Radio Controlled Soaring Digest

January 2010 Vol. 27, No. 1

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Front cover: Glauco Lago, Mississippi Valley Soaring Association President, readies to launch his F3B TOOL, a product of AER-O-TECH Corporation (Stefan Eder and Max Stiedle together with Andreas Kunz and Christian Fielder). Photo by Chris Lee, MVSA.
Panasonic DMC-LX3, ISO 100, 1/1300 sec., f8, 34mm equivalent.

Back cover: Dave Beardsley's High End, flaps down, in a steep landing approach on June 6, 2009 at 60 Acres South, Redmond Washington.
<http://www.hkm-usa.com>
Konica Minolta 7D, ISO 100, 1/640 sec., f8, 500mm

R/C Soaring Digest

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R/C Soaring Digest (*RCSD*) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of each article is the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author.

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In the Air

This issue marks the start of the twenty-seventh year of publication for *RC Soaring Digest*. Started by Jim Gray in 1984, *RCSD* has remained "the journal for RC soaring enthusiasts" for more than two and a half decades.

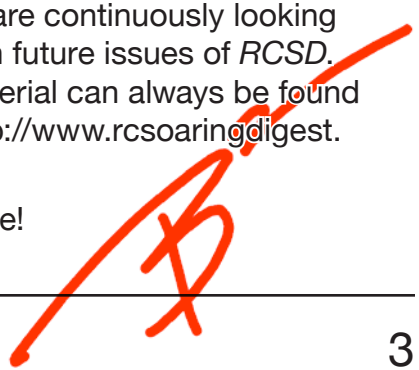
If you are downloading issues of *RCSD* by simply clicking on the appropriate links within the email announcements we send out as each issue is placed on-line, you may not be aware that all issues are available as PDFs from the web site. Issues are arranged in the archives by year published, with the main index at <http://www.rcsoaringdigest.com/pdfs/>.

Our sincere thanks to everyone who has contributed to *RCSD* through the years, whether through submitting material to be published or through some monetary donation. We very much appreciate your involvement and hope it continues.

The contents page background for this month is a photograph by Alex Paul of Nassau, Bahamas. That's a Royal Tern flying over Clifton Bay.

As we stated last month, we are continuously looking for material to be published in future issues of *RCSD*. Guidelines for submitting material can always be found in the Submissions PDF <http://www.rcsoaringdigest.com/pdfs/Submissions.pdf>.

Time to build another sailplane!



CUMBERLAND
Slope-For-Fun 2009

Pete Carr WW3O, wb3bqo@yahoo.com

The Capital Area Sailplane Association (CASA) hosted its annual slope event on November 7th and 8th. As usual, it is extremely well organized with provisions for a very nice luncheon, and beautiful weather. They even arranged to have the 1.6 mile long dirt road repaired and crushed stone added to the low spots. However, somebody forgot to arrange for lift.

My flying buddy Rich Skellen and I arrived on the hill about 10 AM on Saturday to find bright sunshine and warming temperatures. As soon as I got out of the vehicle I knew there was trouble. There wasn't a breath of air stirring! The forecast had mentioned a wind shift about noon so I was not overly concerned. I should have been.

Lest you think that this is an isolated incident, it's the fourth year I've attended the event and found either no lift or wind from behind the hill. Don't get me wrong. I'd be there in a driving rainstorm just to spend the day TALKING about sailplanes. Still, some good old fashioned slope lift would be a nice change.

Rich and I signed in and assembled some planes while watching the action. Unlike previous years there was a wonderful assortment of scale ships and F3J types combined with the usual thermal, handlaunch and electrics. I had described the view to Rich, looking west out over the valley, as spectacular because I expected the fall foliage to be near its peak. Well, as you can see from the pictures, the leaves were well past their usual color display. The cool wet summer must have pushed the cycle forward by several weeks.

A Minimoa graces the foreground while in a rare moment the tow tug was idle. In the background is the valley that normally generates a wonderful combination of thermal and slope lift.

Here is the Pilatius tow tug on takeoff. It towed some very large ships to altitude in an effortless manner yet handled the smaller ships gently.

Here are two examples of molded sailplanes with very large wing spans. Many of the aircraft were operated on 2.4 GHz radios and, I'm glad to say, no ships were lost due to radio trouble.

An excellent example of a radio installation is shown here. The JR receiver is attached with Velcro hook & loop fasteners to the fuselage floor. A 5-cell battery is mounted just aft of the tow-release servo in the nose. The belly wheel is just visible to the rear of the radio room.

I met Carl Luft, KA3THM, a newly minted Ham Radio Operator who had e-mailed me about Thermal Snifflers. He had one that was square and operated on the 49.xx MHz band. He was planning on some LSF Level V tasks and so we discussed using the old unit in his ship. He also had two plastic housings from Snifflers which he very kindly donated to me. He also brought along several copies of the manual for the 49.xx MHz Sniffler. I have them and would gladly pass copies out to anyone interested. You can e-mail me and I'll stick a copy in the mail to you.

I also met up with Mr. and Mrs. Bill Cavanuagh. I've flown with Bill over the years and it was a treat to see him and his wife again. Bill is quite an author, having published articles about R/C soaring dating back to the '70s. Bill was also a District Vice President for the East Coast Soaring Society (ECSS) and later the National Soaring Society (NSS). He had compiled his stories into a book, titled "SPEAR IT OF '77" and was kind enough to give me a copy. It's fascinating reading, very funny and like any good story has more than a grain of truth. Details about the book are listed at the end of this article.

Since the main part of the field was taken over for aerotow, a winch was set up at the south end. Rich and I put our planes up to test the air and struggled to make three minutes. Nearby, the handlaunch people were making superb tosses and

coming down just as fast. They even tried pressing out behind the hill hoping for a bubble coming from the back side with no luck. They persisted the entire day and did not find any significant lift.

There was also a collection of electric ships, from Zagis to hotliners. These electric pilots really enjoyed the air out over the valley that was, unfortunately, free of thermal and slope ships. The vertical performance of these planes is truly amazing. I especially liked one electric sailplane with the power pod built into the leading edge of the rudder and a "Dracula" pilot figure atop the fuselage.

And then there was the aerotow. There were several tow tugs of various sizes on the field, all with big engines and beautiful construction. The showstopper, however, was the Pilatus Porter. This tug was controlled on 2.4 GHz, had an 80 cc size engine and was very quiet, even on takeoff. Its tow cable was attached to the top of the fuselage just aft of the wing and I wondered about left turns since the line ran back on the right side of the rudder. The simple answer was that the tug only turned right! It used a right hand pattern and spiraled up to altitude without a problem. There was plenty of power from the engine to haul even the largest sailplane smoothly.

Over the entire day I watched carefully as tow after tow was completed without any trouble.

The frequency board was set up against the wall of the building where luncheon was laid out. In cold/wet weather this building has been a savior for pilots with frozen fingers and chilled noses to get out of the wind. That wasn't the case this year. The frequency board had tags for all the usual frequencies including the Ham Bands. It also has a supply of tags for 2.4 MHz for pilots to wear. Many of the seasoned (OLD, like me) pilots get nervous if they see someone flying without a tag. For that reason the 2.4 GHz people wear one even though it's

Several very large scale sailplanes arrived on the hill in a custom trailer. A special tray contained the ships and slid into the trailer for transport.

This is a wonderful electric powered sailplane complete with Halloween inspired pilot. I didn't see it fly but can imagine that it performs really well.

The Reiher sailplane and tray have just been unloaded from the trailer. The wings for the two ships are stored next to the fuselages in padded bags.

not really necessary. The system worked flawlessly and there were no radio difficulties.

Since there wasn't a problem with frequencies, the line for aerotow launches was five or six deep at times. Some sailplanes had belly wheels which made takeoffs easy. Several others had no wheel so a carriage was used for the takeoff roll. I wondered how ships with low stabs could clear the carriage without impact but not one ship hit it. While the ground was uneven, the grass was very short so the tug and its load accelerated quickly to flying speed. The whole thing was so smooth and reliable that it looked easy. It's the mark of really skilled people that these launches looked so easy that "even a cave man could do it!"

Rich and I packed up around 3:30 just as the temperature began to cool. The forecast was for more of the same conditions on Sunday so I imagine that the scale people had another memorable day in the sun. In spite of the lack of lift it was easy to see that everyone had a great time. Maybe next year the lift and the fall colors will both be back at the hill so us "cavemen" can enjoy another weekend in the sun.

The tow plane that did the most work was this Pilatius Porter tug. 80 cc engine with a large muffler - very quiet in operation.

Rich Skellen and his OLY II. He spent the day winching up for flights over the valley. Duration wasn't much but the fun factor was very good.

This is another very nice tow tug that was used for launches. Note the servos in the tail for rudder and elevator. Just behind the tug is the carriage that was used to launch sailplanes that had no belly wheel.

Resources:

Bill Cavanaugh, 3538 Lakeway Dr.,
Elliot City MD 21045
BillCavan@aol.com
443-535-0220
“SPEAR IT OF ’77 and Other RC Soaring Articles”
Published by Trafford Publishing,
Victoria, BC V8T 4P4 Canada
ISBN 1-4120-6950-5

A scale sailplane is towed off the field. This one had a belly wheel but several ships had to use a dolly for the takeoff roll. The valley to the southwest had some early morning mist and the fall foliage was well past prime.

2010 USA F3J Team Juniors

Winners of the Team Trials and headed to France for the 2010 F3J World Championships, the United States Junior Team. All three are members of the Seattle Area Soaring Society.

Left to right: Michael Knight, Brendon Beardsley, and Connor Laurel. A couple of aircraft are missing from this photo due to in-flight damage incurred during the trials.

— photo by Jim Laurel

Hobby Club Models

SUP-RES (Superb RES)

Under the expert hands of Mario Scolari, San Diego, California, this model won 2nd place at the 2009 A.M.A. RES Nats Event. A “Real Winner” at any major contest, whether it’s RES or just plain TD (Open Thermal Duration).

Wingspan: 3500mm (137.8 in.)
Wing area: 1220 sq. in.
Wing loading: 5.19 oz/sq.ft.
Length: 1660mm (65.4 in.)
Functions: Rudder, Elevator, Spoilers
All up weight: under 1282.5 gr (45 oz)
Wing Airfoil: AG40-43
Four panel wing
Price: $799.9

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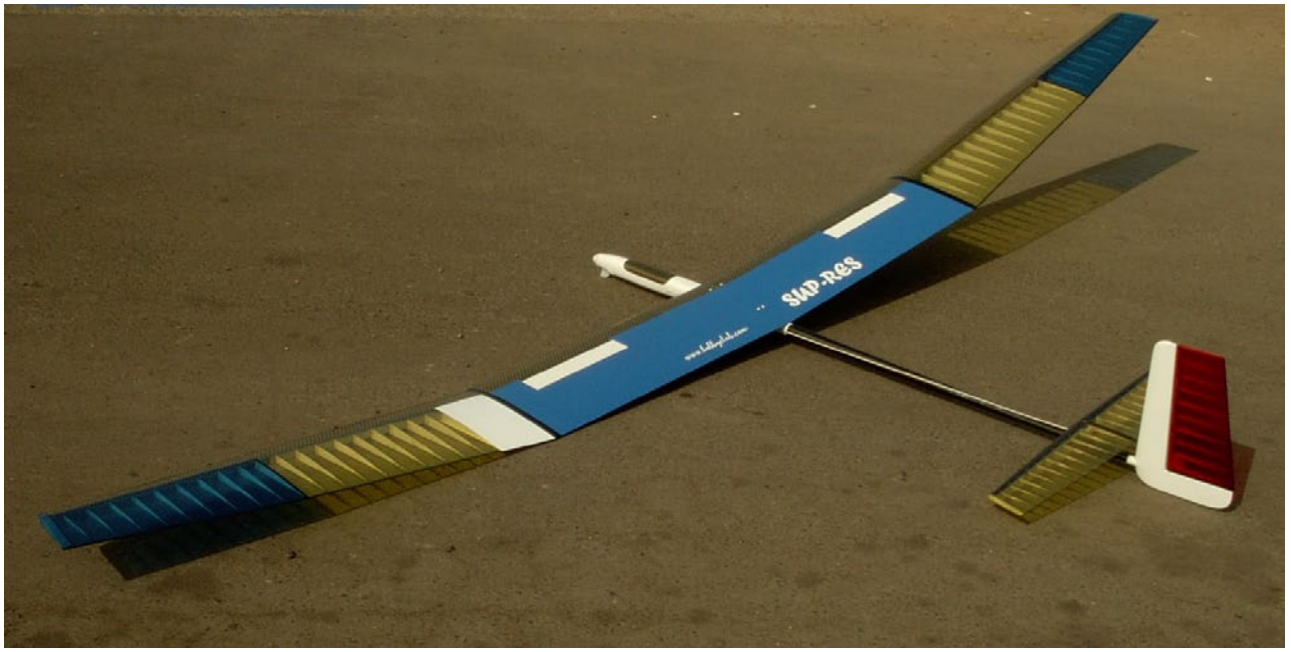

— Alberto

RC sailplanes are kites first!

Learning how much to tap the winch pedal

Gordy Stahl, GordySoar@aol.com
Photos by Tony Utley

Keep in mind that our models only become radio controlled sailplanes AFTER they come off the line. Think about it. Don't rush ahead here because it's not sort of true. Its true and fact.

Until they unhook from the bungee or winch line, they are only kites. Kites have strings attached to get them up into the air. They go up because the wind blows against them and their angle upwards slides them upwards against the oncoming wind.

Stop and think about this process now. If there is very little wind, you have to run fast. If there is a lot of wind you don't have to run at all, you just "kite it up."

The winch would work for a kite except it doesn't have an opposable thumb to let line pay out at times during the pulling in of the line (equivalent to running).

Learning how much and how fast to tap the pedal

Learning to understand the winch's energy is easy. Hold the ring in your hand as shown in the photos. (A leather glove is very highly recommended.)

DO NOT WRAP THE LINE AROUND FINGERS OR YOUR HAND DURING THIS EXERCISE!!!!

Just hold it so that the line doesn't slip through your hand.

Gently tap on the pedal until the winch collects enough line so that the tension lifts the line off the ground and until the line is somewhat straight and wants to pull out of your hand.

Do it again.

That is the amount of tension or pull (or run) that is needed to pull (kite) your sailplane up the line smoothly and with no extra line collected onto the drum.

That IS the amount. Nothing more is needed.

Now that you have to learned and felt how much tapping is needed to lift the line off the ground in front of you, practice keeping the line taught and straight by tapping short bursts quickly.

Practice holding that tension by using your taps a few times until it becomes easy for you to modulate your foot taps so that the line stays in your hand yet stays taught and straight. This is an exercise, something that needs to be repeated until you become comfortable that you are in control of the amount of line tension the winch drum is applying.

I'm a pretty lazy launcher, so seldom throw my sailplanes at the winch. I hold them in my left hand, tap the winch to build that tension and push the model up and away, avoiding hitting my head with the tail.

Gordy demonstrates good foot position on the winch pedal and how to hold the line for the winch exercise explained in this article.

DO NOT PUT YOUR FINGER THROUGH THE RING OR WRAP THE LINE AROUND YOUR FINGER! A leather glove is very highly recommended.

The line is slack to start.

The red tape is tied to the line and is resting on the ground.

Tapping the pedal just enough to hold towing tension, the tape shows the line is up.

Rapid short taps on the winch pedal hold the line taught and suspended.

Braided line vs. monofilament

American Thermal Duration winches use braided line and it has very little stretch, unlike F3J and F3B monofilament winch lines which have a tremendous amount of stretch.

Loading one of those "F" lines prior to releasing your model on the winch is a huge benefit, as the line stretch provides a lot of energy to be used at the top of the launch to propel the model even higher. Without that stretch and energy build up, the best you can hope for is a firm and steady pull with braided line.

Overloading the energy on a braided line winch can often cause some drama on the launch.

Of course so much of that start is a function of a clean sailplane set up. Nose heavy ships will have a lot of up elevator trim set in them, the burst of airspeed will cause the model to rotate, and possibly stall shortly after the release, thus creating that drama.

That makes the launch procedure completely different between the two and often the two get blurred together when the topic of how to launch your sailplane with a winch.

(Okay, you top guys, yes there is a real benefit to a more aggressive release even with USA thermal duration braided line, but not for 80% of the guys' skill levels. They have a lot of other skills to master before tweaking their launch release and pattern.)

You are not going to win any TD contests just because you managed a giant launch. Keep that in mind if you are still wondering about how to use the winch. Winning takes finding air and putting the nose on the spot, right on the second. All that happens after the launch and is done by the pilot's ability to read and work air, and having really good control of the sailplane's nose and energy.

However, you might get to be good enough to win a TD contest if your model stays in one piece all season and the launch is no longer the focus of your flight so that you can learn air reading skills and sailplane control.

The importance of CG location

A properly balanced sailplane with a full flying stabilizer will have almost zero incidence, so an extreme burst of airspeed will have no pitching effect.

It's easy to diagnose if your model has too much elevator incidence (full flying stabs only). Simply give it a hard FLAT throw. If it noses up, you have up trim and likely need to pull some nose lead. It should go straight out and rise, not nose up.

Tail feathers direct the sailplane's nose when airspeed is applied and the winch applies a lot of instantaneous airspeed!

Your model should never have any launch settings that are airspeed dependant! No up or down elevator trims! The reason is that your model's reaction will change with the wind speed and winch power/ line speed. The goal is to have a uniform launch regardless of who's winch you're using or the wind conditions.

A slightly nose heavy model may be more stable but it is a "crooked" model and you will pay big for that piloting laziness in a lot of ways during the flight.

Nose up is not the same as **sailplane rising**. (A good thing to remember when reading air by the way!)

A tow hook set too far back will also cause the model to rotate very quickly upon release, again creating drama.

Get your model balanced first — no nose up when tossed hard and flat. Then set the tow hook by launching and seeing if your model has a nice not too steep angle going up the line.

Too flat, move it back, too steep move it forward.

To insure optimum location, try moving it a notch farther than you thought was good — in both directions.

Add flap launch camber only after the model shows that it is balanced in the toss test and after the tow hook location gives a steep but fast climb on launch.

Try the tension exercise and practice it a few times, pay attention to your "kite" as it travels upward. Ask yourself if you are "running" too fast or not fast enough? Am I jerking the model, or letting it stop and start because of not maintaining that constant tension?

This exercise will take all the mystery and concern out of that winch pedal for you.

Our sailplanes ARE kites until they are off the line. Start thinking of them that way and the winch will be your friend!

See you on my next travels!

Don't let your club winch get lonely!

Rules for Height Limited eSoaring

Compiled from eSoaring.net <http://www.esoaring.net>
and
British Model Flying Association <http://www.bmfa.org>

Rules for new events are sometimes difficult to formulate, and it's tremendously helpful to have an initial set of rules which have been used successfully by others.

We found this information during one of our web surfing excursions and immediately thought about the positive influence this information might have on club electric launch thermal duration events.

There are no limitations on aircraft size, and because only one motor run is allowed, the focus is on soaring, not on battery capacity or available power.

As it says in the introduction, use of these rules within local venues is encouraged. The rules encourage a fun event and feedback will assist in forwarding a finalized product to FAI.

From eSoaring.net

In 2007 and 2008 a restricted power/energy format, of 200W/kg or 100Watt-minutes/kg was flown in UK eSoaring competitions. However it wasn't practical to test all models before each competition, and many models were getting much higher than the rules envisaged. Also over this time period electronic devices to measure air pressure and automatically stop the motor at a predetermined altitude began to be available at a very reasonable price. Changing the rules to limit launch height based on an "altitude limiter" had many practical advantages, as it ensures all models can compete on a truly level playing field, while also reducing the powertrain cost and weight. Many altitude limited trial events were held in 2008, and almost all entrants preferred this format. So Martin Bell, assisted by Mike Proctor and Neil Stainton drafted a new set of Height Limited Rules (<http://www.esoaring.net/uploads/File/00-BMFA eSoaring Height Limited Rules.pdf> and reprinted here), and after much discussion these were approved by the BMFA Silent Flight Technical Committee on 14th December 2008.

If you don't live in the UK please feel free to run your own set of national or club events using these rules. Any events held in other countries will facilitate validating the rules are fun and viable, so we can put them forward to the FAI for future ratification as an international electric thermal soaring class, possibly to be designated F5J.

For up to the minute news about the class and all UK altitude limited competitions please visit our forum <http://www.esoaring.net/forum> - you will find help, technical information, and lots of stimulating discussion. 7.12 eSoaring (Height Limited Rules) Class.

From <http://www.bmfa.org/publications/rulebooks/files/Ru09-sf2-2.pdf> pp. 26-32

7.12 eSoaring (Height Limited Rules) Class

7.12.1 OBJECTIVE

To provide an electric powered model aircraft thermal soaring event, where the initial launch height is the same for all models and a single electric motor run is used to achieve the set launch height.

The launch must be followed by pure gliding flight with no further motor assistance.

Models will be allowed to compete in two classes, an “Open” class using the model definition in 7.12.2 (a) below and a “Two Metre” class where the wingspan shall not exceed 2000mm but no other restrictions, other than those of 7.12.2 (a) below, shall apply. It is however up to the CD on the day to determine if there will be two separate classes actually flown or if they all fly together, which will be the normal method of running an event.

The competitor shall elect to fly either “Open” or “2 Metre” before the start of the competition. Dual entry is not allowed.

7.12.2 GENERAL RULES

(a) Definition of Electric Powered Model Glider.

A model aircraft in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except control surfaces, which performs maunoeuvres, controlled by the pilot on the ground, using radio control.

Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode.

(b) General Characteristics of RC Electric Powered Model Aircraft (FAI F5 class)
Maximum surface area - 150dm^2 (2325in^2)
Maximum flying weight - 5Kg (11.023lbs)
Maximum surface loading - 75g/dm^2 (24.51oz/sqft)
Minimum surface loading - 12g/dm^2 (3.95oz/sqft)

(c) The power source shall consist of any kind of rechargeable batteries (or secondary cells). Mechanical or chemical modification of the individual cells, e.g. to reduce their weight, is not allowed, except that insulation sleeves of individual cells may be changed.

(d) Batteries may be charged or changed at any time during the competition.

(e) Any device for the transmission of information from the model aircraft to the pilot is prohibited. This includes any visual, electronic or any other sort of signal from the model. Any use of telecommunication devices (including transceivers and telephones) in the field to communicate with competitors, their helpers or team managers while doing the competition task is not allowed.

(f) Any ballast used must be carried internally and fastened securely within the airframe.

(g) Any type of electric motor may be used.

(h) The competitor may use a maximum of three model aircraft in the contest. The competitor may combine the parts of the model aircraft during the contest, provided that the resulting model aircraft conforms to the rules and that where applicable, the parts have been checked for conformity before the contest.

7.12.3 The Flying Site

(a) The competition should be held on a site having reasonably level terrain, which will minimise the possibility of slope and wave soaring.

(b) The launching line shall be arranged crosswind and shall include launch marks on the launch line at least 10 metres, apart, one for each competitor of a group.

(c) The launch marks will also act as the center of the landing circles; at which point a 10 metre graduated landing tape is fixed to the ground. The launch/landing markers should be laid out with reference to the wind direction, strength and site topography.

(d) Competitors & timekeepers must remain upwind of their respective landing circle centres at all times after launching of models.

Competitor and Helper

(j) Each competitor must operate the radio equipment personally.

Each competitor is permitted a maximum of I helper and 1 timekeeper. The helper may act as timekeeper where permitted and may also launch the competitors model.

7.12.4 CONTEST RULES

(a) Specific model characteristics - eSoaring.

Models must not exceed 4,000 mm projected wingspan.

No fixed or retractable arresting device (i.e. bolt, saw tooth-like protuberance, etc.) is allowed to slow down the model aircraft on the ground during landing. Vertical tail fins and/or rudders are excluded from this requirement so long as they are not expressly designed to arrest the movement of the model on landing.

The model must be fitted with an approved* type of height limiter switch. Wherever the height limiting switch is positioned in the model, it must not be located where there is any likelihood of a greater air pressure reading being generated than exists outside of the model at any time. (e.g. - close to any forward facing air scoop).

* See appendix for definition of approved height limiter switches

The height limiter/logger must not be enclosed in any material, or in any position or any part of the model, which could result in distortion of actual air pressure variations.

Models must include sufficient static venting to ensure that outside pressure is duplicated inside the model at the limit switch location.

(b) Model processing - initial

Before the start of the contest the CD (Contest Director), or their representative shall ensure that the model is fitted with an approved height limiting switch, which is set to cut all power to the electric drive motor so that the model aircraft completes its launch phase at a height above launch level of 200 metres.

To facilitate processing, all limiting switches must be easily removable and/or easily accessible for checking and log downloads.

The CD will record the serial number of each competitors switch for future reference. Should the limiting switch in use not have a permanently marked unique serial number, the CD will mark a unique number on the switch and record the number so marked.

(c) Model certification

Where a model has been previously subject to the. above checks the CD may choose to allow that model to fly in the contest without further checking.

(d) Model processing - subsequent

The CD may at any time before, during or immediately after the contest, ask for any competitors logged data and limiter settings to be downloaded and analysed, to check for any noncompliance with the rules or to resolve any dispute. The CD may also ask for any Limit Switch used to be checked for accuracy, either by direct in flight comparison with a master altimeter or with the use of an approved altimeter check meter.

(e) Entry, organisation of flying slots and timekeeping responsibilities

For the sake of randomness of the starting order among the successive rounds, each competitor must enter three different transmitter frequencies with 10 kHz minimum spacing. The competitor can be called to use any of these frequencies during the contest, so long as the call is made at least 1/2 hour prior to the beginning of a round in written form to the competitor (or team manager when applicable). However CDs should make every effort to evolve a starting order which reduces any need for frequency change to an absolute minimum - preferably no change at all. Approved radio equipment operating on the 2.4GHz frequency band is also acceptable.

Pre-entry is advisable to enable the CD to arrange radio frequencies in advance so as to permit as many simultaneous flights as possible.

Any number of rounds may be scheduled but a minimum of 3 rounds must be completed to validate the contest and for the scores to count in the UK league. For league purposes, unless otherwise specified in a league proposal for a given year, a minimum of six competitors are required to fly to validate the contest as a league event.

The flying order will be organised (i.e. by matrix) such that, as far as possible during the competition, each competitor will fly against as many other competitors as possible and not against the same competitor(s) in every slot. The only exception to this rule being in single slot per round contests.

The competitor is entitled to 5 minutes preparation time. Preparation time for the next slot in each round will start as soon as all the models from the previous slot have landed. The CD may announce an alternative (longer) preparation start time where appropriate. It is the competitor's responsibility to provide a helper / timekeeper, with the possible exception of International Competitions,, where timekeepers may be allocated by the organisers.

It is the timekeeper' responsibility to time the flight and deliver the score to the CD or his representative.

The CD must clearly indicate the start and end of the working time audibly and if possible visually.

7.12.5 Contest Rules

The working time for the contest is 11 minutes.

All models must be launched and landed within this time period.

Re-launching is allowed at any stage - a re-launch negates the previous flight.

Models may be launched at any time during the 11 minute working time.

Launch is followed by a 10 minute target time flight, terminating in a spot landing.

In the event that a flight exceeds 10.00 minutes, the excess time in seconds will be removed from the flight time score.

Any landing bonus is unaffected provided the landing is completed within the 11 minutes working time and also within 10 minutes and 30 seconds (a total of 630 seconds) of the start of flight time.

If the model lands either after the end of working time or after 10 minutes 30 seconds of flight time, a zero score will be allocated.

The motor must not be run after the first 30 seconds of flight time. If the height limiter switch does not cut the motor before this 30 second period, the competitor must cut it manually. Following a motor cut by the height limiter, the pilot must also manually move the motor control to an off position to ensure no possibility of the motor re-starting when the model drops to a lower height.

The 10 minute target time INCLUDES the launch time and starts from the point at which the model leaves the launchers hand under the pull of the electric motor.

The timekeeper should assist the pilot by announcing the motor run time during the launch phase, advising elapsed time during flight and the approaching end of the 10 minute target time and/or the 11 minute working time.

The timekeeper must stop the watch when the model first touches the ground, any object in contact with the ground, any pilot, helper or timekeeper.

7.12.6 Contest Flights - Launching

There is an official attempt when the model aircraft has left the hands of the competitor or those of a helper under the pull of the electric drive motor.

The models should be launched into wind and within 2 metres of the competitors launch landing marker.

The motor run during the climb must be continuous, (uninterrupted) and at a constant throttle position.

Should there be any doubt about the legality of any launch, the CD may ask fbr the data log for the flight in question to be downloaded. Should the data log show that a height advantage of more than 10% has been achieved, then that competitor's score for the slot in question will be cancelled.

7.12.7 Landing

Each competitor must have his own landing target.

The targets should be laid out with reference to the wind and site topography.

Competitors & timekeepers should remain upwind of the landing target centre at all times and all landings should be made into wind towards the landing marker in the same general direction as launch

After landing models may be retrieved only if doing so does not impede other competitors.

7.12.8 Re-flights

The competitor is entitled to a new working time only if:

1) The attempt has not been judged by the official timekeeper.

2) The attempt was hindered or aborted by an unexpected event, not within the competitor's control.

Mid air collisions do count as an unexpected event and can be the basis for a re-flight entitlement. Equipment or model failure does not qualify as grounds for a re-flight.

To claim a re-flight, considering the above-mentioned conditions, the competitor has to make sure that his official timekeeper has noticed the hindering conditions and he must land his model as soon as possible after this event.

Note that in a case where the competitor continues to launch or continues to fly after hindering conditions affected his flight, or does launch after clearing of the hindering condition(s), he is deemed to have waived his right to a new working time.

The new working time is to be granted to the competitor according to the following order of priorities:

1) In an incomplete group in a different (later) round, or in a complete group on additional launching/landing spots.

2) In a new group of several (minimum 4) re-flyers. The new group of re-flyers can be completed by other competitors selected by random draw. If the frequency of the drawn competitor does not fit or the competitor cannot fly, the draw is repeated.

3) In the original group at the end of the ongoing round.

In priority 2 and 3 above, the flyer granted the re-flight shall have the score achieved returned to the original slot/round.

In priority 2 and 3 above, any person involved in the re-fly, other than the flyer granted the re-flight, will receive the better of their 2 scores.

7.12.9 Scoring

All flight times are to rounded DOWN to the nearest second.

One point per full second of flight time, to a maximum possible total of 600 points (10:00 minutes).

One point will be deducted for every second flown in excess of 600 seconds (10:00 minutes).

A zero score will be recorded for a flight where the motor run is more than 30 seconds.

A zero score will be recorded if the motor is re-started by the competitor at any time during the flight.

If the model aircraft loses any part either during the launch or in flight that flight will incur a 100 point penalty. The loss of any part in collision with another model aircraft or during landing, (i.e. in contact with the ground), is not taken into account.

Landing bonus will be awarded provided the model comes to rest within the arc of the landing tape. The measurement shall be taken from the nose of the model. No landing bonus is awarded if the model touches the competitor, his helper and/or timekeeper during landing.

Landing points will be awarded as below:

0+ to 1m = 50pts
1+ to 2m = 45pts
2+ to 3m = 40pts
3+ to 4m = 35pts
4+ to 5m = 30pts
5+ to 6m = 25pts
6+ to 7m = 20pts
7+ to 8m = 15pts
8+ to 9m = 10pts
9+ to 10m = 5pts
Over 10 meters = 0pts

A landing more than 75 metres from the target receives zero flight score.

For each slot, the competitor with the highest score (flight + landing bonus) will receive 1000 points. Competitors with lower scores will be awarded a proportion of the winner's score i.e. score x 1000/winner's score.

7.12.10 Final Classification

Where more than 3 rounds are flown the lowest score will be discarded. In the event of a tie the discarded score will decide places on the day but both competitors will receive equal League scores.

In the event that this does not produce a winner then a one round fly-off will be held using these same rules.

Appendix - Approved Height Limiter Switches

In order to gain approval, any height limiting switch must demonstrate that it will consistently enable an electric glider, when operated within the rules of the competition, to finish it's launch phase at a height of 200 metres, plus or minus 8 metres. This requirement must be met whether or not the unit incorporates an "antizooming" feature.

As of January 2009 the following devices are approved.

Manufacturer RC Electronics
Part Number: RC Altimeter #2 BASIC
(with firmware version 2.02)

Manufacturer RC Electronics
Part Number: RC Altimeter #2 PRO
(with firmware version 2.02)

Web address for RC Electronics is:
www.rc-electronics.org

Note the difference between these two units is that the PRO version also provides a telemetry link and the facility to download data etc direct from the logger. The functionality of the unit in terms of height data logging and altitude switching is exactly the same as the BASIC unit.

At least two alternative devices are known to be in development and, once they are commercially available and have gained approval, they too will be listed for use in these events.