

# Radio Controlled Soaring Digest

April 2018

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**Front cover:** Thomas Moller launches his 4M ASH 26 at Torrey Pines California. Thomas is a member of the Torrey Pines Gulls. Photo by Ian Cummings, © Ian Cummings Photography.

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This document started as a thread on rcgroups about "Techniques to help WIN contests." Whether a beginner or expert RC-HLG pilot, this summary of ideas and techniques will be enlightening.

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Vince Cockett's comprehensive web site comes under new management with Cliff Evans taking the reigns.

## **A TG-16 over the USAF Academy**

## **How dihedral influences proverse yaw**

Marko Stamenovic, via the Horten Flying Wing Believers FaceBook page.

## **PSS Candidate**

## **North American Rockwell RA-5C Vigilante**

Lots of positives for one of the largest and fastest carrier-based aircraft, a technologically advanced machine which deserves modelling.

## **F3F World Cup 2018**

The new FAI F3F World Cup trophy and notice of the 2018 FAI F3F World Cup event locations.

**Back cover:** Paul Juleff flying his Europhia at The Bluff, South Australia. Photo by Adam Fisher.

Nikon D200, ISO 320, 1/1000 sec., f5.6, 120mm

# R/C Soaring Digest

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## In the Air

RC soaring enthusiasts inhabit locations around the world, and while some have access only to small fields and are thus limited to RC-HLG (F3K) and similar models, others have vast open areas where they can enjoy flying larger models and participate in other thermal duration activities like multi-task (F3B), hand-tow thermal duration (F3J), and various e-power classes (ALES and F5J).

Regardless of individual interests, however, most readers of *RC Soaring Digest* are aware of the high speeds being recorded in Southern California by means of dynamic soaring (DS). See page 23 of the May 2017 edition for a report on the current record, 519 mph, held by Spencer Lisenby, April 13, 2017, at Bird Springs Pass, California, flying a Kinetic Transonic DP.

Spencer's record was sufficient to draw the attention of TNG Technology Consulting GmbH in Unterföhring, Germany, and Spencer presented "The 835 km/h Sailplane and Dynamic Soaring" at TNG Big Techday 10 on June 2, 2017.

Our thanks to Ron van Sommeren for drawing our attention to the YouTube video of Spencer's presentation available at <<https://youtu.be/nv7-YM4wno8>> (56 min). The embedded video used in Spencer's presentation is available separately at <<https://youtu.be/r7gL9uA-McY>> (3:50 min). The slides used are available as a PDF download through a link on the Big Techday 10 web page: <<https://www.tngtech.com/en/tng-about-us/bigtechday/big-techday.html>>.

Time to build another sailplane!





# Model Gliding Association of South Africa National Championships BOMAC, 28-30 April 2018

Courtesy of Kevin Farr, [kevin@fvdv.co.za](mailto:kevin@fvdv.co.za)

## Organising committee

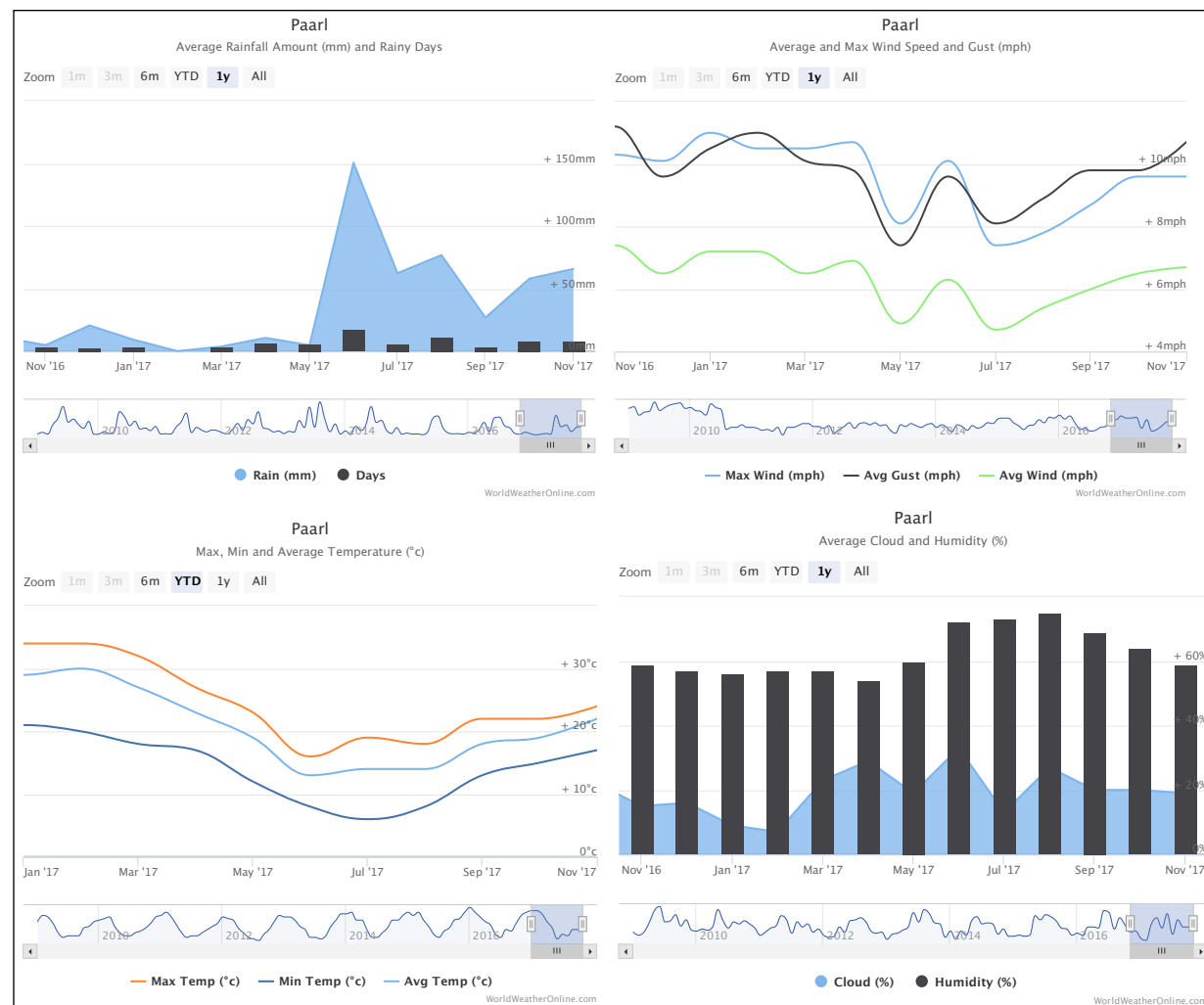
- Rudi King – 0836331696 or [rudi@grassrootsgroup.co.za](mailto:rudi@grassrootsgroup.co.za)
- Kevin Farr – Designs, advertising, social media, shirts, caps, branded spots, trophies/medals, goody bags, etc.
- Peter Schulke – Sponsorships, t-shirts, caps, general management, advice, etc.
- Hans van Kamp – Technical, set-up, advice, etc.
- Tokkie Carstens – Technical, set-up, etc.
- Martin Gilbert – Administration, scoring, general management of event, etc.
- Oom Andries Theron – Administration, finances, etc.
- Werner Mayer – BOMAC chairman
- BOMAC committee
- Special assistance from a distance – Wolfgang Steffny, Jan Sime, Gordon Browne and MGA committee
- F3B helpers: BOMAC committee or members to assist with F3B buzzers on Monday 30 April

## Background on the selected dates for the RC Gliding NATS 2018

There has been some unhappiness regarding the dates selected for various valid reasons. Traditionally there are not a lot of RC pilots that fly in the power and gliding National Championships, so the clash of dates are very unfortunate for a few of us. There will also always be the practical challenges of travelling distances between provinces, being away from work or an own business for 3-4 days, etc. Although it's impossible to find dates and a venue that suit everyone, we tried our best. The challenge is to find an open weekend on the RC calendar, with enough days for the Nats that caters for kids' school holidays, sport weekends, etc. In the Cape we have the added luxury of unpredictable weather with strong winds in Summer and Rain (traditionally) in Winter. The date was not an impulse decision and is based on the weather prediction for that time of the year and secondly available days to allow for travelling and



least amount of leave. The public holiday of 1 May have been used in the past for the gliding Nats, so along with the long weekend, herewith also the rain, wind, temperature and cloud patterns that were taken into consideration in selecting the date:



The weekend of 28-30 April 2018 was proposed to the MGASA group via e-mail on the 29th of August 2017 to give an eight-month heads-up. There were no objections raised at the time, so the organisers continued to add the date to the MGA calendar.

## Update on the water situation in the Western Cape

There has also been a great concern regarding the water shortage in the Western Cape, to the extent that going ahead with the event was put on hold until an update regarding water from Grabouw. It is now confirmed that water is being released and that Day Zero has provisionally moved out to mid May. The current predictions are that Day Zero will move out even further to June or July and may still be avoided with current restrictions and upcoming raining season.

Other, much bigger events in Cape Town like the Two Oceans Marathon and Argus Cycle Tour that attract hundreds of thousands of visitors were also on hold until now, but confirmed that they will continue with the updated information.

After discussions with Skinkikoffi and other relevant parties, the organisers are comfortable to proceed with the Nats in Paarl as planned. We do however still urge all visitors to use as little as possible water during their stay.



## Event

- Categories/Classes
  - 2-Metre (8 min working time, 6 min flight time) – Please note there is a change to the rule with regards to the model spec. The restrictions are only on the wingspan and not on the control surfaces.
  - F5J (Electric) – run by F5J MGA representative the F5J class forms part of the SA F5J team selection process
  - F3K (DLG hand launch) – run by F3K MGA representative – the F3K class forms part of SA F3K team selection process
  - Open (Thermal duration) (12 min working time, 10 min flight time)
  - F3B (Thermal duration, Distance, Speed) – run by MGA F3B representative – the F3B class forms part of the SA F3B team selection process

Please note:

\* 2-Metre, Open and F3B will be flown from electric winches with a 200m turnaround – please also see 2-metre rules and F3B rules.

\* The same Thermal Duration rounds will be used for Open and F3B scoring. If a pilot enters both Open and F3B, he/she will get a score against all Open pilots in the same slot for an “Open score” and a separate “F3B score” calculated against the other F3B pilots in the same slot.

\* Due to the make-up of the contest and that all thermal rounds will be flown before distance and speed for the F3B class, F3B pilots will not be limited/restricted to fly the thermal, distance and speed flights of a round with the same aircraft. This amendment to the rules is only to allow a pilot that damages his/her model during a duration round to still continue with the F3B contest and complete the distance and speed rounds





respectively without being penalised. In the true spirit of F3B, pilots in the F3B class will not be allowed to strategically fly duration with an F3J model and then use F3B models for speed and Distance.

\*The results of the F3B and F3K classes will form part of the South African team selection of these classes respectively.

- Dates (program – time schedule)
  - Friday 27 April  
08h00-17h00 Field set-up and practice day
  - Saturday 28 April  
08h30 Pilot's briefing, 19h30 Gala dinner at Wild Clover Brewery <<http://www.wildclover.co.za/brewery/>>
  - Sunday 29 April  
08h30-17h00 Competition day  
17h30-18h00 Prize giving (2meter, F5J, F3K, Open)

18h00 MGA AGM (Chaired by Jan Sime)

- Monday 30 April  
08h00-09h00 F3B course setup  
09h00-13h00 F3B Speed and Distance rounds  
14h00 F3B Prize giving

#### • Rules

- The competition will follow FAI rules for F5J, F3K and F3B (except for special amendment to rules relating to same models used in a round and winches for F3B).
- FAI rules can be viewed at:  
<[https://www.fai.org/sites/default/files/documents/sc4\\_vol\\_f3\\_soaring\\_18.pdf](https://www.fai.org/sites/default/files/documents/sc4_vol_f3_soaring_18.pdf)>  
<[https://www.fai.org/sites/default/files/documents/sc4\\_vol\\_f5\\_electric\\_18.pdf](https://www.fai.org/sites/default/files/documents/sc4_vol_f5_electric_18.pdf)>





- Open will follow the same rules as for F3B Thermal Duration.

- 2-metre will follow the rules as per 2010 2M challenge (with an amendment to the model spec) and can be found on the MGA blog <<http://mgasa.blogspot.co.za/2010/01/2m-challenge-for-2010.html>>

PLEASE NOTE THERE IS A CHANGE IN THE RULE WITH REGARDS TO THE MODEL SPEC. THE NEW MODEL SPEC. READS AS FOLLOW:

- The aircraft must be an RC glider as defined by the MGA — no on-board propulsion of any type will be allowed. There will be only one model class namely “2 Metre” without any restriction on control surfaces (ailerons, flaps, spoilers are all allowed). The maximum allowable span is 2 metres projected span. This implies that the glider wing should be able to fit

lengthwise through a ring exactly 2 metres wide. There is no restriction on the construction techniques used in manufacturing any parts of the aircraft. There is no requirement for the pilot to be the builder of the model although this is encouraged. The model may be controlled with any make or model of radio providing it is able to operate simultaneously with other radios as per the latest SAMAA specifications. Transmission must be on one of the SAMAA approved frequencies. There is no restriction on the number of models an entrant may use in the course of the contest, a different one for each flight if he/she so wishes.

- Please contact the MGA category representative or organisers if you have any questions regarding the rules of any category. Contact details of the representatives are available on the MGA blog (<http://mgasa.blogspot.co.za>).

- Frequencies

- Any of the current SAMAA approved frequencies are allowed, but if possible pilots are requested to make use of 2.4GHz.

- If any MHz frequencies are used, only the frequencies confirmed in the entry form are valid and cannot be changed after the closing date.

- Contest Director – Gordon Amy Browne

- Protest

- Jury (Rodney Goodrum, Jan Sime and John Monk)

- A R200 deposit will be returned to the competitor if the protest is upheld.er the incident.





- A R200 deposit will be returned to the competitor if the protest is upheld.
- Scoring
  - Appointed officials will spot check times, landing, scores (BOMAC members – Werner, Martin, George, etc. to be confirmed)
- Trophies
  - There will be trophies for all categories senior and where relevant junior. Junior pilots should indicate clearly whether they enter as a senior OR junior in the various categories

### **Application forms and entry fees**

- All pilots with an active SAMAA membership may enter.
- Pilots may enter as many classes as desired, but need to be aware of the F3B rules with regards to the Open class and the model restriction.

- Pilots need to enter in teams of three. (If you don't have a full team, please inform the organisers so that teams can be made up or you can be assigned to a team.)
- Entries are now open and must be received before or on 28 March (see entry form in separate mail)
- Entry fees
  - Entry fee is R300 for the first class and R100 per class thereafter, so R300 for one class, R400 for 2 classes, R500 for 3 classes, R600 for 4 classes and R700 to fly in all 5 classes
  - Please note that if a pilot enters for the F3B class, he/she is NOT automatically entered into the Open class, although he/she will fly in the same slots, so it makes a lot of sense for all F3B pilots to also enter Open...



- The closest airports to BOMAC are Fisantkraal and Paarl East. BOMAC falls outside of the Cape Town CTR, so the temporary ceiling height restriction exemption from RAASA is being processed
- Tent/shelter
  - A marquee tent with chairs and tables for breakfast and lunch will be set up at the BOMAC clubhouse
  - The same marquee tent can be used to store equipment overnight
  - Pilots should make own provision for additional shade on the flight line, for example a beach umbrella or 3mX3m gazebo.
- Toilets
  - Mobile toilets will be available at the field

## Venue

Boland Model Aircraft Club (GPS: -33.750178 ; 18.874758)

- BOMAC is located about 10 km outside Paarl on the Agter Paarl road, on a huge sheep farm with some vineyards. It is also relatively close to Wellington (about 15km), Franschoek (about 50km) and Stellenbosch (about 25km). With Table Mountain clearly in the background, pilots regularly share the same thermals with fish eagles, pelicans and other birds.
- Weather
  - Thanks to long term experience from the BOMAC members, the weather in the Boland should be most predictable at the end of April. Between the changes of the seasons, limited wind and rain is expected for this time of the year. There may be times of cloud, but mostly sunny with temperatures of 11-22 C

- Dustbins
  - Sufficient dustbins will be available and all pilots are urged to keep the field clean for the duration of the contest. All winch line, pieces of insulation tape, etc. must be picked up and placed in the bins.
- Security
  - Although the organizers will do everything in their power to keep the venue safe for the duration of the contest, it is each pilot's responsibility to look after his/her own equipment and items of value.

For more details, including meals and refreshments, accomodations, etc., please see NATS 2018 Bulletin 2 at <http://mgasa.blogspot.com/>.







*Paul Sherman, Darryl Perkins, and Joe Wurts calling Tom Kiesling.*

# On Being a Timer / Caller

Kevin “Rowdy” Botherway, rowdy01.kb@gmail.com

After recently doing an experiment during an F3k competition where we had no favourite timer/caller and had to draw a timer out of a hat, it was decided that we lack in training and helping people become good callers for the soaring discipline here in New Zealand.

I will write a few of my thoughts and experiences calling for various people over the last few years and try and get Joe Wurts, Peter Williams, John Shaw to add some stuff.

I have been lucky over the last few years to have called for lots of world class pilots, too many to rank or name, so I can offer some suggestions.

But none of it's fact and others may like to do things different or have a better suggestion which I hope at some stage to learn about.

## **Stop watches:**

There are heaps of different timing units around.

I find the best to date is the Seiko stopwatch as you can pre-set a flight time on it and have the last three seconds bleep with your call for precision landing and they are correct. (Some even expensive stop watches are one second out!)

More than one stop watch on hand or on a board is best so you can run a working

time and maybe time another contestant if you need to, or use it for the next quick turnaround flight. You should always have a watch dedicated to working time.

## **Timing board:**

This is handy to have.

I have an aerial attached with a small wind indicator on it to help some pilots. The aerial I use more for pointing out stuff to the pilot like air or other planes, etc.

I also have attached paper on a bulldog clip and a pen!

These are all must-have tools if you are a timer/caller. And you need to know your own gear and how it works – believe



*Three stopwatches - two Seiko Time Keeper models (left set for 15 minute countdown, right set to 1 minute count up) and a Robic SC-707W, an older transmitter aerial with light ribbon, clipped paper supply, and pencil and pen make up the author's personalized Timing Board.*

me the last thing you want do is make a timing mistake on operating a watch or timing someone incorrectly...

It's what we all fly competitions for – the best result we can achieve.

### **Pilot and Caller:**

From when you walk out as a timer / caller you need to have clearly discussed with the pilot the task and or any possible other intentions such as if its F3J get ready it may be a zoom launch or rocket launch be ready to get the time started!

If it's F3B and distance some like the on course time and each turn how the time is winding down...

Do not pre-empt the watch. Look at the watch and ensure a smooth call voice at very regular time calls. Some pilots even carry there own watch on the transmitter which is a good idea as a double check on time and also if the timer is busy say clearing a winch the pilot can take care of time if it allows so.

**Landing:** The caller needs to ensure he is regularly advising the pilot of time to go. I start from one minute out to advise the pilot every 5 seconds down to 30 seconds to go, then count clearly down to zero every second.

I believe the caller / timer must always count down to zero so practice this. It's a very clear thing to the pilot. Counting up to some unknown number is not a great





*Joe Wurts calling for Kevin at the last F3K World Championship.*





*Neal and Kevin discussing F3K strategy.*

thing to understand while trying to land an aeroplane on zero!

Calling: One of the most important jobs firstly is to try as a caller/timer to ensure you have your eye on all the aeroplanes in the sky, especially the ones behind the pilot (he will never see these!)

I usually watch the pilots plane very little and feed information to the pilot to filter out what he needs.

You need to try and be aware of everything... ground signs — trees grass flags bugs, etc. — also advise on wind shifts and anything else going on.

There are heaps of great videos on this stuff from <[radiocarbonart.com](http://radiocarbonart.com)>.

If as a caller you have made a timing mistake, tell the pilot earlier than later. Ensure you are honest about it to him so things don't go south later.

One of your last jobs as a caller / timer is to ensure the pilots time / landing and height if F5J is recorded clearly in the correct column, along with group, pilot's name.

Again, clearly remember someone else has to transpose this result to a computer or something and it needs to be very legible.







Erik Dahl Christensen

<<https://www.rcgroups.com/forums/showpost.php?p=14627468>>

This document started as a thread on rcgroups about “Techniques to help WIN contests” <<https://www.rcgroups.com/forums/showthread.php?1124797-Techniques-to-help-WIN-contests>>. It is very detailed and if you find it too detailed, realise that it is because you have become so experienced that you don’t need all of it anymore. The stuff that you master 100% - just skip it. I’m though not quite sure that I master anything 100%. On the other hand, if you are a beginner in this game, you may need even more advice than I have gathered. Please feel free to use this document as an unfinished document, and add whatever you feel is lacking. Either ask someone about what you miss, or close you eyes and think deep for a while.

Have fun.

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## Practice

## comments / equipment

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### Generally

The road to winning a contest will start months before the day of the event.

Physical fitness will eventually come into play as you get closer to the end of the event. During a 2-day contest you will put up at least 100 launches and if you arrive on Friday that could be much higher. Stay in shape in the off season with aerobic exercise and stretching a couple of times a week. During the contest season launch launch launch!

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### Launch

Start your flying sessions with a warm up of 20 launches. Then try to string along 10 perfect tip catches.

From there work on the basic skills needed for any task. Read the air and get an idea where the lift is before you launch. Fly directly to that spot and sniff it out. When you find lift make a few climbing circles and bring it home for a tip catch and relight right back into it. Do this over and over until that thermal is too far to catch again.

Practise launching.

This is a big issue!!

You must be ready to catch and relaunch in less than 2 seconds every time.

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### Thermal

You must be able to find lift on every flight.

“In and out” - Land and launch again and try to find again the same thermal.

Never stay more than 5 minutes in a thermal during practice.

2½ min ??

If reading lift still seems like voodoo to you try this to help make sense of it all. Next time you encounter lift quickly land your airplane and take a look around. What do you feel, see and hear? Now launch back into it.

Treat each flight like an all up last down task. Stand there and read the conditions first and then launch to the lift. When broken down to the very basics this game is the same for any task. Launch, find lift and land on time. Focus on those basics every time you fly.

Get comfortable chasing that lift way downwind, you know it is there so go for it. When that thermal is gone don't just start launching and looking.

Spend some time practising and experiencing how to get back and exactly how far away you can fly downwind, to get to know your limits. This means that you will land out. It is though better to land out practising than during a contest. 😊

Practice turning the plane around without too much height loss.

Practice finding your own lift, but use everybody else's lift during the contest.

Practice low level thermaling, but stay high during the contest.

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### Flying

You must be ready to fly in all conditions from wind to rain to big ole puffy clouds and

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blue sky. These things take practice and not just flying around with your buddies but practicing with intent.

Don't land out, but do it occasionally and part wise on purpose during practise, to push your limits

If you normally fly in a right circle, learn to fly left circles. Don't pay any attention to comments from the jocks that say you need to do right handed circle because the vertical is more efficient. Most people fly right handed circles, and by flying left, you make them struggle to circle better left. More struggle for them, makes them waste air. This is directly from George Moffat's book. He thought were that if he could make you lose time, you might not win.

Learn to land in a crowd. Learn how to drop your plane into a hole. You have flaps, use them!

You must be ready (confident) to fly in a crowded space standing on a crowded field.

---

### Preparing

Have more than one primary ship. That is not saying that your backup should not be as good, but you should have two ships that you can fly interchangeably.

The past 2 seasons, I had 2-3 planes for contests for the first time. When I needed to switch planes, I could do so without worry. If I had to repair one on the field, I did not have to worry about finding CA fast, repair cloth, or even wait for epoxy to cure. It was a pleasure not to have to worry about the next task when you know you have a good plane all ready to go!

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### Preparation just before the task

Stay confident. Relax. Launch your (fully charged up) plane before a round to get the jitters and butterflies out. This should allow you to get a feel for the air.

I use three launches to get me going.

- a) a small toss
- b) a low power discus launch
- c) a full power discus launch

I have once made one launch during practise, where I had the wrong model in my transmitter. This 3-phase launch sequence prevents major damages if I





mess that up. It also prevents damages from unseen damages to the plane, which could cause a totally damaged plane.

Always flight check the plane after the task to make sure that you are ready for the next task. If you set your plane down, it should be ready for the next task without any further attention. Store it so that a thermal cannot grab it to destroy it. They know how to do it!

Always charge your plane after the task.

Keep your planes charged up. If a plane isn't flying during a fun-fly or contest, it should be charging up. Before a contest, practice with your backups. I learned this hard way at the Blue Skies over Colorado. I kept practising with my primary (for the conditions) for the fly-off's and I almost launched it with a dead battery! Unexpectedly switching planes at the last second can screw with your current state of mind and confidence.

If you find lift in the preparation time, don't show it to every pilot,

If flying Prep time, do not circle for a long time in a thermal you found. If you do, the other pilots will determine how fast the thermal is drifting, and if it is going downwind, they will know how far they have to fly to get to it. The old turn and burn routine that Bruce Davidson uses.

A preparation example from Matthias Hammerskiold, Sweden:

- 30-28 Check my gear and ballast

- 28-25 Passing through the trigger point

- 25-15 Check conditions of previous groups and winning tactics

- 15-10 Preparation time is running. I review the tactics with my helper and make a final condition check. Position myself in the launch area according to tactics.

- 10-0 Working time running. Carry out the tactics.

Things can happen within this window which force me to change ballast or plane but I see this as "failing" of the plan which will take focus from the tactics. With a good team the risk can be minimized since they can take care of previous group analysis.

## Flying the task

Don't land out.

Make sure you don't lose points in the ladder task.

If you have a good pilot in your group, GREAT! Don't let that intimidate you. Just relax. Use him! He's just another thermal indicator for you.

Know the planes in your group and who's flying them. I think Bruce D mentions this a lot-- Cover them! Fly far enough that you can work on your own and fly close enough that you can zoom to the planes seemingly in lift.

In a gaggle of planes. Stay in blue skies. It's not worth losing your plane and maybe the other guy's plane over something that can be easily avoided. Most of the times, thermals are big enough that you can stay out of the gaggle. I do this all the time. Sometimes you cannot avoid it if people are ranged far out. It took me two mid-air collisions at the 08 IHLGF to learn this. One of them was my own stupid fault. It took out Kiwi's plane and I still regret doing it. And this was before the contest started!!!

Keep your speed up!

Never lose time; for example if I land at 10 meters from me, I begin to walk when my model is still flying to save time

Fly against yourself, NOT the other pilots. You lose time because YOU did not make the flight task time, not because others do not make the time. You are competing to be the best at the task time and at the end if you drop time it is because you dropped the time. The more time you can get, the better you will place once any comparison is made for scoring.

Never come in early. If you have a chance to bury another pilot by flying as long as you can, do it! Don't assume you are the best of a flight until you max and cannot accumulate any more points.

Let your timer know what you are going to do. Tell him your limitations, what you like to do and don't, how you want time to be counted, that is, if he doesn't already know.

Never let your timer comment on your flight other than trying to compare what you are in versus what the other pilots are doing. I once had a timekeeper saying get out of there, get out of there, you are in really bad sink. I ALREADY KNEW that because I was already trying to get out, and penetrate through the sink! I am not blind!



Winning a contest is a 2-step process. The first obstacle is to get into the fly offs. The tactics employed to do this may be quite different from those used to win the fly offs. It is wise to be a bit conservative and fly closer to the field during the preliminary rounds.

You should have a plan before every launch even if that means holding for a couple of seconds. The goal here is to be consistent. At the IHLGF this year (2009) it only took an average of 921 points per round to make it into the fly offs in 10th place. In the finals the game changes from conservative to calculated risk taker. It will take aggressive flying to get the most out of every flight. Transitions will come into play so you better be ready for tip catches on every flight.

Do not underestimate the importance of a great timer.

When you start to treat it like a team event you will have a big advantage.

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#### Tactics for each of the tasks

Either memorize these task specific tactics, write them down and show them to your timer seconds before the start of the working time (not advisable), OR let your timer be part of these tactics, so you gather the synergy from two brains doing different parts of the necessary thinking during the flight 😊. Think of F3K as a team event.

Suggestion: Print and laminate these task specific tactics AND the general tactics, and keep them on you score board until you don't need them anymore.

Generally

Avoid the same sink twice – be in the “the river of air”

Avoid “cross overs” => no midair's

Fly different areas if you don't have a positive thermal indication

Circle only in lift

Be conservative - stay in the middle of the pack until you know where the thermal is

Learn to spot thermals from vegetation movements, birds, insects, wind shifts and other planes in the air.

Don't land out.

1) If there is time left in the tasks

3 out of 6, ladder, 2 last, last, AULD

Use the excessive time to find lift => in & out

Don't land early. Find lift while flying, then land and relaunch directly into the lift. You don't lose points for over flying the time.

2) Turn-around tasks

5x2, 1-2-3-4

Make the time a little short. 2 seconds "wasted" on ground is better spent watching for lift, than 2 seconds stressed over flying.

If you can find lift before you land = in & out

If you are in doubt before the launch, use 5 seconds to scan the sky, make a decision and launch

change of tactics

If you lose time in 5x2 or 1-2-3-4, the task changes from a turn-around task to a task with time left in the working time. This change suddenly gives you time to either scan the sky from ground, or over fly the other times while searching for lift in the air. In the same manner a task with time to spare and the above mentioned changed turn-around task, can change or change back to a turn-around task, if you have used all the spare time 😊.

"last flight" - working time 7-10 minutes dependant on CD

Find lift in the 2-5 surplus minutes

Your timer must be aware of anybody finding lift

Use the excessive time to find lift => in & out

Don't land early. Find lift while flying, and then land and relaunch directly into the lift. Remember that you don't lose points for over flying the time.

"2 last flights"

Find lift in the last part of the second last flight => in & out

Don't land early – use the time in the air to find lift => in & out

Your timer must be aware of anybody finding lift

Use the excessive time to find lift => in & out

7 min working time => 4x25 sec. free air scan time

or

10 min working time => 5x50 sec. free air scan time

2 min surplus time => 4x25 sec free air scan time



Don't land early. Find lift while flying, and then land and relaunch directly into the lift.  
Remember that you don't lose points for over flying the time.

#### "AULD"

Find lift from the ground  
Choose where to fly if you can  
be conservative – stay in the middle of the pack until you know where the lift is

#### "Ladder" – there is 75 seconds excessive time in the working time

Over fly each flight 1-2 seconds  
Find lift during the first short and easy flights  
Use the last part of the last longer flights to decide where to fly next  
Use the excessive time to find lift => in & out  
Don't land early. Find lift while flying, and then land and relaunch directly into the lift. Remember that you don't lose points for over flying the time.

#### "5x2"

Find lift during the prep time – decide where to fly  
Find lift in the last part of each flight => in & out  
Make the time a little short. 2 seconds "wasted" on ground is better spent watching for lift, than 2 seconds stressed over flying.  
If you can find lift before you land = in & out  
If you are in doubt before the launch, use 5 seconds to scan the sky, make a decision and launch

#### "3 out of 6"

Find lift in the first minute  
If you search for lift in the air, make a decision at 0:40, so you can either stay in the thermal, relaunch in it if you are low or decide to fly the thermal that is somewhere else 😊  
Find lift during the last part of each flight => in & out  
If you have time left, use it to find lift – preferably in the air  
Use the excessive time to find lift => in & out  
Don't land early. Find lift while flying, and then land and relaunch directly into the lift.  
Remember that you don't lose points for over flying the time.

#### "1-2-3-4"

Find lift during the first 40 seconds.

The first 3-5 flights (dependant on skill) are free scan air time for the last longer flights

If the full time is not flown -> change tactics

If the surplus time is spent on ground change back to turn around tactics

1 min surplus time counted as a 1 min flight => 2x25 sec free air scan time

Dependant on skill and weather:

1 min flight is free air scan time

2 min flight can be free air scan time

Find lift or decide where to fly next at times 0:40, 1:40, 2:40 and 3:40.

Make the time a little short. 2 seconds “wasted” on the ground is better spent watching for lift than 2 seconds stressed over flying.

If you can find lift before you land = in & out

If you are in doubt before the launch, use 5 seconds to scan the sky, make a decision and launch

The following table can give you an estimate of which times you are aiming at when setting your target for next years competitions. Have a look at your scores from last year, and find where you can/will improve this year. Analyse where you can gain points. Practise that and advance placings in your next contest.

Find out what your target shall be for this years contests, and see what times you shall fly to reach your goal and contest placings your wish for.

The mentioned combinations of times are of course only some of the possible combinations.

Be aware that the tactics for a turnaround task flown to less than 100% changes the task from a turn around task to a task with slightly different tactics.

	at least 75% of max min 750 points	at least 80% of max min 800 points	at least 85% of max min 850 points	at least 90% of max min 900 points	at least 95% of max min 950 points	100% 1000 points
AULD	3 x 2:15	3 x 2:24	3 x 2:33	3 x 2: 42	3 x 2:51	3 x 3:00 Gratulations
Ladder	all but 2:00 =771 = 77.1%	all	all	all	all	all Gratulations
5x2	5 x 1:30	5 x 1:36	5 x 1:42	5 x 1:48	5 x 1:54	5 x 2:00 ( <i>not possible but close</i> ) Gratulations
3 of 6	3 x 2:15	3 x 2:24	3 x 2:33	3 x 2: 42	3 x 2:51	3 x 3:00 Gratulations
Last <u>flight</u> 5 min	3:45	4:00	4:15	4:30	4:45	5:00 Gratulations
2 last <u>flights</u> 2x4 min	3 x 3:00 or 4:00 + 2:00	2 x 3:12 or 4:00 + 2:24	2 x 3:24 or 4:00 + 2:48	2 x 3:36 or 4:00 + 3:12	2 x 3:48 or 4:00 + 3:36	2 x 4:00 Gratulations
1-2-3-4 min	1+2+3 + 1:30 or 1+2 + 1:45 + 2:45	1+2+3 + 2:00 or 1+2 + 2:00 + 3:00	1+2+3 + 2:30 or 1+2 + 2:15 + 3:15	1+2+3 + 3:00 or 1+2 + 2:30 + 3:30	1+2+3 + 3:30 or 1+2 + 2:30 + 3:30	1+2+3+4 ( <i>not possible but close</i> ) Gratulations



# My September 2017 visit to GP Gliders

Raul Boerner, via <https://groups.google.com/forum/#!topic/rec.aviation.soaring/KmCfxFW-TvU>

*Raul is a competitive sailplane pilot. He is a member of and flight instructor for the Black Forest Soaring Society. BFSS is based at Kelly Airpark, a private residential community located between Denver and Colorado Springs, just West of Elbert, Colorado.*

Poland is a beautiful country, especially in early September. The purpose of this trip was to meet CEO Jerzy Peszke and tour the GP Gliders facility. The operation recently moved to Korczyna (2.5 miles NW of Krosno). The original airport building was too small for anticipated production.

Jerzy Peszke (Junior) comes from a glider family. Grzegorz Peszke (Dad) is a well-known aircraft designer; “particular” only starts to describe him.

Meeting the two bolstered my decision to order the GP Jeta, a 15-meter self-launching electric glider with a powerful motor and ballistic rescue system.

Jerzy’s grandfather, also Jerzy, was Tomasz Kawa’s instructor, father Kawa. Flying a GP 14 Velo, Sabastian Kawa won the 2017 World Gliding Championship, in 13.5 Meter Class.

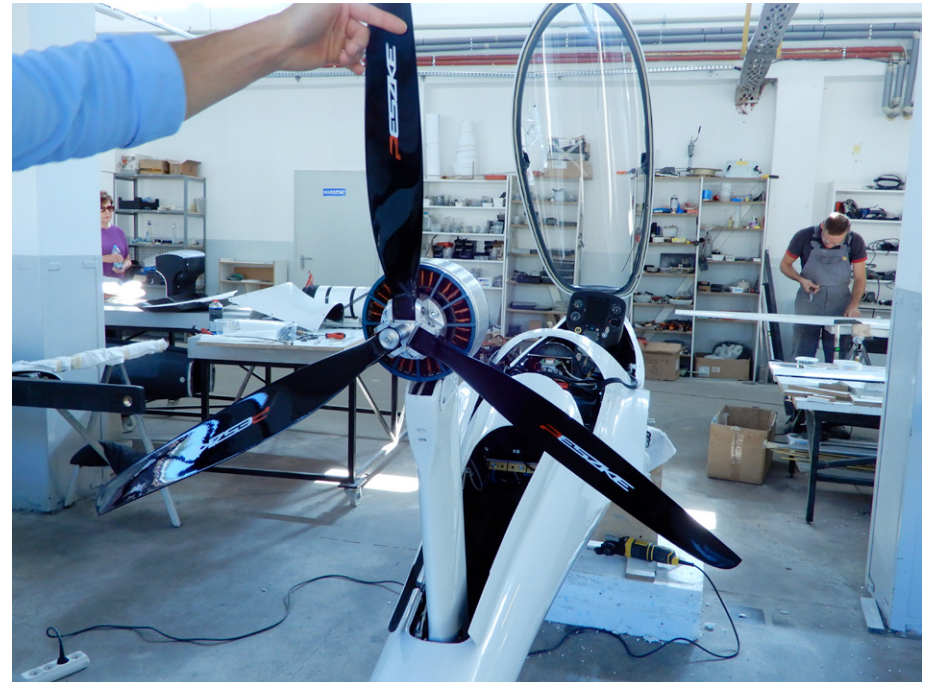
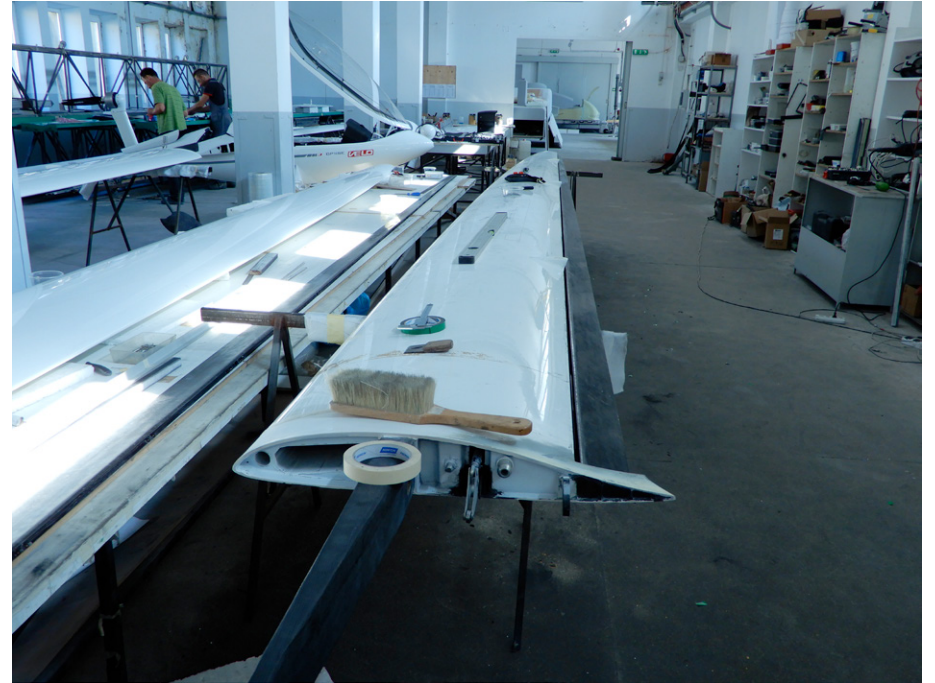
And soon, the newer 15-meter Jeta prototype will be test flown. Per Sabastian’s suggestions, the Jeta is undergoing some aerodynamic improvements; he is a GP Gliders Technical Consultant.

On the drive through Poland, we passed Ostrow. This will be the site of the July, 2018 WGC. GP Gliders intends to have the Jeta in that contest. My plan is to attend.

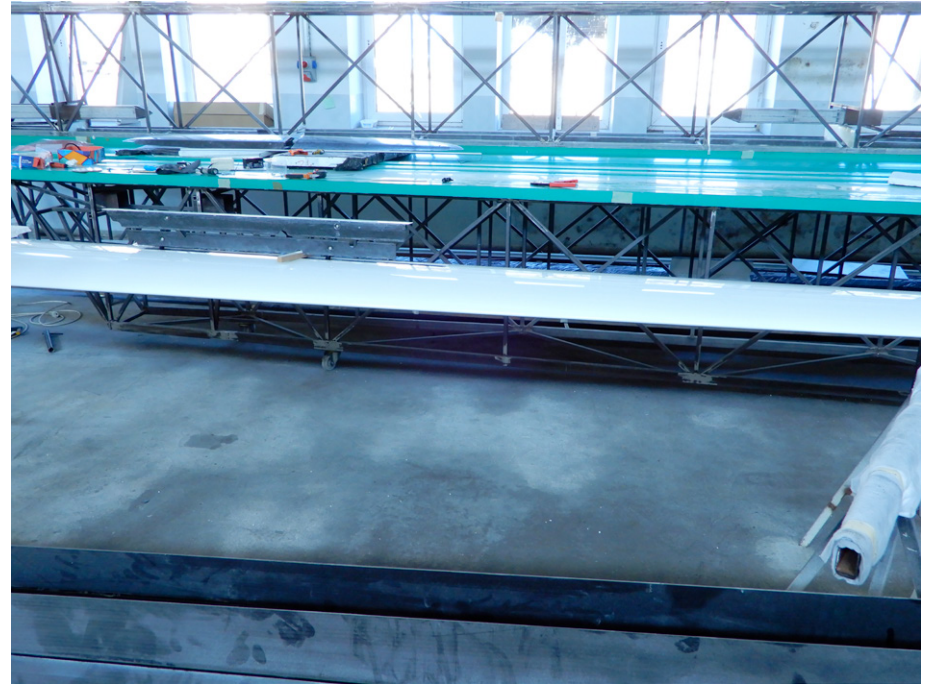


*GP GLIDERS are designed and produced by PESZKE S.C. based in Krosno, Poland. The company is a producer of aviation products, including high performance propellers, light sport airplanes, and gliders. Founded in 2007, the company has substantial expertise in the use of composite technology and aero structure design. Lead designer Grzegorz Peszke is an experienced developer, constructor and competitor. He has set records in Radio Controlled Thermal Soaring in the F3B class.*















# Thermal Soaring Master Class



Paul Naton / Radio Carbon Art Productions, [www.radiocarbonart.com](http://www.radiocarbonart.com)

Paul Naton has been involved in RC soaring since the late 1980s. Starting on the slope at Torrey Pines California, Paul's love of RC soaring has continued to grow along with his expanding involvement in RC-HLG (F3K) and thermal soaring, both hand-tow (F3J) and winch-launch (F3B), as well as e-launch (ALES and F5J). For the last two decades Paul has been producing RC soaring videos through his company, Radio Carbon Art Productions. The Thermal Soaring Master Class is the latest offering from RCA.

Paul recommends Secrets of Thermal Soaring for beginning pilots and High Performance Thermal Soaring for pilots with intermediate skills. Thermal Soaring Master Class and Thermal Soaring Master Class 2 work in unison to explore those more advanced topics of benefit for advanced RC soaring pilots.

## Thermal Soaring Master Class

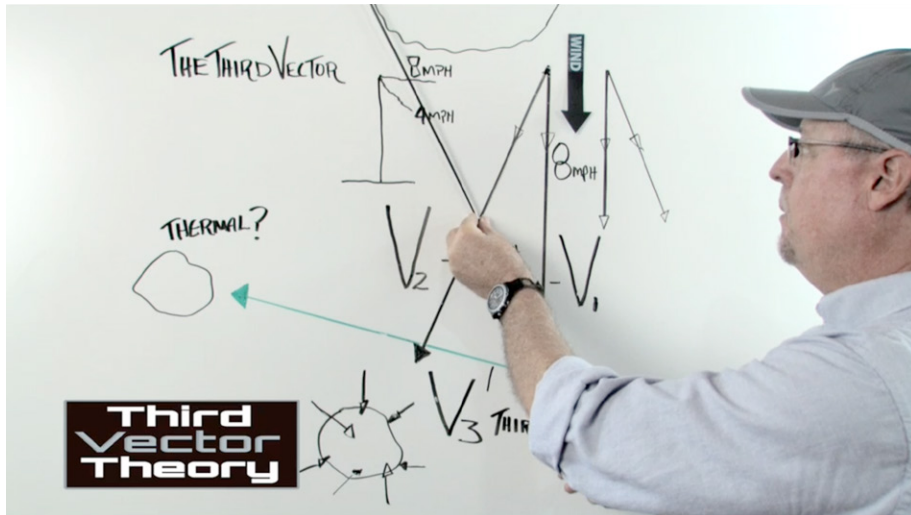
Thermal Soaring Master Class consists of a series of 18 classroom lessons which cover a wide variety of topics, beginning with the "river of air" concept made popular by Dave Thornburg. Using that basis, Paul goes on to explain not only how thermals are created, but how they behave and how they can be detected and used to best advantage.

Paul's explanations are easily understood, as evidenced by his discussion of the "third vector" proposed by Joe Wurts as a method of finding thermals. Through the use of white board illustrations and the use of a small sailplane replica, Paul is able to not only retain viewer interest, but makes a lasting impression. Major topics, like controlling speed through flight modes, the use of ballast, and safe ways of exiting thermals are discussed, along with methods of searching for thermal activity, and the importance of bank angle as related to climb rate.

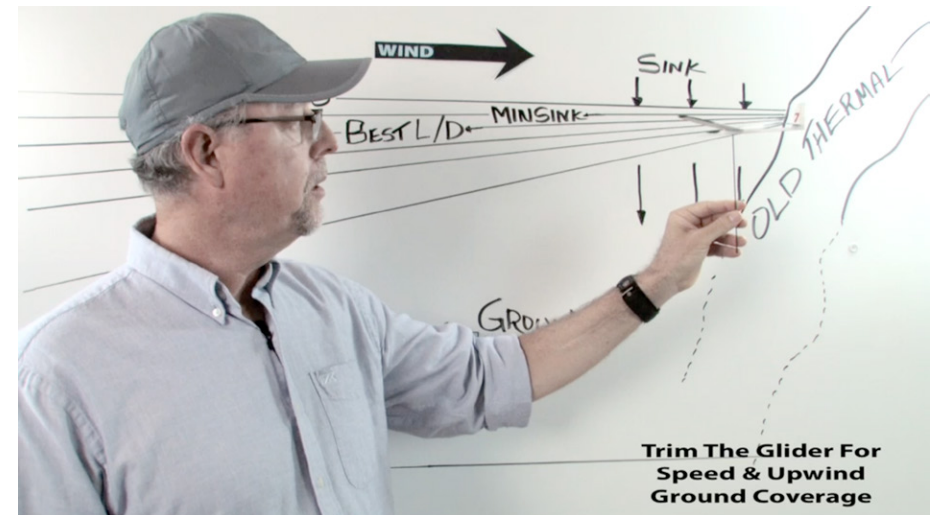
To get the overall flavor of Thermal Soaring Master Class, we recommend you take a look at a short video addendum in which Paul talks about the complex nature of low level thermals and how they tend to merge making larger thermal structures <<https://www.youtube.com/watch?v=ioQ1QH3dCPI>>.

## Thermal Soaring Master Class 2

Thermal Soaring Master Class 2 is substantially different than the Thermal Soaring Master Class in that, rather than being a series of classroom presentations alone, it consists of five general topics presented in the classroom format followed by actual flight examples.



From Thermal Soaring Master Class: Paul Naton explaining the “Third Vector,” a method of determining the general location of a passing thermal.



From Thermal Soaring Master Class: Here Paul is describing methods for safely getting out of thermals and returning home from downwind.



From Thermal Soaring Master Class 2: Here Paul describes ways of evaluating sailplane height, distance and speed by gaining field perspective.



From Thermal Soaring Master Class 2: A tail-mounted camera shows flap position while searching for lift under windy conditions. In addition to verbal commentary, “subtitles” are often used to highlight specific points.



These example flights were created using different aircraft to which video cameras were attached at various points on the wings, fuselage and tail. Thus, when Paul talks about optimizing camber and other mixes for varying conditions he is able to provide actual in-flight examples which show flap and/or aileron deflections while cameras mounted to the fuselage and pointing toward the tail assembly allow the viewer to see the rudder deflection needed to maintain a coordinated turn.

Advanced topics covered through this DVD include tracking thermal movement, flying in calm and windy conditions, and maintaining flying site perspective to better determine sink rate.

Paul provides a continuing and comprehensive verbal commentary

- Thermal Soaring Master Class  
Standard DVD: <<http://www.radiocarbonart.com/tsmcdvd/>> \$24.95  
Download: <<http://www.radiocarbonart.com/tsmcd/>> \$21.95
- Thermal Soaring Master Class 2  
Standard DVD: <<http://www.radiocarbonart.com/tsmc2dvd/>> \$24.95  
Download: <<http://www.radiocarbonart.com/tsmc2/>> \$21.95

### SPECIAL!

Thermal Soaring Master Class and Thermal Soaring Master Class 2 are available as standard DVDs or as downloadable HD MP4 files. For a limited time, these two programs are available as a set in either standard DVD or downloadable MP4 format for just \$29.95.

during these flights and includes printed subtitles at times to accentuate the finer points being illustrated.

In reviewing Thermal Soaring Master Class and Thermal Soaring Master Class 2 we found them to be capable independent stand-alone products. When viewed consecutively, the two videos work together to provide a comprehensive and advanced overview of the interactions between the pilot, the sailplane and thermal activity.

Thermal Soaring Master Class and Thermal Soaring Master Class 2 are available in full HD (1920 x 1080 pixels) as either standard DVDs or as downloadable MP4 video files.

Both videos are highly recommended by RC Soaring Digest.

## Other videos available from RCA

- Endless Lift, Endless Lift 2, Endless Lift 3 and Endless Lift Special Edition
- Pro Aerotow
- Best of Scale Soaring
- International HLG
- PSS Masters
- Just Want to Fly and Just Want to Fly 2
- Soar Utah
- 2.4 Radio Clinic
- DLG Building Clinic
- Electric Sailplane Clinic, Electric Sailplane Clinic 2 and Electric Sailplane Clinic 3
- F3 Building Clinic
- F3X Building Clinic
- Glider Repair Lab, Glider Repair Lab 2 and Glider Repair Lab 3
- Glider Tech Lab
- Handlaunch Building Clinic
- Handlaunch Master Class, Handlaunch Master Class 2 and Handlaunch Master Class 3
- Handlaunch Tech Lab
- High Performance Thermal Soaring
- Performance Tuning for Sailplanes
- Radio Clinic for Sailplanes
- Secrets of Thermal Soaring
- Soaring Master Class, Soaring Master Class 2 and Soaring Master Class 3



Twenty plus years ago Vince Cockett set up the Southampton Soaring Society. This proved to be very popular for about five years. When the SSS folded, Vince decided to build a new website to try to keep the community together. Over the years this has developed into what we have now, Scale Soaring UK <<https://scalesoaring.co.uk>>.

With very little info anywhere else, Vince got his teeth into it and he has built up a formidable platform with information available on a great number of aircraft.

Vince is also a very accomplished modeller demonstrated by some truly superb examples, the Fafnir and See Adler just for starters.

I was indeed honoured that Vince approached me two years ago with a view to taking over the reins as he feels that he has dedicated enough time. Not that he will not contribute anymore, far from it. I talk to him every day and am always trying to keep this very spritely 74-year-old on his pins!

With Vince's support and encouragement, I have already started to develop the front end of the site. I am currently bringing it up to the standards of today. There is a lot to do but I am getting there.

I hope that I can live up to Vince's expectations, and continue to run the site as he would wish.



*Vince and his Weihe.*

Finally, on behalf of all members of the Scale Soaring UK Forum I would like to thank Vince for his hard work over the years in giving us the site and community that we all use and love.

Cliff Evans







VIRIN: 171229-F-ZZ999-0001

Lt. Col. Noel Williams glides over the U.S. Air Force Academy football stadium in a TG-16A during his "fini" flight on December 13, 2017. (U.S. Air Force photo/Released)

The original photo can be viewed or downloaded here:  
<<https://tinyurl.com/yb2776vn>>.

DG Flugzeugbau TG-16A (Model DG-1001)  
s/n 10-0400  
c/n 10-173S103  
N204DG



# How dihedral influences proverse yaw

Marko Stamenovic, Horten Flying Wing Believers FaceBook page:

Long post but very interesting stuff (at least for me 😊). Here is a small study of how dihedral influences proverse yaw inspired by conversation with one friend. He is not on FB so I won't mention his name. On graph horizontal line shows effective dihedral and vertical axis shows yawing moment. Absolute values are not important in this case, just general influence of dihedral on proverse yaw. Elevon deflections are  $\pm 10$  deg in all cases. BSLD is designed for  $Cl=0.4$ . Sweep is very low.

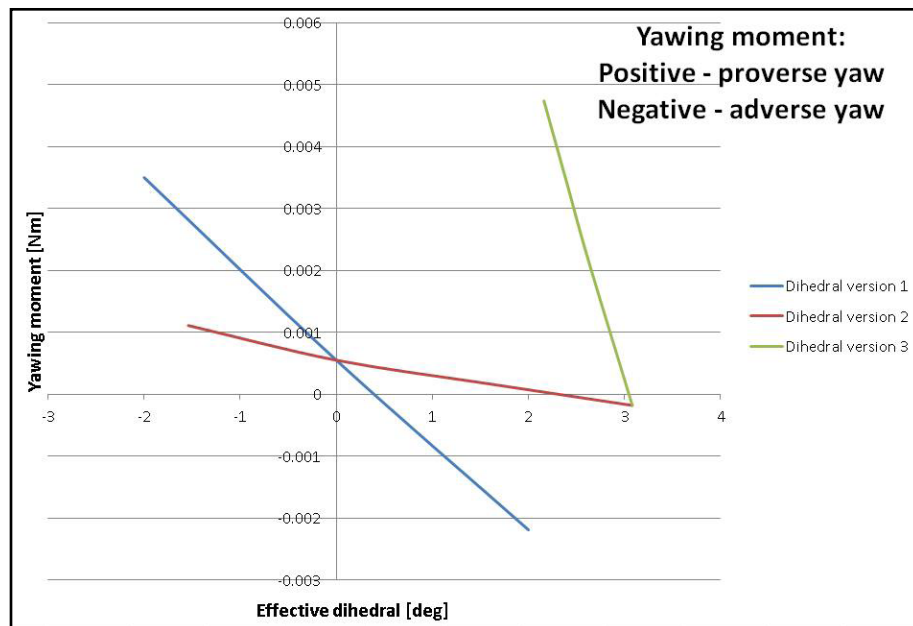
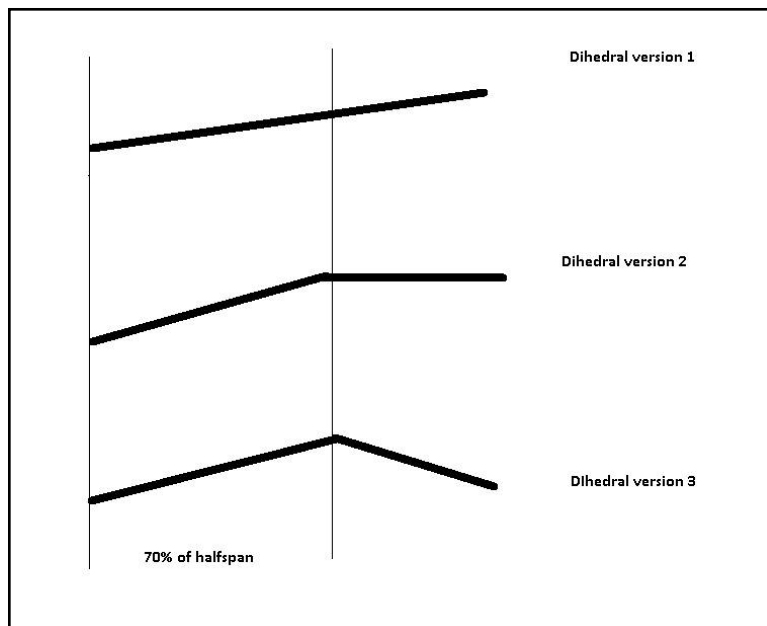
- Dihedral Version 1 is wing that has continuous dihedral angle from root to tip. Increasing dihedral clearly reduces proverse yaw. This might explain bad behavior for some models with high dihedral angle.
- Dihedral Version 2 has dihedral angle from root to 70% of halfspan and after that dihedral angle is zero. Elevons start at 70% of halfspan. It preserves proverse yaw up to higher angles of effective dihedral compared to the Version 1.
- Dihedral Version 3 has anhedral from 70% of halfspan outwards. Elevons are the same as for the Version 2. Proverse yaw is much, much stronger in this case.

Clearly, Version 3 looks like Seagull or Albatross wing with anhedral at outward part of span. Is producing stronger proverse yaw with roll inputs reason for this wing shape of some birds?

We know that we need to design BSLD for  $Cl$  higher than a certain value or otherwise we loose proverse yaw very quickly. With the wing shape from the Version 3 we can design BSLD for much lower  $Cl$  and keep proverse yaw. So this shape reduces some limitations in design. We can design wing optimized for lower  $Cl$  - higher speeds. That is of course if stall characteristics are satisfactory with BSLD designed for that  $Cl$ .

Another thing is CG position birds use. Proverse yaw reduces and turns to adverse yaw as we move CG backward. But we know that some birds fly in pitch unstable configuration. Could it be that Version 3 shaped wing solves this and gives proverse yaw with CG positions much backward compared to the solutions we use for models?

A lot more has to be checked, it is also interesting how is proverse yaw influenced by sweep for example. What I wrote above sounds logical to me and could explain a lot about birds flight, but it requires much more detailed study.





## Slope Soaring Candidate

# North American Rockwell **RA-5C Vigilante**

We have always considered the RA-5C Vigilante to be one of the most magnificent aircraft ever produced. Its aerodynamically sleek lines are accentuated with a unique upper cockpit contour reminiscent of a cobra hood, the “canoe” on the lower fuselage is a detail we for some reason find pleasing, there is a large amount of wing area, and the all-moving horizontal stabilizer has enough area that there is no need to enlarge it when drawing up a model. (Interestingly, the vertical tail was an all-moving surface as well.)

Added to all of these attractions, the RA-5c was one of the largest and fastest carrier-based aircraft ever to see service. This leads to a very large model, 63.6" span and 91.9" overall length (with probe) at 1:10 scale. As the full size aircraft was capable of sustained speeds of 1,320 mph (2,124 kph), a 1:10 scale model could fly at slightly more than 130 mph and appear quite realistic.

More than 150 RA-5C aircraft were built, some converted from the earlier A-5A and A-5B (attack bomber) models.



*The sleek lines of the RA-5C Vigilante are in evidence in this photo.*





*This photo shows the “Cobra hood” upper cockpit contour to good advantage.*



*The “canoe” on the fuselage bottom held an array of sensors and cameras. Notice the huge flaps.*

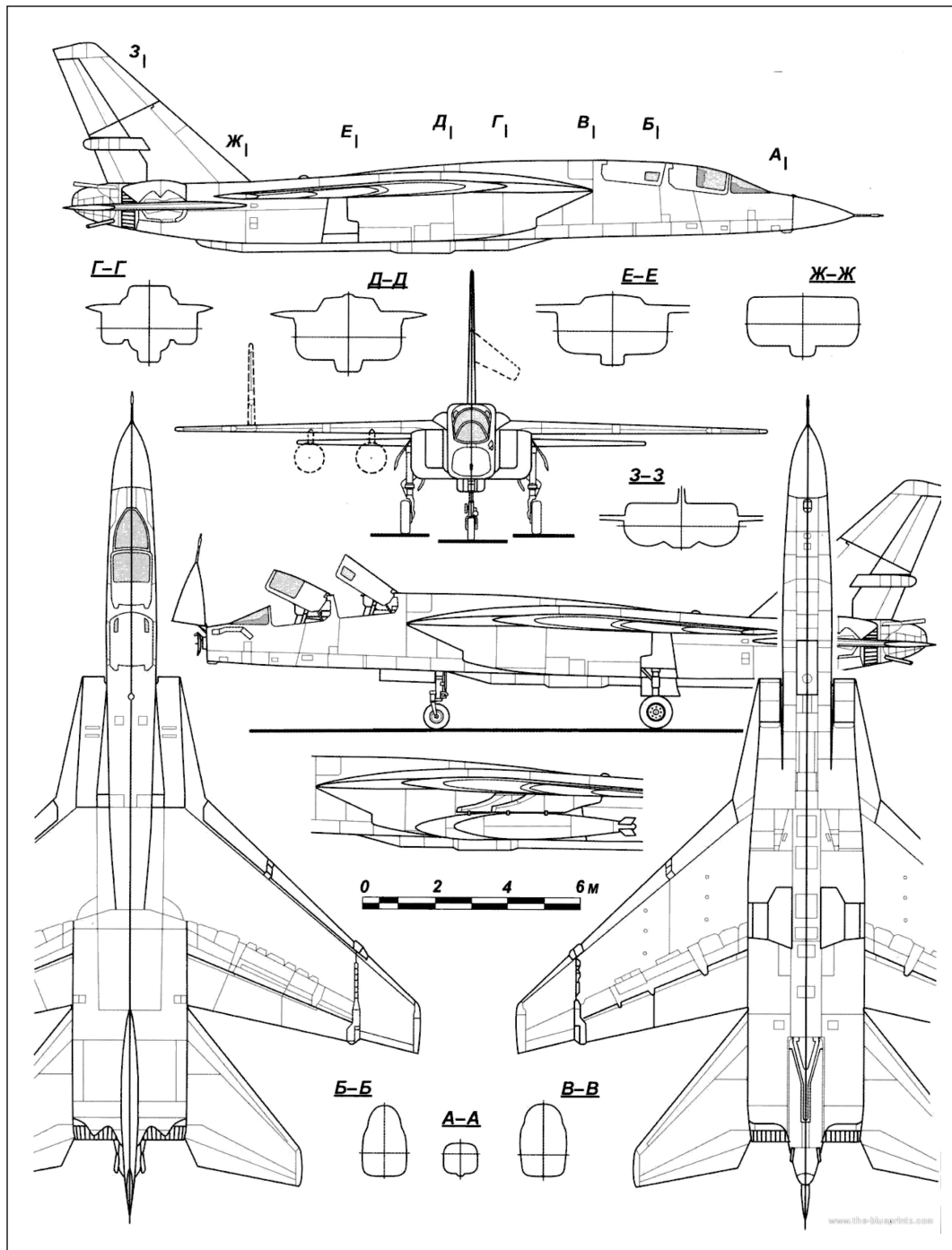


*Coming over the edge of the carrier deck, note the flap deflection, leading edge slats and high angle of attack.*



*The AofA during landing contributed to the Vigilante having a bad ramp strike reputation.*





*A large amount of wing area and a substantial stabilizer.*

#### RA-5C DIMENSIONS

Span:	53.2 ft / 16.21m
Length (over nose probe):	76.55 ft / 23.33 m
Height:	19.37 ft / 5.90 m
Wing area:	753.7 sq ft / 70.02 m <sup>2</sup>
Sweep angle:	27.5 deg at 0.25c

The RA-5C itself was a two-place twin-engined all-weather aircraft capable of low level and high level operation designed for both carrier-based and land-based operations. The primary mission of the RA-5C was reconnaissance before and immediately following airborne attacks carried out by other aircraft. Recon capabilities included photographic, radar, and Electronic Order of Battle (EOB) data.

The RA-5C fuselage had a 14.47:1 fineness ratio and was of conventional all-metal construction. Materials were primarily aluminum and steel, with titanium used in the engine area and in high stress areas. The pilot was situated forward, while the recon-attack navigator sat behind in a separate but connected cockpit. The RAN is located at the small rectangular portholes on either side of the fuselage. Both cockpits were air conditioned and pressurized, although air conditioning for the pilot was cut off when the flaps were deflected in order to supply engine bleed air to the leading edge BLC system.

The wing skins were machined from slabs of Alcoa 2020-T6 aluminum. Spars stiffened the skins of the inner wing, stringers were used for this purpose on the outer wing. The wings had rather large flaps and leading slats, while spoilers and deflectors were used on the wing inner and outer panels for both yaw and roll control. The spoiler-deflector system could also be used as speed brakes. The RA-5C had a boundary layer control system (BLC) for the leading edge slats.

The horizontal tail consisted of two separate all-moving surfaces and could be used for pitch and (trim) roll. These surfaces could be deflected 15 degrees leading edge up and 18 degrees leading edge down. The leading edge of the horizontal stabilizer at the root is nearly directly below the wing trailing edge at the root. Changes in pitch trim was accomplished automatically as the flaps were deflected.

The vertical tail was an all-moving surface which had a maximum travel of 8 degrees either side of center with flaps down 25 degrees or more, 2 degrees either side of center with flaps retracted.

The RA-5C was a technologically advanced aircraft: it was the first production aircraft with heads up display (HUD) installation, the first to use slot deflector spoilers with which there was no dead band, the first variable engine inlet using horizontal ramp geometry, and the first production aircraft to use a fly-by-wire control system.

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- *Forgotten Jets, North American A-5/RA-5 Vigilante series*. Lists A-5 and RA-5 aircraft by BuNo.  
<http://www.millionmonkeytheater.com/A-5.html>







FAI Aeromodelling Commission (CIAM)

## *F3F Radio Control Soaring World Cup*

### **New FAI F3F World Cup trophy**

The new trophy for the World Cup competitions is finished and will be given to the winners of the FAI World Cup competitions in F3F and F3K from 2018 on.

It is a collaboration between German and Czech FAI supporters, with help and support from countries all over Europe. Truly it is a sign of the common goal that we all share, promoting and living the sport of aeromodelling.

The molds are a high-tech CNC-machined by a Czech partner near Praha. The medal itself is traditionally handmade from a tin casting master in the beautiful mountain city of Freiberg in Germany (between Chemnitz and Dresden).

A big thank you goes out to all the known and unknown partners, that made this extraordinary medal possible.



### **2018 FAI F3F World Cup**

You will find the competition dates for the 2018 FAI F3F World Cup Series at the following web site page: <<https://www.fai.org/world-cups/f3f-radio-control-soaring>>.

We are looking forward to see you there!



