbase regardless of whether there are visible clouds. Knowing the air temperatures the ground, and the relative humidity and lapse rate will tell you where cloudbase should be.

So.. If there are cumulus clouds in the sky, then there *is* moisture, and there is rising air. And when there are no clouds chances are the warm air rising from the ground is hitting an inversion (a layer of air where the temperature increases instead of drops with increased altitude) somewhere below the predicted cloudbase. The rising warm air hits warmer air above it and stops, and never gets to the temperature/altitude where it is forced to release it's moisture.

If puffy clouds form early in the day it probably means that there

is little to no inversion, or high humidity, so air rises early.. hits cloudbase altitude, forms clouds.. etc, and does that as long as it can. Problem with days like that is that the rapidly forming clouds will eventually block the sun and cut off the heating at the ground.. No more heating at the ground, no more rising air. The atmosphere starts out unstable and works its way into a stable configuration (warmer air above cooler air).

If clouds form only later in the day and over develop into thunderstorms, there's a fair chance that there was a good sized inversion early in the day, (lots of cooler air trapped under warm air which is conditionally stable). As the day progresses the sun keeps heating the air near the ground.. it rises.. until it hits the inversion cap, and the inversion fills up with warm air from the top down. At some point the entire inversion area under the cap finally fills with warm air, and the cap simply disappears and all of a sudden all that built up warm air ends up just a bit warmer than the air above it, and it all starts to rise at once. It also builds up some momentum, so even a little air slipping past the cap, can start a process that can't be stopped. Large quantities of rising air under those conditions is what causes thunderstorms.

So.. What can you do? How can you know? Is the atmosphere stable or unstable today. How do you answer the question "Should I fly or not?"

Same way the weather forecasters do. Learn to read Skew-T diagrams.

Start with at least one of the following tutorials:

<http://nemas.net/edu/skewt.html>

and another couple

http://weather.unisys.com/upper_air/skew/details.html

<http://www.geo.mtu.edu/departments/c.../interpret.html>

Ok.. you don't need to look at all of those in one sitting. At some point you'll want to play.

Go to <http://maps.fsl.noaa.gov/> and click on the link on the left under the "Soundings" label for either Interactive (Java) version or Non-interactive version. I use the Java one.

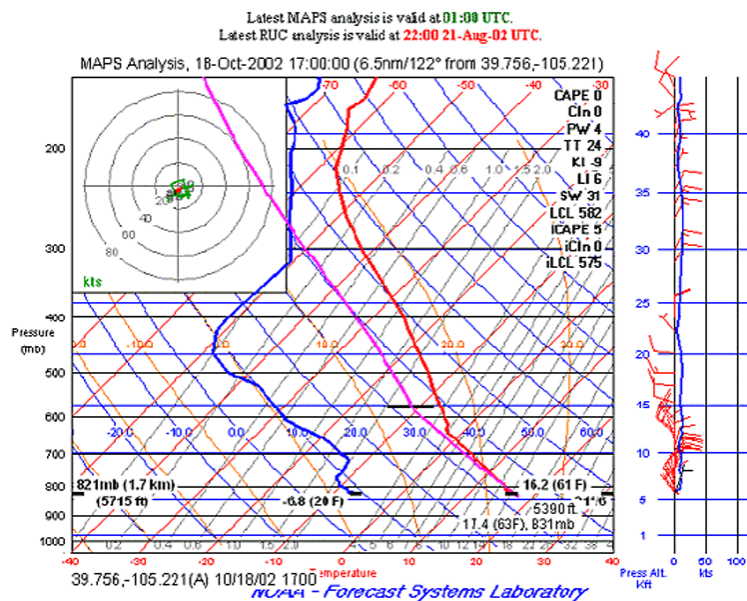
Enter a nearby airport code, or lat, lon in the Site box.. Pick a start time (It's Zulu time.. so for instance here in Colorado it's local time plus 6 hours.. noon = 1800 Zulu etc) and click on Java based plots button.

What you'll see is a Skew-T diagram with two jagged lines rising across it. The red one on the right is the actual sounding plot showing the temperature of the air at increasing altitude.

The blue one on the left is the dewpoint temperature plot. And the multiple diagonal red lines (rising up and to the right) are the temperature lines (which is why they call it a Skew T (temperature) diagram).

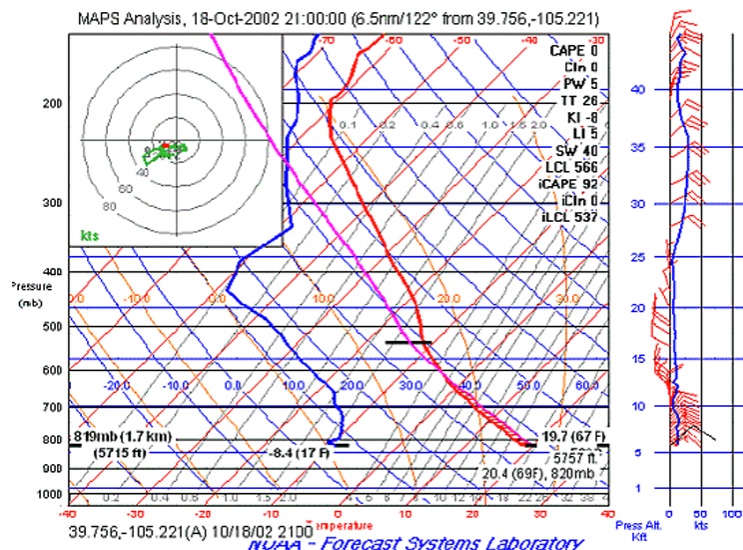
Click your mouse anywhere, and it'll show a violet air parcel trajectory line.

Example: 11am about 3 miles south of my house today.



Click the mouse on the very bottom end of the temperature sounding plot. The Violet line appears rising up and to the left. In this case it shows how a parcel of air, released at 5390ft altitude, at 63 degrees F *wants* to rise given its initial temperature, the lapse rate and the moisture content. However, notice here that the entire temperature sounding plot is to the right and above the parcel trajectory line. That means the atmosphere is fundamentally stable. Air at the surface temperature won't rise on its own because all the air above it is warmer. It will rise if you heat it up a bunch more (click further to the right) but it crosses over pretty quickly.

Let's jump forward to 3pm.



Ok, now I clicked at the base of the temperature plot and you can see the Violet line starts out on the right/above the temperature line and stays there for a while before it crosses over. That means a parcel of air released at the surface will stay warmer than the air above it all the way up to about 12 thousand feet, where it hits a major cap (a very stable high pressure ridge is keeping the upper atmosphere very boring). Notice the short horizontal black line up at 17k feet or so? That's cloudbase. Since the rising air can only climb to 12k before it stops, it'll never hit cloudbase, thus the sky stays clear.

What's all this mean?

If I looked at the first Skew-T, I'd know that it would be a pretty hopeless time to fly, unless I know that the actual ground temperature is quite a bit warmer than what it's showing as the base of the temperature plot.. BUT, ground warming throughout the day (and I know there aren't going to be any clouds all day) will push the bottom of the temperature plot right (warmer) as the day goes on, and eventually it'll do what it did at 3pm. The paragliders simply call it the "lapse". "The sky lapsed". The ground warming finally reaches a point where a lot of warm surface air will start to rise across the entire sky. And that is infact what happened today. At about 3:30pm there were over a dozen paragliders all cruising around the sky at altitudes between 6k and 12k feet and I was flying my gliders at about 6800 feet. Also as the sun goes behind the mountains to the west, the air in the mountain's shadow, cools quickly and warm air right at the shadow boundary is suddenly induced to rise as the air above it cools. So the paragliders and I both had great broad lift until about 4:30 or so and then had to work further out tot he east to catch the thermals rising from the shadow line as the sun went down.

Also notice how the wind at low altitudes (the funny wind barbs on the right) also stabilized between 11am where it was light from the NW, to 3pm later the day where it was stronger and stable from the NE up to 10k feet, which is optimal conditions at my local slopes.

BTW, the upper air was doing something really weird. A day ago it was blowing 100knots up over 30k feet.. today at 11am, it was as dead as I've ever seen it.

Anyway, you can waste as little or as much time on Skew-Ts as you want, but in general they've been quite useful. I forgot to mention that they project the soundings out into the future which is what you'll probably find the most useful, but of course being predictions they won't be 100% accurate. On the one hand, the forecasts will often give you a good idea of whether the atmosphere will become more or less stable, but the wind direction and speed predictions can't always be trusted. I like to look at the last plot plus 3 or 4 hours into the future, and then go back at the end of the day and see how right it was, as the actual sounding data is filled in.

- Ian Frechette



The purpose of the dive is to convert the elastic energy in the line into kinetic energy of the glider. In a drag-free world, how the dive is done wouldn't matter — all the line energy would always ends up in the glider. In reality, the problem with a shallow dive is that it drags the line through the air at very high speed

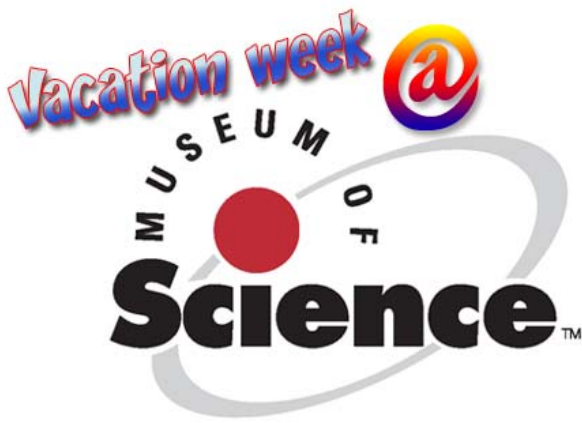
which chews up a great deal of this energy. In contrast, a dive nearly parallel to the line makes the line drag very small, since the line then just slides though the air along its length. So the steep dive leaves the glider with more energy at the start of the climb.

The larger the line drag is relative to the glider's drag, the more lossy the shallow dive will be. The typical stranded winchline, dragged sideways through the air, effectively has at least 5x more drag than a 3m glider at small CL, and perhaps 10x more drag than a 2m glider. So a near-vertical dive (along the line to be more precise) is especially advantageous on a 2m glider.

The big problem with diving nearly parallel to the line is that it risks shredding the tail. Been there, done that. Now I try to dive maybe 15-20 degrees off the line, and no closer. This is almost as good as 0 degrees with regards to line drag and a lot safer.

One other complication is the wind. In reality, in the dive you want to maximize the glider's airspeed rather than groundspeed. So diving shallower into any headwind makes sense. But probably a better way is to simply start the dive sooner, so that diving nearly along the line will still result in picking up some headwind. A full simulation would be needed to figure out the best dive start/angle which maximizes headwind gain minus line drag loss. My guess is that you still want to dive nearly along the line.

- Mark Drela



Ready for take off!!!

This is every body (self portrait, from the ariplane's point of view)



Airborne, first flight, first solo, (a little help from G2 and a body box doesn't hurt)



Everybody flew and everybody was very nervous, including myself.

Teaching Remote Control Aerial Photography was a wonderful experience, I had 12 kids, 8 were boys and 4 were girls (10-13 years old)

The Museum provide us with 4 airplanes. 2 Soarstars, 2 Slow Sticks, and 3 computers with Flight Simulator G2. They also provided Radios, servos, ESC, Glue, etc.

Day 1 & 2 was dedicated to teaching the basics of flying and building the models. It was a thrill for the kids. They enjoyed taking turns practicing their flight abilities at the controls with Flight Simulator G2. The girls where more skillful at the beginning. I set task such as, take off, do a couple of turns and then land. I was very surprised by the end of day 2. The kids were taking off, doing a loop and landing! Awesome!!!

Day 3 and 4 where flying days (and repairing). We used a buddy box for safety. Everybody had the chance to try the controls. Most of the kids took off from the ground and landed. There was one kid with full scale experience who soloed on his first flight!

All 4 planes are ready to fly again for next summer class at the Museum of Science in Boston. It was a great experience and I can't wait to teach the next class.

- Derick Veliz



We all had Tons of FUN at the Museum of Science



The Charles River Radio Controllers, Inc.

ama charter 339

2004 MEMBERSHIP APPLICATION

Name _____

AMA No. _____

Street _____ Birth Date (AMA req'd) _____

Town _____ State _____ Zip _____ Tel. _____

E-mail _____

Channel Number(s) _____

I PREFER TO RECEIVE MY NEWSLETTER

☐  **ELECTRONICALLY**

☐  **Via the US Mail**

To receive membership card and field pass, bring this application to a club meeting, or mail **with a copy of your Year 2004 AMA LICENSE**, appropriate dues, and a **SELF ADDRESSED STAMPED ENVELOPE** to:

Dick Williamson /Secretary CRRC
P.O. Box 398
Lincoln, MA 01773
Telephone 978 443-8549
E-mail: williamson@ll.mit.edu

☐ I DO NOT want my address to appear in the club phone book

OPEN Member	\$35.00
JUNIOR member, (under 19 before 7-1)	\$20.00
SENIOR member, (if age 60 before 7-1)	\$25.00
full time STUDENT	\$20.00
Family member additional to OPEN membership	\$20.00

I'M INTERESTED IN THE FOLLOWING:

☐ TRAINERS/SPORT PLANES

☐ ELECTRICS

☐ PATTERN

☐ GLIDERS

☐ HELICOPTERS

☐ RACING

☐ INDOOR/PARK FLYERS

☐ SCALE

☐ GIANT SCALE

☐ OTHER (specify) _____

LIVING ROOM COLIBRI

Here's my latest indoor plane. I wanted something that flew slow enough to fly in the atrium of the building where I work. For test flights I used my living room which is 18'x30'. I can fly it in the living room, but only ovals. This is far better than I need since I designed it to fly in a much larger space. See this page for quicktime movies of it flying in my living room: <http://pease1.sr.unh.edu/aew/rc/Kolibri-LR/> The movies are dark because the sun was going down when I filmed them, I'll get better ones in the daylight as soon as I can.

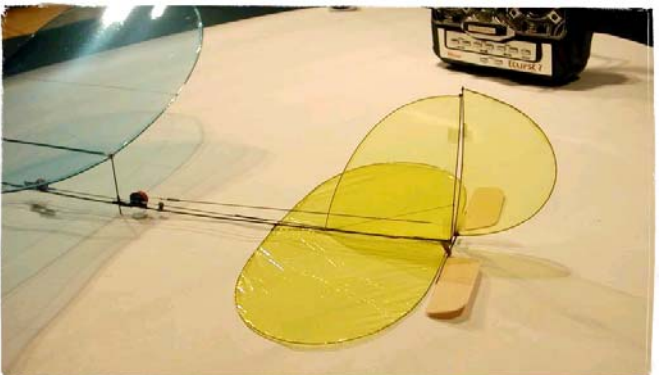
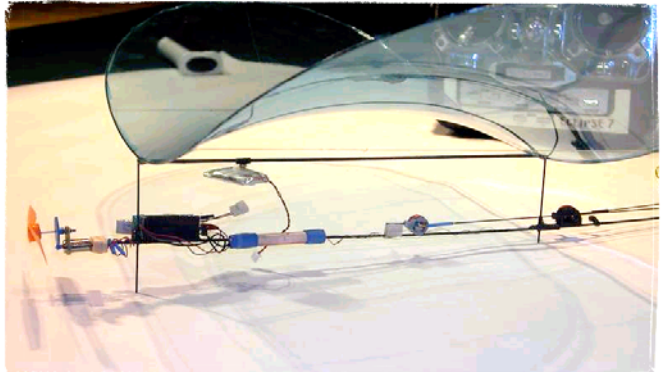
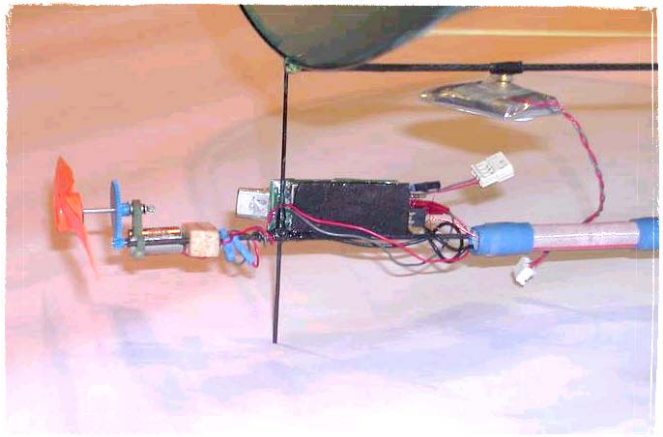
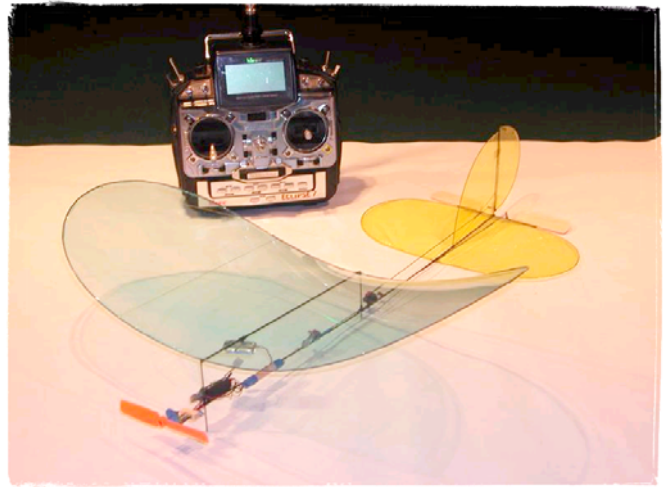
The plane uses a wrapped CF tube fuselage from Dave Lewis, and is a micro-sized Kolibri. Designed to be rudder and motor control only, trimming became frustrating so I went to R/E/Tcontrol. Weight ballooned when I added the second actuator because all I had on hand was a heavier E-flight designs Mega actuator.

Both wing mounting rods are friction-fit into holders attached to the fuselage so wing incidence can be adjusted and the wing can be removed for transportation. The battery mounts on a magnet which is clipped to the wing's main keel, so battery position can be adjusted to optimum CG depending on which battery is used.

Specifications:

Span/Chord: 18.5"/8.5"
Wing Area: 141 sq. in. plus 44 sq. in. tail area
Weight: 21-23g depending on battery
Wing Loading: .58-.77 oz./sq. ft.
Motor/Prop: Falcon PU-04/GWS 4x2.5 (to be replaced with 5x3)
Battery: 90 mAh or 145 mAh LiPoly
Receiver: JMP Combination
Actuators: 1 - Bob Selman MagAct, 1 Eflight Designs Mega actuator

- Allan Wright



April CRRC Meeting Pictures



Tracy Clarke's improved Stinger



Tom with his Super Cub



Mike Cormier with his Flutter-by



Mark Drela's modified IFO



Pete Young's Great Planes DC3



Tony David's Extra Wattage 330L



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