Committee - George Whelan 208617, Derek Robertson 821368, Neil Davidson 712458

NEWSLETTER FEBRUARY 2000

Well Ladies and gents I hope you all survived the Christmas and Millennium mauling as it leaves me at present. Only regret is that I did not take full advantage of the 10-day holiday from work, only managed to get out flying 1 day. We have had some fine flying weather over the winter so far, hope it bodes well for the forthcoming summer. (Kiss of death if I ever heard one)

Neil Davidson as secretary has been chasing up a copy of the SAA insurance policy, partial success to date; he has received 2 out of 3 faxed pages and is on the trail of the missing page. On the question of **SAA** v **BARCS** Neil has uncovered a potential minefield with respect to where the club would stand in the event of an accident and subsequent claim **against the club**. If we are ALL in SAA then the club inherits club insurance. If we are all in BARCS the club can purchase insurance quite cheaply. If however we are mix and match we face the problem of double indemnity. Neil is working up a chart to illustrate the pros and con's and will circulate this amongst the membership to see if there is any inclination for change or to consolidate our current position or move to the parent organisation BMFA.

Cove rangers have formally applied to develop Calder Park; I was in the council office speaking to the planner handling the application and raised an objection in writing on behalf of ADS. There are several issues for the council to consider in this case,

a) The application is in breach of the council's green belt development policy.

b) As the council are both the planning authority and the land owner they cannot adjudicate on this matter and once the application is ready to proceed it will go along with any objections to the Scottish Office for the final decision, watch this space but don't hold your breath.

On behalf of ADS I contacted some 10 clubs between Edinburgh and Elgin proposing inter-club information exchange and activity. Response has been very disappointing; only 2 clubs have responded, one club referred us to airtime for their club comps and information.

We have submitted a list of the **CURRENT PAID UP MEMBERSHIP** to GTI models, only members on this list will receive club discount. If you have not paid up you will **not** be on the list and **not** receive club discount. **YOU WILL NOT RECEIVE ANY FURTHER NEWSLETTERS** after this one, **YOU HAVE BEEN WARNED**.

Richard Holt is an SAA qualified instructor and he is willing to test any members for their SAA thermal bronze. We don't propose to tie Richard down to specific dates but if you make yourself known to Richard when he appears at the field I am sure that he will do his best to accommodate you.

The Davie Davidson Trophy will be awarded annually for the longest flat field thermal duration flight for an unassisted glider. Simple rules, the glider must land in the same field from which it was launched. The attempt must be declared prior to launch. A timekeeper other than the pilot must monitor it. Closing date for attempts will be 31st October each year. Trophy awarded at the AGM. Submit your times to Derek during the year and we will make sure the info is circulated around the club.

I have attached a copy of a safety report from the BMFA concerning PCM receivers, this info may be contained within your equipment manual but may not be easily recognised.

For all you travellers out there an interesting article about dune soaring in Florida, this could equally apply to the Broard Hill or some of the dunes at Balmeadie, I seem to recall quite a good bowl there, and what about Kaimhill ski? Slope.

Slope Soaring Without Mountains

(Why R/C is a good excuse to go to the beach)

INTRODUCTION

Believe it or not, slope soaring is entirely possible here in sunny Florida, despite the fact that within 30 miles of the coast the ground rarely gets more than fifty feet above sea level. While our thermals in the summertime have been known to lift small houses off their foundations, the cooling seabreezes that form much of the year are a convenient source of lift along our beaches. Slope soaring is not difficult for anyone who is capable of flying a model sailplane safely. It also offers some unique qualities and opportunities not found in thermal flying. This section will cover a beach environment like we have in Florida, but applies also to any slope with a bit of flat area in front... hills, mountains, large flat-sided buildings, highway overpasses, etc.

The thing that most people will probably notice first is how easy it is. The lift is usually constant and easy to stay in. You need bring nothing but a plane, your radio, sunblock (let's be careful in the sun!) and perhaps a reclining beach chair... bring a cooler and you can really make a day out of it. There are no hi-starts, winches, or motors to worry about. You can bring the kids with little fear they'll be in the way of the airplanes.

Like anything else, there are cons along with the pros. First is the obvious one... you can't slope soar if you don't have a wind off the water. There is, however, usable lift when the wind is coming close to parallel to the shore. (See the diagram for an explanation). The wind may also be too light, which will not let you be able to stay up, or it may be too strong, and your plane will have to be ballasted or may not be able to fight it. Landing on sand will buff your Monokote to a dull haze quickly, and I have lost a brightly-colored Gentle Lady forever by crashing in Palmetto scrub so thick it swallowed my plane up forever. Some sites have too many people around for safe flying (particularly in the summertime), or it may be difficult or inconvenient to get to a suitable site. (See map below for Brevard county slope-soaring sites.) But like any other endeavor in R/C, once you know what you are looking for, most of these problems often are easily solvable.

HOW IT WORKS

Slope soaring has been used by birds for eons and was used by glider pilots long before methods to detect inland thermals were discovered. Anytime there is an obstruction to the wind, such as a hill, dune, building, or tree line, the wind has to get around it somehow. Immediately in front of the obstacle, the wind is forced upwards to get over the obstacle. This rising air is usable by flying objects as a means to counteract the pull of gravity. Unlike thermals used for most inland soaring, slope lift depends almost entirely on the prevailing wind, rather than on solar heating and air temperatures. Thus, slope soaring is possible (even improved) by conditions that hinder or prevent regular thermal flight. Sometimes, slope lift can be combined with thermal lift, depending on the topography and weather at your flying area.

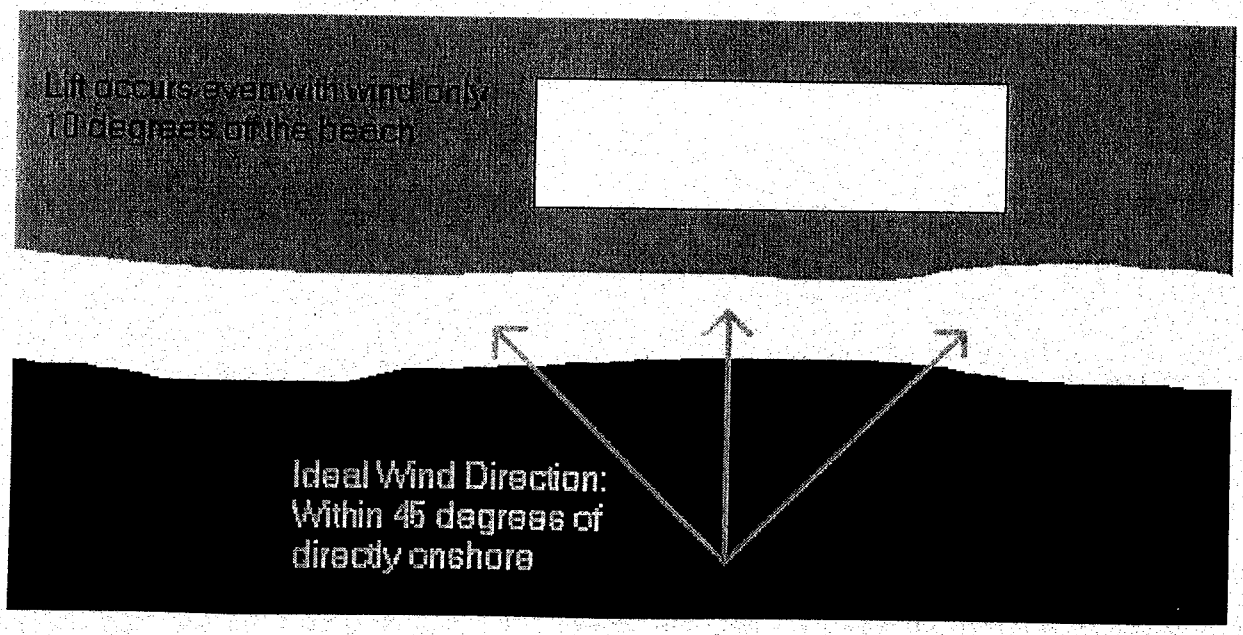
EQUIPMENT

First of all, you need an airplane (duh...) I have flown for a long time with that most common of sailplanes, the Goldberg Gentle Lady. My first one (the one that got eaten by the palmettos) didn't have spoilers. The one I have now (named Splat Cat) has large spoilers of my own design. This is not absolutely necessary, but it is a tremendous help - on most days that are worth soaring at all, the lift is so good it is very difficult to land without killing some of your lift! I have a 59-inch hand-launch ship from DJ Aeroworks called the Chrysalis. This type of ship does well on those light lift days when a 2-meter Gentle Lady isn't terribly exciting. I believe that any sailplane can probably fly well on a slope, although a plane that can't handle high winds in thermal flying shouldn't be expected to handle them on the slope as well as a dedicated slope-type ship. However, since a part of sloping is trimming the plane out to match the wind speed, even a Gentle Lady can slope-fly on days you'd probably not even bother to take it to the regular flying field. Dedicated slope planes are often heavier than other gliders and may not be flyable very often in places (like Florida) where there are rarely winds higher than 10-15 mph, although this certainly isn't the case for all slope planes.

I also took a yellow plastic newspaper delivery bag and cut a one-foot streamer, the same width as the red flag on my transmitter antenna, and taped it to the end of the flag. This is quite useful in determining the exact wind direction (the red flag is just too heavy and stiff to work well).

WEATHER CONDITIONS

Well, first of all you need wind. A good situation would be a 10-15 mph steady breeze, within 45 degrees of being directly onshore. You can fly in winds coming very nearly parallel to the shore, although this greatly reduces the effective lift potential, and thus you will have to work harder to climb. Steady winds are ideal, but gusty winds are usually perfectly flyable. For a plane like a Gentle Lady, your upper limit is probably about a 25 mph wind... and that gets pretty hairy. The lower limit would be a 5 mph steady wind right off the water. The less directly the wind is heading off the water, the higher the wind speed must be to get the same lift... although this effect is minimal within 45 degrees to each side of directly onshore.



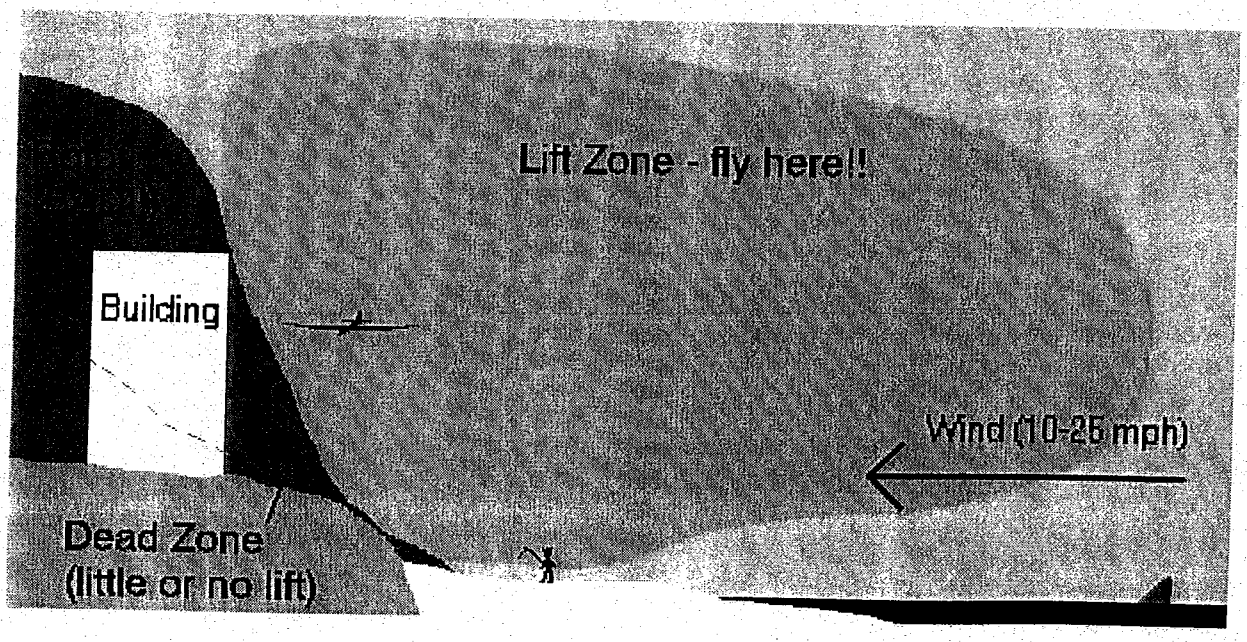
Rain isn't a problem if you and your model can handle it. Lightning storms can blow in quickly in Florida, and it can't be emphasized enough how**deadly** this can be! If you are at a remote site, fine, but be sure that you don't get stuck in the open with no access to your car or other safe shelter, just in case. High tides can be a problem if they shrink your landing zone to an uncomfortably small size. There have been times when I launched with plenty of beach available, but had to land near the dune because high tide snuck up on me! Beach erosion also can modify your available landing area, and of course don't forget the SPF 30+ sunblock... once you try slope soaring, you'll probably love it and spend a lot of time in the sun!!

SUITABLE FLYING SITES

The ideal flying site has a large area of flat land or (even better) water in front of it... and a steep slope that is directly perpendicular to the wind. Since mountains and seaside cliffs are scarce in Florida, we have to make do with what we have. Oceanside condominiums and hotels are often well suited for this, but simply flying over the natural dunes often provides enough of a rise to provide lift (and fun). The taller and steeper the object, the greater the effect it has on the wind, and thus the larger the area of usable lift will be.

As a slope pilot, there are three main areas to be concerned about:

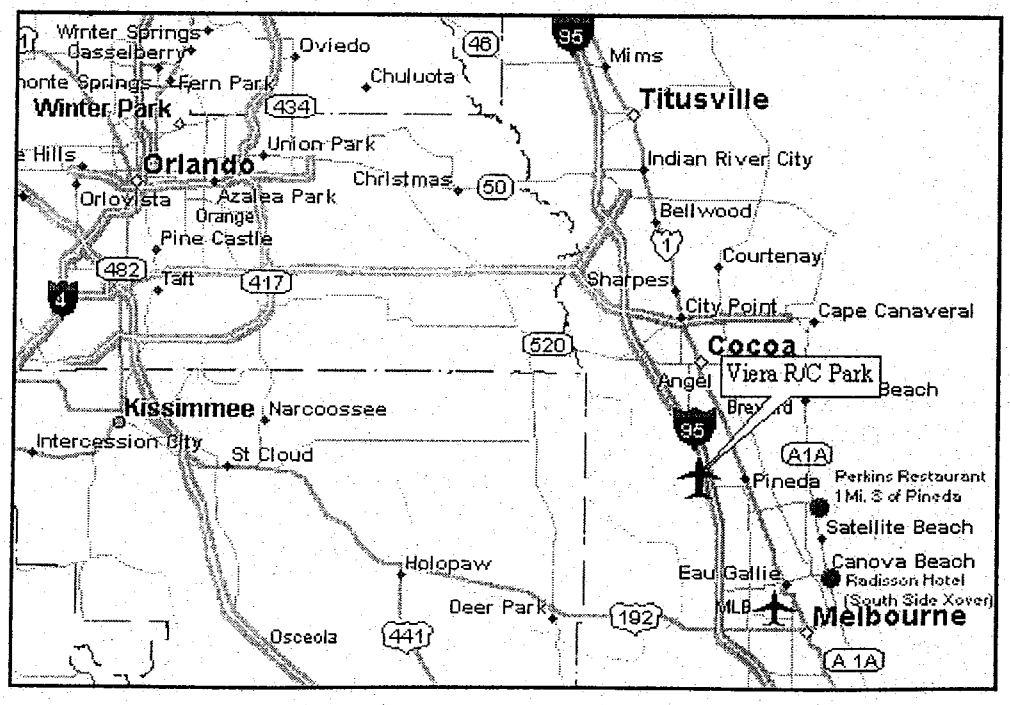
- The **lift area** extends from the front face of the slope or obstruction, up roughly along its vertical face to an altitude of roughly twice its height, out to about that same distance in front (upwind). If the wind is coming in at an angle, this area will be extended farther towards the upwind side of the building.
- There is an area of little or no real lift that I call the **dead zone** that is found close to the ground or beach, and also in the "corner" where the front of the obstruction meets the flat ground. For gently-sloping dunes or hills, there may be little or no dead zone. This is the area where the wind stagnates, while the rest of wind blows over it. It is usually not particularly dangerous, although if you forget that there is little lift here you can be fooled into flying yourself to a forced landing due to lack of lift. It can be useful however as a calm area for landing in or sitting in, somewhat shielded from the icy blast of a wintertime gale.
- The third area is the one that is dangerous, usually called the **rotor**. This is the turbulent area behind the dune line or building, where the air tries to come back down. It is best described as an area of sink from which it is difficult to recover, as the wind speed is typically high with no lift to give you the time to work it out. On the mega-slope sites out west, the rotor is known to eat airplanes. In Florida, it can eat them, but not by it's force, rather by the situation it puts the pilot in - having to land in what is almost invariably a bad place, such as palmetto scrub or a parking lot (just ask me how I know...) Just repeat to yourself: *lift good, rotor bad!*



These are only rough descriptions, every situation is unique and has its own idiosyncrasies. The only way to know for sure is to fly a site and find out!

A couple of other factors come into play. You have to have a place to fly from. Usually, fliers will stand on the top of a large hill, but on a Florida beach, you may end up standing either on a dune crossover or on the beach itself. Either one is acceptable, depending on what you feel like and the conditions. Remember, it is not good for the environment (and sometimes is even illegal) to damage the dunes or their vegetation by walking on them, so avoid this except in cases of emergency (lost airplanes) and then, be careful not to damage the plants. I have never tried flying from the top of a condo, but something tells me the landings would be almost impossible. A big factor with beach flying is finding a site that is safe. You don't want to have to fly over large numbers of beach goers, for hopefully obvious reasons. One or two folks on the beach is usually no problem, but you need as much (if not more) clear area to land in while slope soaring than you would need at a flying field (remember, you may not always be able to head right into the wind on landing). Rocky beaches can be flown on, but there is a greatly increased chance of airplane damage if you miss the catch. Even plain old sand is a bit abrasive on coverings, so after a while you'll probably want to try to catch the plane whenever possible.

My favorite sites are the beach access near the Perkins restaurant in South Patrick Shores. Just go about a mile south of the Pineda Causeway on A1A. There is a deck that is a great place to launch from, a flagpole to show the wind at a glance, reasonably tall buildings for a long way on both sides, and there are usually not too many people on the beach. There is also food nearby! My second choice is the Radisson Hotel near the corner of the Eau Gallie Causeway and A1A. Go to the beach access on the south edge of the hotel property. This building is very high and flat, however it often has a lot of people and the beach can get fairly obstructed by crossovers and rocks. There are some other sites that are a bit more remote in the south beaches, but I rarely fly them anymore... just too far to drive most of the time, although the desolation is kind of nice once in a while.



FLYING ON THE SLOPE

OK, so you have a site that looks promising, with some nice dunes and a couple of 4-story condos. You have a glider ready (one you are comfortable with), batteries all charged, you've got your sunscreen on, and there is a nice, steady 10 mph wind right off the water. The beach only has a few scattered sunbathers, all of whom are a ways down the beach, so that's no problem. It's low tide, so there's plenty of beach to learn on. All's great, as far as you can tell.

Well, first you have to get into the air. If you have a crossover to stand on, great... these make great "aircraft carriers." If you are actually on the sand, that's fine too - just get up near the dune line. If you are in front of a condo, you may wish to move off to one side of it, on the downwind side so that you aren't launching inside the dead zone.

Launching

To launch, check that both radios are on and the controls move properly, then just give the glider the ole heave-ho. If the wind is coming right off the water, you actually want to launch down the beach, not right into the wind (headed offshore), or at least plan on turning immediately towards the building or down the dune line. If the wind is coming more from one direction than the other, launch in the direction the wind is coming from. If you launch right towards the water, you often will be flying right out of the band of lift that is strongest directly over and in front of the dune line.

To gain altitude, you want to go back and forth, right over the beach just above or slightly in front of the dune line. Always turn into the wind, you will in essence be doing a long figure-8 pattern. If you are on a crossover, remember that anything that is at your eye level will appear to be lined up with the horizon. You may not climb very quickly at first, but just maintain gentle figure-8s and you should gain altitude. The key to this part is to fly smoothly, and don't lose altitude in the turns. When you are headed upwind, you will often see a sailplane virtually stop in midair. If you are trimmed properly, this is normal... you should be climbing even though the ground speed is low. When you go downwind, you will appear to fly faster but you will actually climb at the same rate (just cover a lot more ground while you do it, giving the appearance of less climbing).

When you first launch, it's not too uncommon to just not be able to stay in the lift and end up having to land on the beach. There are several causes of this. Assuming there really is lift enough to fly, what I do most often is get too close in to the building at too low an altitude, and get in the dead zone. All seems well, the air is quite calm, but you have little lift. The cure for this is to fly out farther towards the water (say, over the waterline or so) where there is lift at low altitudes. There is strong lift near the building near the top, but it dies near the ground... don't try to get to it too soon or you could end up walking! Another common problem is getting off to a poor launch that you just can't recover from. What can I say, it happens to all of us... try again. Remember, throw hard, throw up, but don't stall.

Flying

Once you are up, you can start trimming for optimum performance. This could actually be a matter of opinion. In lighter winds, I like to trim for a good climb at the expense of ground speed, since it's not hard to get up and down the beach. If the wind is heavier, I will often trim with quite a bit of down trim. This increases the plane's airspeed, since it is effectively in a dive. But since the wind is high, there is a large upwards lift component and the plane holds altitude relative to the ground. Aerobatics are also usually easier in higher winds, since there is more lift there to exploit and your plane is trimmed to fly faster. Just keep your plane pointed into the wind and you'll do well.

Ahh, aerobatics. This is where the real fun starts! I'm sure most soaring pilots have gone out once in a while and blew a good launch on a few loops, rolls, spins, or whatever, only to think that it's a real shame to waste a good launch in order to have fun. Well, on the slope, you can do all the aerobatics you want. Re-launching is simply a matter of flying back and forth for a minute or two until you are back up! Even with a Gentle Lady, loops, rolls, and stall turns are a breeze on most days. (pun intended) Some of the full-house ships would be truly awesome. Just remember the chief caveat, don't do it over people and be careful not to get blown back into a building or get too low so that you can't get back. I usually perform aerobatics over the water (remember, the lift usually extends quite a ways offshore) and thus stay well away from danger.

Don't fly right overhead the whole time. This not only wears out your neck, but flying right overhead is disorienting. If flying by a building, try to get to one side so you can look down the beach at the plane. Be sure to keep an eye out for people around you. I'll let you discover the joys of flying with seabirds for yourself, or you can read about it here!

Landing

OK, sooner or later you have to admit that it's time to land. (Usually because either your batteries are gone or your neck is getting tired). You want to come into the wind as much as possible. There are two scenarios that commonly happen, one when the wind is within about 60 degrees of being parallel with the beach, the other when the wind is close to being directly onshore. The nice thing is that 90% of the time if you botch it up, you can go around again, you aren't forced down unless you get way out of the lift area.) Don't try to catch your plane from a dune crossover, I used to do this sometimes but I broke too many planes. Land on the beach instead. (The new EPP foamies are dang near impossible to break, even if you actually try to... so if you have one of these, then crossover catches become a realistic proposition.)

If the wind is coming down the beach, you want to kill altitude and use the lift right over the dunes to come home. Right over the crest of the dune, there is a lot of lift, but there is a rotor right behind it. It's probably safest to get a few feet in front of the dune. Go downwind a ways, maybe 50 yards or so, and lose altitude until you are no more than 20 or 30 feet high. You may want to dive, do a loop, use spoilers, whatever to get there, just keep in mind where the lift is (and isn't). Fly towards you, you may wish to trim for a slower speed just above the stall. Be careful, if you stall here you may do a good lawn-dart impersonation (sand is wonderfully gentle on planes trying to dive into it though, aside from the dulling of the finish.) By the time you are 10 yards away from yourself, you want to be near eye level. Just fly the plane to yourself and catch it. If you are too high, you may try a near-stall, diving usually will increase your speed too much to catch it safely (depending on the current ground speed). If you get too far off and still have some altitude, you may elect to do a go-around. Just keep flying down the dune line, climbing gently if possible, until you can safely turn around. Go downwind to where your approach started and try it again. Sometimes I even get out and just practice approaches, only catching it on the perfect ones.

If the wind is coming right off the water, you have to modify this a bit. basically, you want to do the same thing but for the last few feet, turn to head right into the wind. This will allow your ground speed to drop to near zero, even though the airspeed is still high enough to prevent stalling. Spoilers are a godsend in the last 10 yards of this type of approach!! You may also want to stand a bit farther away from the dune for this one. If you are in trouble, try to get back up near the dune but don't forget the rotor / dead zone behind it!

If you are flying near a condo, this is good and bad. The dead zone usually extends onto the beach in front of the building. This makes landing a lot easier if you want to stand in this calm area and have a good approach. But, if you botch it, it's harder to go around. Overall though, this is probably the easiest and is definitely the best when the wind is really cranking. Be warned, though, the trim you set to fight the wind will bite you on landing if you forget about it... don't be surprised that you need a lot of up elevator all of a sudden when you get near the ground!!

Landed? Still have an airplane? :-) Of course you do, that wasn't really so hard was it. Pat yourself on the back and relax - that was fun wasn't it!

Radio Control Frequencies

35MHz

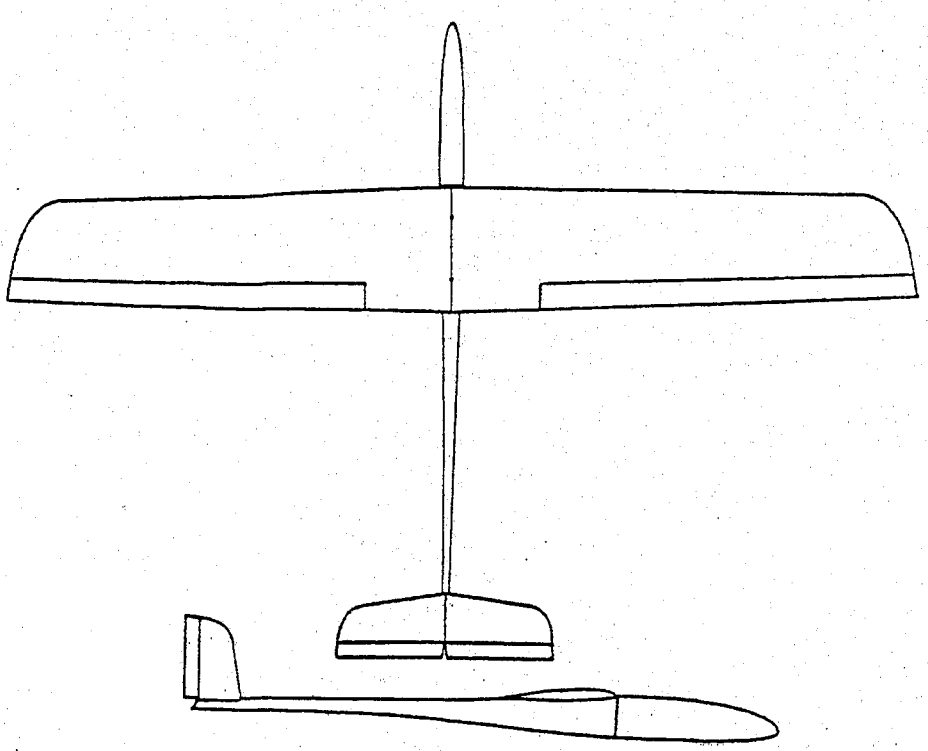
60 - 35.000	69 - 35.090	78 - 35.180
61 - 35.010	70 - 35.100	79 - 35.190
62 - 35.020	71 - 35.110	80 - 35.200
63 - 35.030	72 - 35.120	81 - 35.210
64 - 35.040	73 - 35.130	82 - 35.220
65 - 35.050	74 - 35.140	83 - 35.230
66 - 35.060	75 - 35.150	84 - 35.240
67 - 35.070	76 - 35.160	85 - 35.250
68 - 35.080	77 - 35.170	

27MHz

26.975 - Black

26.995 - Brown	**27.145 - Yellow**
27.020 - Brown/Red	**27.170 - Yellow/Green**
27.045 - Red	**27.195 - Green**
27.070 - Red/Orange	**27.220 - Green/Blue**
27.095 - Orange	**27.245 - Blue**
27.120 - Orange/Yellow	**27.270 - Blue/Grey**

ELIMINATOR SR

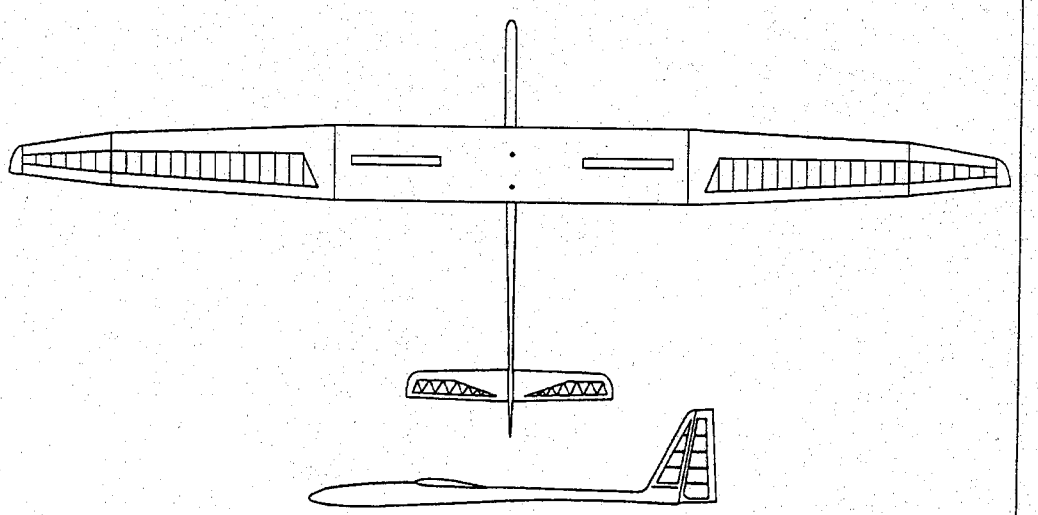


The ELIMINATOR SR (slope racer) is designed to suit the new 60" pylon racer class, but also makes a great sports aerobatic model with the RG 15 wing section giving it a good soaring performance. It flies equally well with either a standard or vee tail.

The white pigmented fuselage features a slide on nose cone and has room for a standard servo and receiver. Made of epoxy glass with kevlar reinforcement, it has a moulded-in servo tray and ply plates for wing and tailplane fixings already installed.

The wings are blue foam with epoxy/glass/veneer covering. With shaped carbon leading edge and finished trailing edge the panels require very little work to finish. The aileron positions are already marked out and channels for the servo wires pre cut. Shaped wing bolt blocks are provided as are laminated ply/balsa tip blocks and ply strips for facing [illegible]erons.

ELIMINATOR 134



The Eliminator 134 lightweight thermal soarer features traditional wood construction. It is a top performer suitable for open class or F3J competitions, as well as the sports flyer. With its smooth, steady handling and light wing loading (9oz per sq ft) it is able to exploit those tight, light thermals. The bolt on three piece wing has a modified E193 section. Strong construction makes it ideal for fast towing or bungee launching. It has room for standard radio.

It is available as a plan, semi kit or a complete kit.

Wing Assembly Jig

The performance of a model is directly dependent the accuracy of the construction of the wing. Alignment of the wing components during construction is critical to the stability of the finished model. Many kits provide tabs on the ribs to maintain the correct alignment during assembly over the plans. This is an effort by the kit manufacturers to help modelers but this is not always the best solution. If a modeler is scratch building from plans, he needs a way of keeping everything straight. There are fixtures which are commercially available which do a very good job. Every modeler should have a fixture which helps in construction of a wide variety of wing styles and sizes.

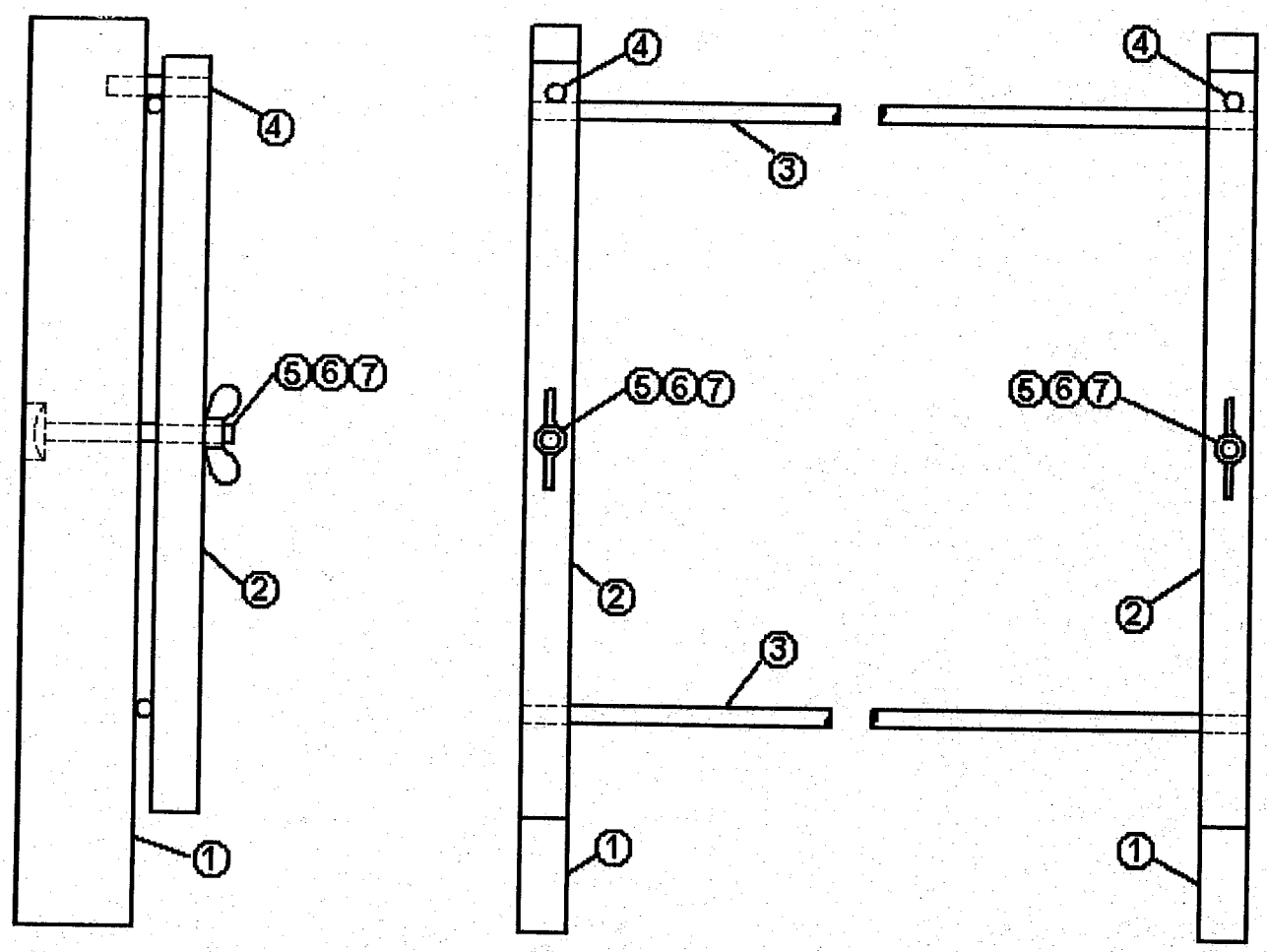
The wing jig that is shown here is easy to build from readily available materials using common tools. The skills required to construct this wing jig are well within those of many beginners. It is easy to assemble and use and works with straight, tapered, swept, and delta wings. It can be permanently mounted to a work bench, a building board, or taken apart for storage.

Bill of Materials

Materials listed are for one (1) complete assembly

ITEM	QTY.	DESCRIPTION
1	2	1" x 2" x 12" S4S Stock
2	2	1" x 1" x 10" S4S Stock
3	2	1/4" Dia. Alum. Arrow Shaft x 36" Lg.
4	6	1/4" Dia. Hardwood dowel x 2" Lg.
5	2	1/4-20 X 2 3/4" Stove Bolt
6	2	1/4-20 Wing nut
7	2	1/4" Flat Washer

Construction begins with obtaining the materials required. There is nothing critical about the items listed. The S4S (surfaced four sides) stock can be pine, fir, spruce or whatever is readily available. The actual dimensions of the stock is less than the designated size. For instance, the 1" x 2" stock is closer to 5/8" x 1 1/2" but this is taken into account in the design. A 1 x 6 board can be ripped to make the stock pieces. Hardwood dowel can be used in place of the arrow shafts but the assembly will not be as stiff and may not work as well. The dimensions can be increased to accommodate larger wings.



Wing Assembly Jig

The stock pieces are first cut to length. The ¼" holes for the alignment dowels and the stove bolts are drilled by stacking Item 1 on Item 2 and drilling both pieces at the same time. The recess for the head of the stove bolt is cut next. If the fixture will be permanently mounted to a workbench, two (2) pilot holes for #10 wood screws should be drilled and countersunk in Item 2. Two (2) of the dowels, Item 4 are glued into the hole in Item 2. The four (4) remaining dowels are inserted into the ends of the arrow shafts. The prevents the tubing from being crushed when the locking bar is clamped down. Inserting the stove bolts through the appropriate holes completes the construction.

The wing jig is relatively simple to use. The ribs are first cut to shape and finish sanded. If the wing that is being build is not a straight type, the ribs should be numbered from the root to the tip. The ribs are stacked so that the spar notches are all in alignment. A drill press is used to drill ¼" holes through the stack. One of the holes should be located on the centerline of the ribs about 1" from the leading edge. The other is located on the centerline about 1" from the trailing edge.

Next, the stack of ribs for one wing is slid onto the support rods. If gear blocks will be installed, the wing must be built upside down. The support rods are placed on the fixture bases with the forward support rod firmly against the alignment dowels. Finally, the locking bars are placed over the alignment dowels and the stove bolts and the washer and wing nuts are tightened.

The wing is now ready for assembly. The ribs are slid into position over the plans or by measuring between the ribs to get the proper location. The spars, leading edge, trailing edge and sheeting are attached to the ribs. After the glue sets, the entire assembly can be flipped over and the sheeting for the opposite side can be installed. After sufficient time has been allowed for the glue to set and the assembly to become rigid, the wing can be removed from the support rods. The next wing is done in the same manner but care must be taken to assure that the ribs are stacked in the opposite direction to produce a rib for the opposite side.

That is all that is required to produce a wing jig for trouble free operation. It is inexpensive, easy to build, easy to use, and easy to store. Using the wing jig properly, a modeler can produce a wing that is free of warps.

BMFA SAFETY NOTICE
PCM / FAIL-SAFES

Report from the BMFA Technical Council - 30th October 1999
Compiled by **Andy Ellison**. R/C Power Technical Committee.

On Sunday 14th March 1999 eleven year old Adam Kirby was struck by a radio controlled powered model aircraft and killed. The coroners inquest into the accident has concluded that a contributory cause in this tragic accident was the settings of the computerised transmitter based programmable failsafe.

In this instance the radio in use was transmitting in pulse code modulation mode (PCM) and the programmable failsafe was set to HOLD.

On Saturday 30th October, after a long study and information gathering exercise, restricted by the legalities surrounding a case of this type, the BMFA Technical Council sat to deliberate proposals put forward by myself relating to the use of PCM radio and its association with programmable radio failsafe devices. This was in order that the problems associated with its usage could be clarified and passed on to R/C fliers via this publication, the BMFA members handbook and by the instigation of competition rule changes. The following report is a synopsis of my findings.

Please bear in mind that the terminology relating to this topic varies greatly from one radio manufacturer to another, and so for the purpose of this safety notice I have generalised. The term HOLD refers to a scenario whereby the servos HOLD the position they were in just before the interference arrived. The term PRESET refers to the moving of the servos into pre-programmed positions which were defined by the operator before flying, and FAILSAFE is a generic term to cover both.

Computerised radios are an ever increasing feature of the modern R/C flying club. Regrettably it is also the case that many of the users of such devices do not fully understand their operation nor indeed the content and facilities of the operational software contained within. This is particularly the case when PCM mode is selected with respect to the PRESET/HOLD options.

In my research I found that a disturbing number of average club fliers using these radios (around 80%) were unaware that selection

of PCM mode brings with it the failsafe features of the program. Basically if you select PCM you automatically have a failsafe set to prevent the model from flying away.

The program has no respect for the weight of the model (fail-safes are mandatory on models over 7Kg dry weight) and modellers transmitting on PCM, when questioned on the settings of their failsafe, frequently answered that they did not have a failsafe on their model as it was under the 7Kg limit.

The unfortunate fact of the matter is that they did indeed have a failsafe operating on their model but did not realise it. Moreover, because they did not realise it, they had not programmed it, and in the event of signal loss, it would defer to the factory default settings, usually HOLD.

This of course includes the throttle servo. If this interference occurs at take-off for example and the throttle holds at an opened position with minimal deflection on the other control surfaces, the results can be disastrous.

If you use a typical Computerised Transmitter, or have members in your club who do, you should be aware of the following basic findings.

Almost all sets give an automatic PRESET/HOLD feature within the program as soon as PCM is selected. This failsafe becomes operational if interference occurs at the receiver of the model or the transmitter signal is lost. Control returns to the pilot when the interference ceases. If interference does not cease, the pilot will not regain control.

The failsafe software cannot be totally inhibited. It will either hold all (HOLD) or go to positions pre-programmed by the pilot (PRESET). Some sets allow a combination of this feature. i.e. some channels will go to a PRESET position and some controls will HOLD at their last position.

The default setting if nothing is programmed is to HOLD at last input position, including throttle. This will become operational after a pre-determined interval set by the pilot (1.0 seconds, 0.5 seconds or 0.25 seconds) or after a default interval if nothing is programmed. The interval is the length of time it takes, starting the moment interference occurs, until the servos assume their pre-set positions.

The failsafe does not work in the event of receiver ni-cad loss.

Programming of the PRESET feature is done by opening the memory of the computer, putting the sticks, switches and potentiometers in a selected position and then closing the computer memory. This can be quite difficult to follow even from the radio instruction manual.

If a model normally flown on normal modulation (PPM) is swapped to PCM by a change of receiver, the failsafe feature is again automatically selected even though none of the other settings in the transmitter are altered. There is no warning given to the pilot to remind him that he is now flying under the protection of PRESET/HOLD software.

To illustrate the seriousness with which the BMFA are taking this matter, the Technical Council unanimously agreed a plan of action which has been reported to the coroners inquest and includes :

1.The forwarding of our findings to all known radio manufacturers highlighting the problem and requesting/advising that they :-

i. Negate the problem through the use of revised software i.e. inhibit the failsafe function so that it must be selected to turn it on, and modify the factory setting for the throttle function so that it does not default to "HOLD"; and
ii. Publish in the operations manual for the Radio, clear and concise instructions highlighting the potential danger of an "un-programmed" Transmitter based, radio failsafe device.

2. The findings are passed to the CIAM/FAI with the expressed request that they distribute them to all National Aeromodelling Governing Bodies in a suitable publication.

3. The CIAM/FAI/BMFA instigate an emergency general rule change to ensure that any powered models flown under the protection of a Radio Control Failsafe device must ensure that said device brings the motor/engine to run at its lowest speed, (stopped in the case of electric powered models), and specifically not to HOLD the last position of the motor/engine control.

There are other factors which contributed to the sad death of Adam Kirby and these are covered elsewhere. The purpose of this safety notice is one of education and promotion of awareness.

It is the strong recommendation of the BMFA Technical Council that clubs and individual fliers alike take on board the points made above and assess them against their own operating system and philosophy

as responsible users of this equipment and as model flyers to ensure that such an occurrence is does not happen again.

We recommend that particular care is taken by all individuals when operating on PCM or when swapping from PPM to PCM to ensure that the PRESET/HOLD feature is correctly programmed with throttle to tick-over (stopped in the case of electric power).

We also strongly recommend that all clubs incorporate a regime into their flying field rules that will ensure that all operational fail-safes in use on powered models (including "add on" devices used with PPM) must set the throttle to tick-over (stopped in the case of electric power) regardless of the other control operations governed by the failsafe and regardless of the size of the model.

Andy Ellison
R/C Power Technical Committee.