

R/C
SOARING DIGEST
Radio controlled
THE JOURNAL FOR R/C SOARING ENTHUSIASTS

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ABOUT RCSD

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

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Don't forget to check out the RCSD web pages each month. Cover photographs are always available for viewing, and usually available for downloading, as well. Special article .pdf files are frequently available for a limited time, and of course our web masters update the highlights and status information of each issue as it becomes available.

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On-Line Articles - Great articles originally written for the printed version of *RCSD*.

..... "Trimming Your Sailplane for Optimum Performance" by Brian Agnew
 "Flies Faster" by Dr. Michael Selig
 "The Square-Cube Law and Scaling for RC Sailplanes" by Dr. Michael Selig
 "Modifying & Building the MB Raven (Parts 1-4)" by Bill & Bunny Kuhlman
 "Butterfly and Moth Airbrushing Tutorial" by Joedy Drulia

Bookshelf Listings - A listing of recently published books of interest to aeromodelers.
Complete RCSD Index, 1984-2001

The Soaring Site

E-Mail Problem

The editorial for the January 2003 issue of RCSD discussed the enormous amount of spam that many of us have to contend with every month. An RCSD subscriber in Illinois, Richard Weston, responded with an e-mail that we wanted to share.

So many folks in the RC community have club or personal web sites, I'm sure that many (most?) are experiencing the same problem. And, of course, the issue is in the news, constantly...

"For many years I maintained a web site for my photographic company. Naturally my e-mail address was included, which meant that all the e-mail 'bots would ferrite out that address. In my case the e-mail was a "virtual address" which was forwarded to my ISP server and ultimately to my computer.

"But the results were the same, I was inundated with junk e-mail, which left me wondering - "Just how big was I supposed to be anyway?"

"By shere luck, I had an inspiration one day. I created a JPEG (picture) image of the e-mail address, which was clickable, bringing up a viewer's e-mail program. I put that "image" in place of the text e-mail address and - Viola! The 'bots do not search for image files, only text files.

"That reduced the e-junk somewhat but not all together. Only after I retired the company (and myself, for that matter) and the web site, with its virtual e-mail address, did the junk e-mail become practically nil.

"But obviously once your e-mail address is "captured" by those e-mail 'bots, there is little you can be do short of changing your e-mail address yet again - which is not at all practical.

"I now have two e-mail addresses with Earthlink.net, which has nifty sounding programs like "Spaminator", etc.,

but they seem to work because lately I have received very little e-junk at all.

"I offer this scenario only as a possible remedy but alas nothing is foolproof. The telemarketers and spammers are a virulent, insatiable and distasteful breed who will always find another way to get to us.

"As an aside - I don't do "Windows", I own an Apple computer and therefore do not have the inherent Microsoft Windows problems (viruses). Also, don't use your e-mail as your User ID on such sites as eBay, etc.

"This is not testimonial for any program or system - just one man's story."

When I asked Dick if he had any objections to sharing the information with other RCSD readers, he responded with the following:

"I certainly have no objections to your reprinting my note. I just read in this morning's newspaper that yet another software developer has come up with a program to disregard the TeleZapper tone, which many of us have been using. It never ends."

Ain't that the truth!! :-)

Seattle Area Soaring Society
<http://www.reddata.com/sass>

This month, we took a quick trip to the west coast via the Internet in order to visit the home site of the Seattle Area Soaring Society out of Seattle, Washington. As with most of the sites we've been revisiting, so far, the design has changed and there's a lot of good information available.

The number of technical articles available on the SASS web site is impressive and easily accessed from the main page. For those of you interested in obtaining more information about SASS or in viewing some of the articles they have made available, you can access the "Links to Organiza-



Sensoar

A young Lou Garwood (age 12 in 1990) launches a Hobby Horn Sensoar into slope lift at a small hill in Rotterdam, New York. The balsa and plywood kit builds into a two-meter polyhedral sailplane controlled by rudder and elevator servos. This type of sailplane makes an excellent trainer for slope or thermal glider flying.

Photograph taken on Kodachrome 200 slide film with Minolta SRT-201 camera using a 200 mm lens by Dave Garwood, New York.



tions, Special Interest Groups, and Clubs" from the RCSD main web page (<http://b2streamlines.com/RCSD.html>), and select the link to the SASS web site.

What follows is a listing obtained from their web site just to give you an idea as to what's available.

AEROTOW ADVENTURE

by M. Scott Borden

Programming the JR XP8103 Transmitter

(63 KB Word file)

by Sherman Knight

Programming the JR X-347 Transmitter

(155 KB Word file)

by Sherman Knight

V-Tail Mixing with the JR X-347 & X-388 Computer Radios

(19 KB Word file)

by Sherman Knight

Trimming Your Model Sailplane

- Part 1 (24 KB Word file)

by Sherman Knight

Trimming Your Model Sailplane

- Part 2 (246 KB Word file)

by Sherman Knight

The Care and Feeding of Your Winch and Retriever

(27 KB Word file)

by Sherman Knight

Construction Tips

(34 KB Word file)

by Sherman Knight

Trimming Your Sailplane for Optimum Performance

by Brian Agnew

RCD535 Receiver Conversion to 6 Channels

They said it couldn't be done, but Louis Dionne proves them wrong!

John Roe's Twin Star Hints UIUC Applied Aerodynamics Group

(Dr. Michael Selig)

Airfoil Data Plotter

Adam (Red) Weston says, "I've been playing with this site, perhaps you've been there already, but if not, it can graph all the airfoil data gathered by

Selig, and can put it on the same plot for you. It uses a reduced Reynolds number, and interpolates between Reynolds numbers to get the exact one you want. Pretty cool."

Airfoils for Flying Wings

Basic Design of Flying Wing Models

Lost Foam Construction Techniques

Gliding Glossary

Epoxy Resin

60 Acres

I'm sure that you've noted that many of the articles are written by Sherman Knight. Indeed, Sherman has shared his expertise with the sailplane community for many years. And, that's not all he's shared.

Many of you are familiar with the 60 Acres site in Washington; indeed, of late, it's been the subject of the column written by Bill & Bunny Kuhlman, which has appeared in the pages of *RCSD*. However, that site is under threat and Sherman, a lawyer as well as a sailplane enthusiast, has applied as much pressure to bear as possible in the hopes of saving the 60 Acres flying site. His comments to the Redmond City Council included a 23 page letter with 234 pages of exhibits, according

to an e-mail message from Sherman addressed to the recipients of the SASS Yahoo-based e-mail list.

We all owe Sherman our thanks for all his hard work and dedication to the sailplane community. For those of us who do not fly in the Washington area, it's still important for us to be aware what can happen to our flying sites and some of the avenues available to all of us when it comes to the use of public land.

A one page flier, prepared by Sherman for distribution to hobby shops, is included in this issue. The names of folks to write to has been deleted, because we understand the the deadline has long since passed. An editorial note has been added, instead.

Happy Flying!
Judy Slates

SCHEDULE OF SPECIAL EVENTS

May 15-18, 2003

Midwest Slope Challenge Wilson Lake, KS
www.alltel.net/~mwsc

May 24-25, 2003

So. California PSS Festival Cajon Summit, CA
Brian Laird, Slope_Scale@compuserve.com
<ourworld.compuserve.com/homepages/slope_scale>

June 6-8, 2003

Spring Aero Tow Festival Visalia, CA
Chris Pratt, cmesoar@quik.com
<http://www.cvrcoaring.com>
(559) 733-5188 (7-9pm)

June 13-15, 2003

JR Aerotow Monticello, IL
pdf file available on the RCSD main web page

July 19-26, 2003

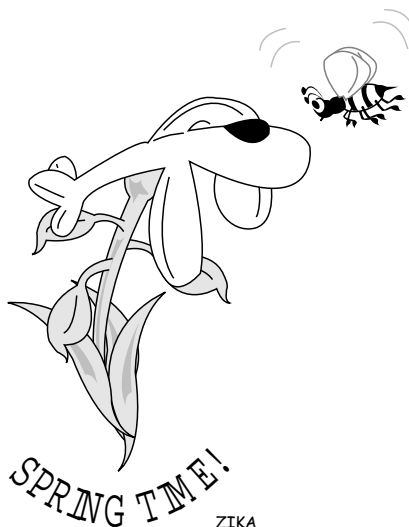
AMA/LSF NATS Muncie, IN

October 10-11, 2003

Texas National Tournament (TNT) Dallas, TX
www.SLNT.org

November 29-30, 2003

Tangerine Soaring Championships Orlando, FL
www.orlandobuzzards.org



Please send in your
scheduled 2003 events
as they become available!

60 Acres Flying Field Under Threat

To all hobbyists and users of 60 Acres South:

King County is currently pursuing a number of initiatives that will seriously affect, if not entirely prevent, the use of the 60 Acres Park in Redmond as a place for hobbyists to launch model rockets, fly kites and free flight models, as well as radio controlled electric and sailplane models.

Traditional users: For more than 30 years, 60 Acres South has catered to multiple, low-impact users such as families launching model rockets, kite flyers, and hobbyists flying radio controlled and free flight model gliders (all activities which are virtually silent and non-polluting).

Because of the open aspect of the park, and because there are no large developments surrounding the field, 60 Acres South is ideally suited for these type of activities. Indeed, it is the only public park in all of King and Snohomish County that is suitable for flying model sailplanes and small electrics. Marymoor Park in Redmond is the only other King County park where flying radio controlled models is allowed. The Marymoor field is dedicated to flying gasoline-powered radio controlled airplanes and is not suitable for sailplanes, park fliers, or electric sailplanes.

Multiple threats: The first threat posed to the 60 Acres flying field is a proposed sewage water reclamation project. Slated to begin construction in summer 2003, this two-story industrial plant, complete with parking lots, light poles and drive-ways will take up more than 1/3rd of the field. Other threats include building a spur of the Burke-Gilman trail that will run along the northern edge of 60 Acres South, and a proposed parking lot to be built during construction of a replacement bridge over the Sammamish Slough (scheduled to begin construction in Summer 2004).

An equally serious threat comes from King County's decision to use its public parks to generate revenue. The county is proposing to rent out its public parks, such as 60 Acres South, for private events. This means that groups with deep pockets, such as horse show operators and large corporations will displace hobbyists and families as the primary users. The result will be that taxpaying hobbyists will be shut out of these publicly purchased and publicly owned parks for the better part of the summer months.

The Seattle Area Soaring Society (SASS), has been flying radio-controlled (RC) gliders at 60 Acres South since 1971. We maintain the field out of our own club finances, posting frequency boards, safety signs and carrying out ground repairs, as well as providing portable toilets for public use. Because it is the only large field in all of King County with public access, 60 Acres South is also used by many school groups and scouting organizations for large events, such as launching model rockets.

Unless all hobbyists in the Seattle Metropolitan area act together to voice their opposition to these plans, we stand to lose one of only two publicly-accessible flying fields in all of King County. Please write a letter urging King County to reconsider its plans for 60 Acres, and ask that this park be preserved the way it is. Thank you for any help you can give.

(Editorial Note: For additional information as to the status of this threat, please contact the Seattle Area Soaring Society (web link available from the RCSD web pages); Yahoo-based e-mail list: http://groups.yahoo.com/group/SASS_club/. Detailed information, expanding on this flier, available, as well.)



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Twist Distributions for Swept Wings, Part 3A

In an effort to be both focused and brief, we may have unintentionally passed on false information in Part 3. The column this month is therefore dedicated to resolving misconceptions promoted within the last "Twist Distributions for Swept Wings" installment (RCSD 09/02), specifically as related to Figure 4, reproduced here with modifications as Figure F4.

There are two basic forces of interest to aerodynamicists - lift and drag. In a wind tunnel, the investigator may measure the lift and drag of the airfoil by setting up two scales. One scale will measure the lift generated by the section through a balance system which has its axis vertical to the tunnel

test section and hence the air flow. Another scale is set up with its axis parallel to the air flow to measure drag.

The investigator can rotate the airfoil section through negative and positive angles of attack relative to the air flow. As the angle of attack increases or decreases, both lift and drag will vary. Regardless of the angle of attack, generated lift is always measured perpendicular to the air flow and drag parallel to the air flow.

Figure 1A demonstrates how two vectors having the same source may be resolved into a single vector by constructing a simple parallelogram. Since lift and drag are always perpendicular to each other, they can always be resolved into a single vector by means of a rectangle (a parallelogram which has intersections of 90 degrees).

We can also perform this operation in reverse. That is, given a single vector and the angle(s) of the parallelogram, the separate component vectors may be derived.

As an example, we know that the lift vector is always perpendicular to the air flow and the drag vector is always parallel to it. By constructing the

requisite rectangle on the resultant, we can define the lift and drag vectors. This process is shown in Figure 1B. We can perform a similar procedure on the weight vector, thereby establishing two separate component vectors — one parallel to the direction of flight and one perpendicular to it.

Figure F4A shows a powered aircraft in straight and level flight. To maintain straight and level flight after application of additional thrust (Figure F4B), aircraft trim must be adjusted so the wing continuously generates only enough lift to exactly match the aircraft weight. Drag will increase until it exactly matches thrust — R_1 becomes the same length as and in opposite direction to, R_2 . Once the aircraft is again stabilized in straight and level flight, the aircraft velocity will be greater, the amount of lift will be unchanged, the coefficient of lift will be lower, the wing will be operating at a lower angle of attack.

Figure F4C shows a sailplane in a steep constant velocity glide. We know the direction of the air flow, so R_1 can be resolved into the lift and drag vectors which are perpendicular to each other, as described previously. The same procedure can be used on the weight vector, resulting in one vector denoted

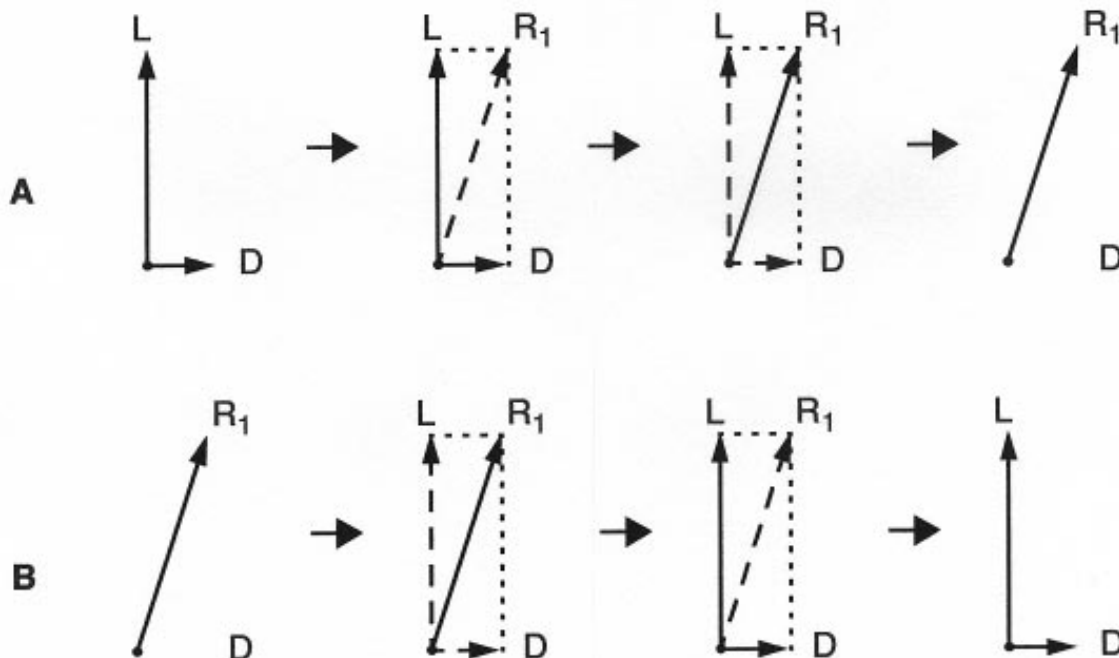


Figure 1. Calculation of resultant vectors

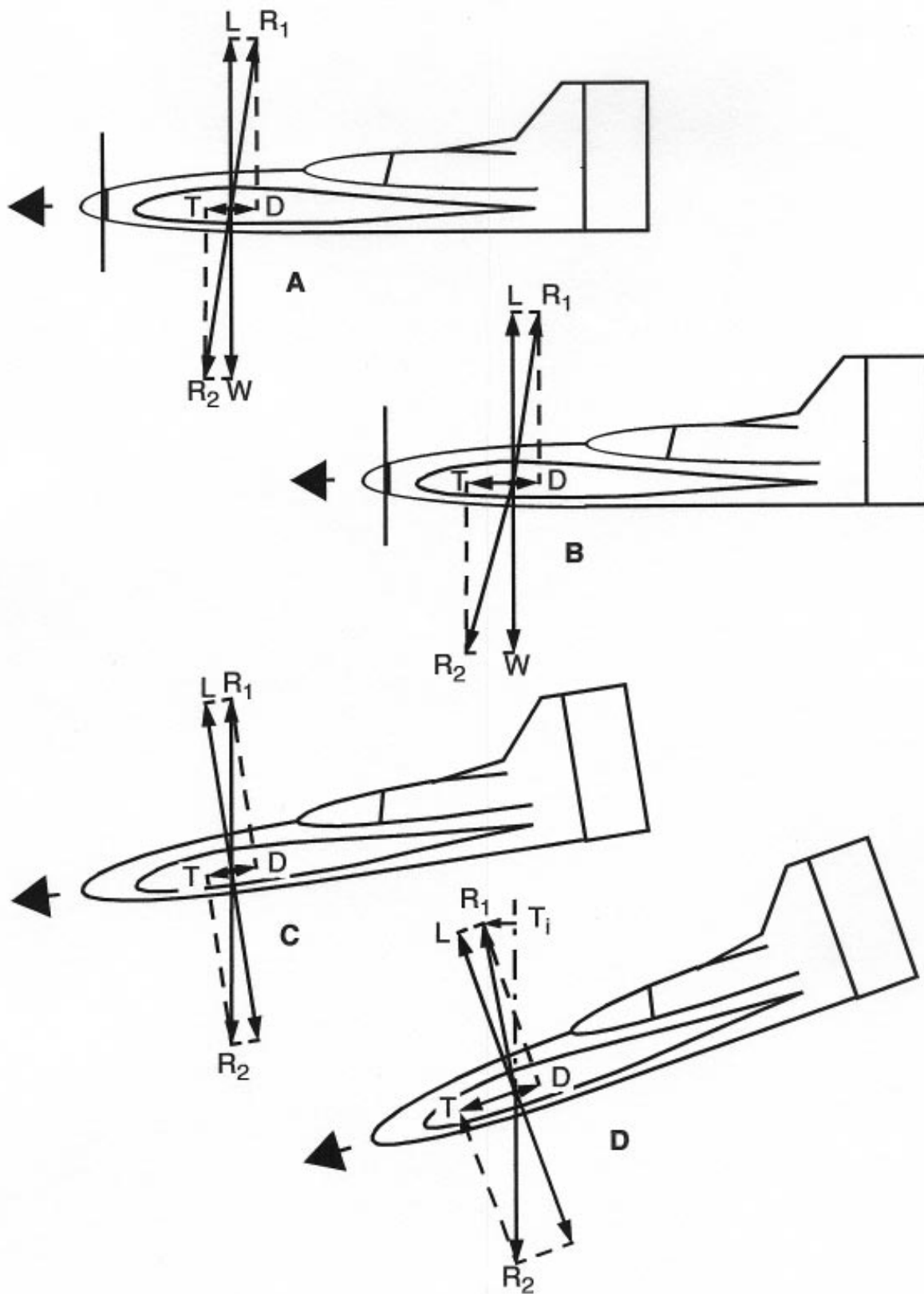


Figure F4. Force vectors on powered and unpowered aircraft which are otherwise identical.

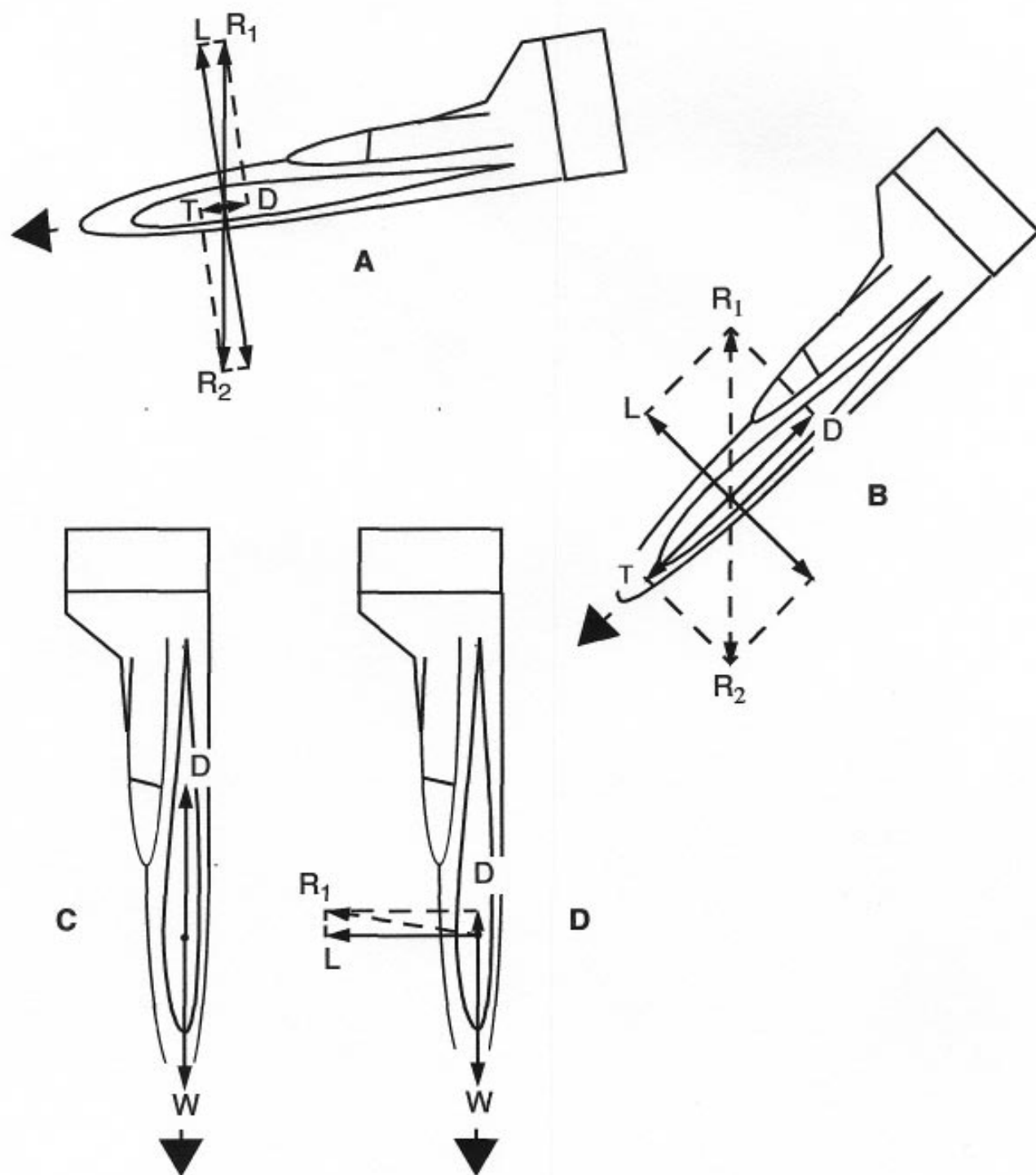


Figure 2. Force vectors on powered and unpowered aircraft which are otherwise identical.

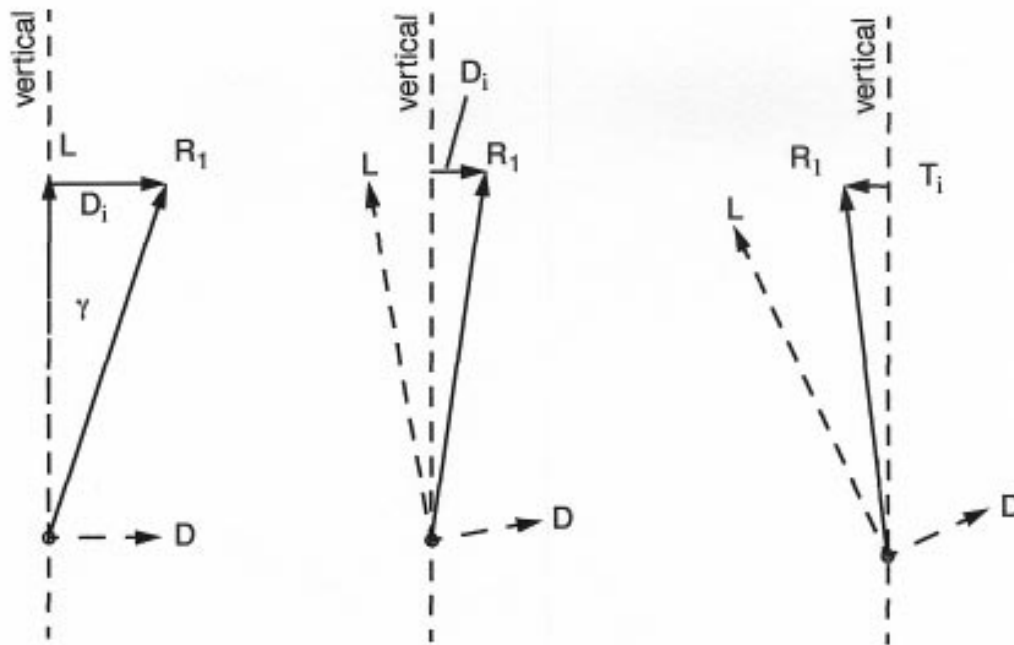


Figure 3. Force vectors demonstrating reduction of induced drag, D_i , and development of induced thrust, D_i , by rotation of lift and drag resultant, R_1 .

changes direction so there is a reduction in the angle of attack. If we consistently maintain the initial angle of attack, the aircraft will pull out of the dive.

In Figure F4D, the aircraft has just been put into a steep dive from straight and level flight. The aircraft is assumed to be flying at the same speed as before the change in attitude. The weight vector can be broken down into its two component parts, as was done previously, and the thrust

Table 1: L/D and required rotation of R_1 for $D_i = 0$

L/D	$\gamma, R_1 \angle \text{vertical}$
10:1	5.71 degrees
20:1	2.86 degrees
30:1	1.91 degrees
40:1	1.43 degrees

T (thrust), and another unnamed vector.

As the glide angle steepens, the portion of the weight which is considered thrust increases. At the same time, the lift decreases and the drag increases. See Figures 2A and 2B.

To help explain this, take a look at the extreme. Figure 2C shows the glider in a sustained true vertical dive. The wing is operating at the zero lift angle of attack and so lift has been reduced to nothing. Drag makes up all of R_1 and weight makes up all of R_2 .

If in a vertical dive we adjust the angle of attack so that it matches what was required for straight and level flight, the lift will be the same as during straight and level flight and it will be oriented exactly in the horizontal. See Figure 2D. The drag vector will also be the same length as before the change in attitude and will remain parallel to the air flow. The resultant R_1 is rotated nearly ninety degrees from the vertical. The lift force immediately begins accelerating the wing horizontally while the weight accelerates the aircraft vertically downward. As the horizontal speed increases, the air flow

component is accelerating the aircraft in the direction of flight. The lift and drag vectors remain oriented to the direction of flight. R_1 , the resolution of the lift and drag vectors, is rotated forward of the vertical, indicating that a portion of R_1 is directed in the horizontal direction. This small force is denoted in the illustration as T_i , induced thrust. If the angle of attack is held constant, the aircraft will pull out of the dive, just as in the previous example.

Winglets, and swept wings with washout, can take advantage of the rotated R_1 because the angle of attack of the airfoil section can be held constant. The induced thrust which is produced may not seem like much of a force, but consider that if a wing section has an L/D of 20:1, R_1 must rotate forward of the vertical just 2.86 degrees in order for that part to get a "free ride." If R_1 can be rotated forward beyond 2.86 degrees, that portion of the wing is actually producing thrust. And as the L/D increases, the required angle of rotation gets smaller. See Figure 3 and Table 1.

RCSD COMPENDIUM

A digest of some of Uncle Sydney's earlier gossips from BMFA F3J News

By Sydney Lenssen, England
sydney.lenssen@virgin.net

Year 2001 for F3J was the year of the stake ban, and this compendium of extracts from past Uncle Sydney gossip columns traces the rise and fall of the stake ban. Despite being historic, the account holds hints of what might happen in F3J's future.

Dateline 30 March 2001

The international F3J world was in turmoil this week after FAI announced from Lausanne after its annual meeting that ground stakes for hand towing are banned with immediate effect.

CIAM, the aeromodelling arm of FAI, has introduced this new safety measure in response to the death of a 16 years old Slovakian last April. Igor Hudak's skull and brain were split by an anchor stake which pulled out of the ground during a two-man tow.

The internet has been flooded since with dozens of protests and snap reactions to this drastic change, with many flyers predicting the end of F3J competitions. Some of the reactions are blatantly nasty and crude. Others are less than polite in their descriptions of CIAM, its national delegate members and their knowledge of soaring and F3J in particular.

There are also serious critics convinced that two-man tows, where one man runs with the pulley and the other man acts as stationary anchor or even runs in the opposite direction, are inherently more dangerous than the ground anchor technique which has been banned. A few constructive ideas have emerged too.

So what are the facts, how did they combine to produce the ban, and what lies ahead for F3J competitions and the models themselves?

The fatal accident took place on a flying field near Poprad in the Slovak Republic on 19 April 2000, during an F3J training session. The official investigation reports that the towers

had run about 10 metres from the anchor and the model had reached a height of about 70 metres.

The stake was 30 cm long and driven into the ground up to its stop, according to Miroslav Sulc, the president of the Model Union of Slovakia, in his letter on the incident to Sandy Pimenoff, CIAM president. Four previous tows had been carried out. The fifth tow was fatal with the young man dying on the way to hospital.

Rumours about the tragedy circulated over the summer months, and enough information reached BMFA in the UK for the Silent Flight Technical Committee to issue extra guidance on the safer use of ground anchors in F3J, in time for some of last year's league competitions. There were also reports and condolences in BMFA NEWS and model magazines.

As world authority, FAI was informed of the incident last year, it is understood by Tomas Bartovsky from the neighbouring Czech Republic. He is also his country's CIAM delegate and chairman of the Soaring Committee. Sandy Pimenoff, CIAM president, called for an official report on the incident from Slovakia. This was delivered to him in Finland in early March this year.

The Soaring Committee chaired by Tomas Bartovsky consists of representative "experts" from Belgium (Robert Herzog), Germany (Ralf Decker), France (Philippe Bataille), Austria (Karl Wasner), the USA (Terry Edmonds), Greece (Antonis Papadopoulos) and UK (Nick Neve). All these people have long knowledge and experience of R/C model glider flying.

The idea of allowing winches was proposed a year ago by the Americans, but did not progress far as the main business in 2000 was to overturn the proposed ban on two-man towing. A new 2001 proposal put forward by the Swiss should have been on the agenda, but was not because it had been submitted incorrectly. The text should have been sent to CIAM electronically, but wasn't.

The main CIAM committee, with 33 delegates, voted unanimously 33 to 0 to ban the ground stake immediately.

The actual words – which could be important – in the new rules will say that "it is prohibited to attach the line to the ground or to a fixed object."

Nick Neve believes that this latest decision is interim and CIAM fully expects to review the ban. It is extremely unlikely, if not impossible, to revert to the previous rules. He thinks that the introduction of power winches could come next, but that will take at least one year and would need to be classified as a safety measure. A clear set of rules and specification could allow the reintroduction of an "engineered" stake complete with at least two backstays.

It would also appear that if the UK proposal for single man towing had not been adopted two years ago, only to be firmly rejected last year in the face of protests from all over Europe, then it might well have been seen as the best solution this time round.

With any activity there is associated risk. With F3J flying there remain many risks even if stakes are banned. But in the event of another ground anchor pulling free and injuring – or worse – some person at any time after last weekend, then CIAM would be liable to prosecution, and would have little defence against any such action.

That is a simple and inescapable fact. CIAM had no choice. To do nothing was not an option. It had to act. There was no time for national consultation except for the minimal opportunities in the few days before the Swiss meeting.

+++

The report above was intended as a factual account, written in the week following CIAM's ban on the ground stake.

Two-man pulley tows caught on less than ten years ago, the technique and much of the associated thinking stemming from Germany. Its popularity was inspired by competitive European F3J flyers wanting to utilise the heavier, high efficiency gliders already dominant in F3B. Also important was the emergence of a band of Czechoslovak moulded model producers, expert in using glass fibre and carbon rather than the crappy balsa available, with time on their hands due

to political changes.

Not surprising then that first official reaction to CIAM shock stake ban came from Germany. Stefan Eder, writing on behalf of the national soaring committee of the German Aero Club (DAeC), claims that banning the stake increases danger for helpers and towmen in F3J. DAeC would not adopt the new rule. They will use "local rules", as allowed in the FAI Sporting Code, and continue to allow competitors to use ground anchors.

In a protest letter to CIAM soaring committee chairman, Tomas Bartovsky, DAeC has said that Germany will present detailed drawings and description of a "safe" ground anchor, namely one main stake with at least two additional stakes, for the next meeting. Furthermore, DAeC wants F3J to retain hand towing and not allow power winches to keep the identity of this class.

Many Brits seem to have a fairly open mind on the change. Those who are upset are annoyed by the lack of consultation and abruptness of the ban.

Janek Wozny is one of the few openly favouring the ban. He says he hoped that the British CIAM delegate voted for it. He invites anyone opposing the change to ask themselves how they would feel if their son had been the victim.

One fascinating alternative, supported by Brian Austin, is to allow an anchor stake to be pinned on the launch line, using 300 metres of line doubled up, with the two men and their pulley down the far end, as per normal. That's provided a talking point, and would be safer than what's suggested at present. But loose soil could still see the odd flying stake chasing the models, and lots of potential to exploit the new 300m line if it were to be adopted.

The German team might continue to tow with stakes in national competitions and for the Eurotour, but when they get to Slovakia for the Eurochamps in July, the stake will still be banned. If they refuse to comply, their entries will not be permitted. That's the point where DAeC support will vanish.

Bumped into Alex Hoekstra, Holland's most successful F3J flyer, at Dortmund. He was dismayed at the stake ban. "I don't want to see power winches. That's why I left F3B after so many years. I got so depressed, going home after competitions with £1-200 worth of spoiled tangled lines.

"For me, the joy of F3J is the mass launch, the need to fight for every second and to be able to track your rivals, all coming in at the countdown. Winches will inevitably lead to huge complications, new dangers, lots of new rules, tangles and staggered starts. That'll spoil it."

Joe Wurts, the world's most versatile and successful R/C soaring pilot, and former F3B as well as F3J world champion, had thoughtful and forward looking reactions, as you might expect.

"It is going to be a very difficult to change the rules back to allowing a stake. The one loophole that should be excised, it that there probably shouldn't be any pulleys at all, as they definitely do put at least one tower in the line of fire of whatever is on the end of the line, whether it is a handle or stake."

His conclusion: "Until things are sorted out, I'm planning on getting some practice on straight no pulley tows."

Nic Wright, only Brit to ever win an F3B world championship, was on CIAM's soaring committee at FAI for most of the 1990's. He admits that he wanted a ban on pulley launching, and this was first considered in October 1992, but didn't get anywhere. The technical committee was not in the mood to restrict development of the new F3J class, and insisted on evidence before banning pulley towing.

In 1994, Tomas Bartovsky submitted a "ban the pulley" proposal to the technical committee following the accident in Holland when Terry Stuckey had his back pierced by a dog-stake screwed into silty soil on reclaimed land. Tomas found only one supporter, Nic, and nothing was done. Nic remembers: "Short of someone getting killed, the committee wasn't going to interfere with the development of F3J."

"The German safety committee is promoting a system that puts two people more or less in line with, and in close proximity to, a metal object that can be released from the ground unexpectedly and with more destructive power than a shot gun discharge."

More from Joe Wurts: "I've pushed for change in F3J launching, partly from safety standpoint, partly technology. It is fairly easy to see the optimisation path with current high power potential launch rules. Unfortunately it involves a much higher manufacturing technology than is current practice for F3J or F3B. I have been unwilling to put the effort into the task, but someday another will do it."

"I'm still favouring winches, although there seems to be some inertia that is yet to be overcome on this. Failing that, the "no pulley" solution strikes me as a "relatively" safe solution."

Good that some people are taking the stake ban arguments onto a higher plane after all the early gut reaction. The clinching argument in favour of some change is obvious when you project forward and envisage the sorts of F3J models which could evolve, say five years from now.

Imagine winning models of the future, and how different are they likely to be. The biggest factor in future development is almost certainly launch method: single man tow, or swooshing into the sky by electric winch, or rocket projectiles exploiting the potentially higher energy of engineered stakes, new material mono-filaments and single/double pulleys, allowing two or three times present launch speeds.

While you are imagining, envisage what the local full-size gliding club would say to the suggestion that steel hawsers and a 5,000 hp tractor could increase the launch angle to 80 degrees and double the launch height in half the time!

Dateline May 2001

For those who missed the first UK F3J Euroteam practice: up to 2.00 pm the weather was close to perfect, with many two-man straight tows reaching wonder heights. But there were line breaks galore. One unappreciated benefit of the now banned stake and

pulley is that both towers are more able to judge line tension.

Take away the pulley, and two towmen find it hard to appreciate the tension generated, even on a fast windy launch. Perhaps practice and harking back 10 years will make them defter.

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Reports from Babenhausen, 2001's first German Eurotour event, tell me that most competitors are sticking with the stake so far. UK's Ivinghoe Team was there in force, enjoyed the two sunny cloudless skies and did better than last year. One of them reports that the German rivals were laughing at their efforts without a stake. So after a couple of rounds of crossed lines in the side winds, the UK flyers went back to the stake.

I've also had a report from Holic in Slovakia, site of this year's Eurochamps, where an F3J event took place first weekend in May. The competition was run to the new rules with no stakes, without problems. At the closing ceremony, an Austrian competitor spoke to the assembly, pleading with the organiser to require the application of safer rules in July, and allow pulley towing with stakes. Some competitors applauded.

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Regular *Gossipers* will remember that Joe Wurts urged a ban on the pulley as well as the stake. One reason was his vision of where F3J models will get to shortly – in a matter of years anyway – if some limit on launch power isn't set. What is his vision? That intrigued me, so I chased him further.

Joe Wurts: "At this time, I don't see any airplanes available out there that can consistently take a good two-man tow by two fit, athletic towers. In 10 mph winds and sufficiently strong line, I can break just about any wing on the market.

"To make something stronger, we need to push up the structure's strength and stiffness, but not the weight. The best way to do this is to use high modulus carbon for both the spar and the skin. Unfortunately the skin only wants very light cloth, and

that is amazingly expensive, and even more so for higher modulus materials.

"I would want to use pre-preg materials in aluminum moulds, probably using the trapped rubber plug process, which further increases the tooling costs. The goal is to make a wing capable of taking 300+lb. of towline tension without failure, without large deflections. The whole plane should have an unballasted weight of 4 lb. for lighter conditions and evening flyoffs."

Joe's current cost estimate to achieve that process is \$15,000 plus and man-years of effort.

"I don't like that scenario. It stems from the high amount of power available in the launch, and fortunately nobody at this time is in fact using all the power potential. But somebody, or some group, will step up to the next level of manufacturing technique and the next level in the organic winch wars."

He then makes the vital point that in allowing – even encouraging – two-man straight tows, CIAM have added more fuel to the launch technology fire. That will lead to even lighter, higher aspect ratio planes with even more exacting construction. Planes will cost \$3,000 and more.

"I like the concept of competing on the basis of measuring thermal skills. I don't like the extreme emphasis on launch speed and power, but that is inherent in the current rules right now."

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"Safe pulley launching", issued this month by Tomas Bartovsky, who chairs CIAM's soaring panel which makes the FAI Rules, is worth reading. It deals with two man towing, where one man runs with the pulley and one man holds the end – a human stake.

"Vitaly important is that soft ropes at least 5 metres long should be attached to the end of the tow-line and to the pulley, and that the anchor man should stand at least 3 metres away from the pulley-man to glider line."

But let me pass on a few gems from the experiments carried out by Tomas to arrive at his guidance. This is

serious stuff, although it reminds me of Hoffnung and his barrel of bricks mending a rooftop chimney!

Tomas and his team of helpers anchored the usual 150m line at the flight line, attached a 5m rope to the other end of the line and anchored that end. They then stretched the line as if they were towing, with the pulley just on the line – not the rope – to a tension they reckoned to be 50 kg. They then let go of the pulley to see how it would fly.

Tomas Bartovsky: "The first experiment was made with the anchor displaced 3m away from the towline. The pulley flew about 5m in the predicted direction, but after hitting the ground it changed direction and flew over the anchor at a height of about 300mm.

"To come closer to reality, the anchor rope was lifted 600mm into the air by running it over a chair. In this trial, the pulley flew about 20m through the air, clear of the anchor point.

"The next test was done with the anchor point closer to the line, 1.5m away. This time the pulley hit the shank of the chair. The following six tests were made with the anchor and chair 3m away from the line. The pulley flew each time about 25m through the air, its path approximately along the middle of the angle formed between the lines.

Now comes the hairy bit!

"One test was also made with me holding the rope, 3m away from the line. The helper stretched the pulley out some 8m before letting go. The sound of the pulley nearby was unpleasant, but it passed me safely by, about 1.5m away.

"Finally one test was made with a real tow. At the beginning of the tow, I stayed about 3m from the line. We started to make a power tow. When the glider was about 50m high and the line was in full stress, the tow man released the pulley. The pulley on the line flew in a parabolic way, the highest point being about 5m above the ground. I felt no danger because the pulley flew high and in a vertical plane aside of me."

My mind boggles at this report. The quotations are genuine. Imagine the mayhem in a 10 or 15 glider slot. If the stake really is so dangerous, how would you describe the pulley?

The only blessing is that nobody is likely to try a pulley launch with anchorman except in flat calm, and they'll be lucky to generate any remotely dangerous tension in the line.

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Dateline July 2001

Less than six months after CIAM shocked the F3J world by banning ground stakes, the best of the competing teams at July's Holic Eurochamps have shown that they can launch equally high without. Two-man direct tows in winds of 5 mph or more, and hand-held pulley tows for anything less, can give launches close to 200 metres if you recruit strong fit towers with speed and acceleration. Line speed counts for most in launch height, and it also helps to get the clocks started.

The stake arguments went on and on, but they did not interfere with the contest. In Round Zero, the practice round for flyers and officials, the German team staggered out to the launch line carrying three 20 kg sandbags. At the towing end, they were simply dumped in the grass, with the end of the line tied to them.

The "sandbag stake" made its public debut – the new German secret weapon. And it worked. The two-man launch was perfect, indistinguishable from any steel-staked launch.

The sandbags were cleared away before the next slot, and the cheering, jeering, clapping and laughter were swapped for fierce arguments for and against. The Germans did not try to use this method again. They had made their point. The new rules, as written, do not prevent anyone using two men on the pulley providing you have a heap of sand somewhere on the field, a spade and three sandbags. There's a future in the sales of sandbag trolleys.

Two days later, the team managers learned of the rushed sandbag development programme which Dieter Kohler and his colleagues had per-

fectured in previous weeks. They had established that for most field conditions, a total weight of 60 kg in sacks would give enough drag to anchor the end of the line. On very gusty days, they had found that the sacks did slip along the ground a little, but that was not a disadvantage, for it slightly reduced the line tension for a split second. It also helped to prove that the end of the line was not attached to a fixed object.

What the contest director Milan Blazek and the three-man international jury, Tomas Bartovsky, Raymond Pavan and Marian Jorik, had to decide that first afternoon in Holic was: should this new method be allowed in the championship starting next day?

The jury chairman admitted at the team managers' meeting that evening that he could see no valid reason to ban the sandbag under the rules. In fact, he admitted to liking the technique, and was sure that given time, somebody would hit upon ideas to avoid the inconvenience of carting sand around.

But nevertheless, the contest director and jury had decided to ban the new method for the 2001 Eurochamps. They could not find a rule broken to justify the ban. However, "Sandbags were against the spirit of the new rules," they said. Also, if sandbags were to be allowed, then several teams would not have time to get the equipment needed for the next day's champs.

Nobody objected. The Germans gave notice that they want CIAM's ban on the stake to be reversed next Spring, and in the meantime, local rules allowing use of tethered stakes prevail in German competitions. They were only using the sandbags to demonstrate that alternative legal ways of two-man pulley tows were possible.

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In case you hadn't heard, the Americans have also come up with an answer to the stake ban, allowing conventional two-man pulley tows. They rig up a normal F3B tethered turnaround pulley as the stake, then run the end of the 150m line round the pulley attached to an object which can't pass through the pulley block,

such as a piece of wood. The line then jams in the pulley, but is not attached to the ground or any fixed object.

+++

Talking to some of FAI's committee men over recent weeks has indicated that several are having thoughts about what they see as wrong with current F3J rules as they stand, and they do not see the stake ban as an issue anymore. They reckon:

- F3J scores are too dependent on high and fast launches rather than soaring and landing skills. Winning slots regularly depends on stiff, high strength wings to resist wind and launch stresses, and techniques necessary for this stifle design innovation and discourage juniors and newcomers.
- F3J competitions suffer from the close scoring among the winners of both the qualifying rounds and the fly-offs. Too often there is insufficient differentiation between the leading contenders. (At the Eurochamps, flight times to two decimal places of a second were recorded and computed in the results, even though everyone knows that stopwatch error by timekeepers at start and finish can be up to one full second.)
- The current rules need re-writing. Many clauses clash and confuse other clauses. As the "sandbag" incident illustrates, many clauses do not convey or result in the intended effect. When rules are broken, penalties are often unclear. What started as a simple glider class now has rules, which have grown like Topsy. They need simplifying and writing in plain English.

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Dateline September 2001

Most amazing exploit at HollandGlide? That was Thomas Rossner flying his Corrado in the fourth fly-off round. He was one of six German flyers in the fly-off. He and several others had already flown out the 15-minute slots three times. His girlfriend Vera Bastuck almost made the fly-off too, and she told me as

timekeeper during the third slot that Thomas was likely to try a circus trick in the last round. He'd dreamt about it, she said.

Thomas's landing spot was about 25 metres away from the taxiway, and he planned to hit the tarmac at 14.59, then bounce and spear the spot when all his observant rivals would have written his chances off. That is exactly what he did, scoring 100 landing points!

Snag with the whole crazy dare was that few appreciated that the whole exploit was deliberate. That was high skill indeed. He only gained third place. For him, fun is more important than winning.

+++

Some gossip followers have wondered what Joe Wurts was getting at when he forecast lighter stronger moulded wings for future F3J and F3B models.

I don't know precisely what he has in mind, but I was amazed recently to read of carbon nanotubes, discovered 10 years ago by Sumio Iijima, a researcher with NEC, the Japanese electronics company.

The prospect is that carbon nanotubes will eventually replace the much cruder carbon fibres in composites. The tubes have tiny diameters – 10,000 could be fitted into a thin human hair – and they can be formed concentrically – multi-layered. Most important for us, they enjoy 100 times the tensile strength of steel. First exploitations are likely in electronics because the nanotubes are astonishingly efficient conductors.

Imagine what effect carbon nanotubes could have on your latest "pride and joy" if the wing's aspect ratio could be doubled and its weight halved at the same time. Imagine what's going to happen to microchips, transmitters and receivers. But don't hold your breath yet awhile!

+++

Dateline October 2001

2001 will be remembered as the year of the stake-ban. But the saga still waits its finale, and will need to wait until next year's *Conference Internationale*

Aeronautique Modelle (CIAM) meeting in Lausanne – March 2002. But the crucial date is 11 November - next month - by which time all national proposals to change F3J rules must be lodged with FAI.

Our BMFA silent flight technical committee will be taking a delicate line, conscious that the stake ban appears to have stemmed last year largely at the behest of Nick Neve, UK's delegate. We've already had the 1999 experience of the UK proposing and winning a single-man towing rule, only to have it thrown out – with UK support - the next year. Now we have the prospect of the 2001 stake ban being reversed by the following year's CIAM Plenary meeting.

Although SFTC favours the return to the tied-stake, UK's official position is hoping that it can latch onto and support tied-stake proposals from other nations, without looking too daft.

Whatever CIAM decides, I am neutral, happy to fly F3J with or without the stake. I would be happy to see electric winches. If the stake ban stays, I would vote to ban pulleys too. Otherwise I am not bothered what they decide in Lausanne.

+++

So what will happen? Philip Kolb has sent *F3J News* the proposed German "tied stake" drawing. They have carried out tests on towline tensions and what it takes to drag the tied stake out of the ground. These were witnessed at Herrieden in September, while everyone was waiting for the mist to clear. The Dutch will support Germany. Both countries have ignored CIAM's ban and allowed the stake "under local rules" throughout this year.

Tomas Bartovsky (Czech Republic) chairs CIAM's soaring technical committee. He polled everyone flying or helping at the European Champs in July, asking which methods of launching should be allowed by the rules. The results have not been broadcast. He will have prime influence on what FAI will do.

My wild guesses are that the governing body – the Plenary - will not reverse the ban on ground staking. It

might ban the pulley altogether. The voters from 40 odd countries are not interested in what the majority of flyers want or prefer.

But a significant number of them believe that F3J would be a better class of model glider competition if the power, speed and crucial importance of the launch phase is reduced and controlled.

It would not surprise me if dropping of the lowest score in qualifying rounds and in the flyoffs is eliminated. Scores have reached such a high and close standard that excusing the one mistake does not quite make sense. Personally I would like to see some measure of the nine round qualifying scores – (why not the whole score?) – taken forward into the four round flyoff too.

+++

Last column bemoaned this year's lack of UK junior F3J flyers, and Stephan Lammlein expressed surprise and commiserated. In contrast, Germany seems to attract ever more juniors. At the national championships at Delmenhorst, 23 of the 90 competitors were youngsters, the youngest was 11 years old. With a ground stake, they launch almost as high as anyone.

Stephan reckons that the physical exertion of towing is an added attraction to younger people, not the dreaded drag that it is for most of us! It has also become accepted practice in Germany to give the juniors first choice of winners' prizes.

He suggests, and surely he's right, that you need a certain critical number of juniors taking part – at least 10 – becoming friends as well as rivals. Then without extra inducement, the numbers will steadily grow. We oldies often have little in common with teenagers, and most teenagers know that we oldies rarely talk sense. But young men and women tend to fly better.

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Dateline: April 2002

March's CIAM meeting in Lausanne did what I guessed (wrongly) would not happen and reversed the stake ban;

it made the **tethered** stake legal. It also banned single man pulley towing!

Of course, the UK F3J league had already decided to allow two-man towing with tethered stake under local rules whatever FAI decided. But it is better to behave legally when you can. So for the time being, two man towing, with or without a pulley, will be permitted in all F3J comps plus the forthcoming world champs in Lappeenranta (Finland). Quaintly, since FAI can't officially change rules until January 2003, local rules will be applied there too.

Funniest note: the stake is now legal providing it is driven at least 400 mm into the ground, with two ties, as per the German guidelines. Then someone from Finland announced that the ground at Lappeenranta airport is so hard during August that a piledriver will be required, and once driven, a strong man wouldn't be able to pull it out afterwards.

Second laugh, although it's not so funny, is the state of affairs at CIAM, where it has become the rule to hurriedly adopt towing proposals one year, only to reverse or withdraw them

the next. In my estimation – although I would not be so rude as to tell them – the rulers of our international sport have become detached.

+++

Everyone expected the next F3J world champs (2004) to be held in Slovakia, and the only matter unsure was the outcome of the fight between Holic and Poprad as to where we should be flying. (It shows how keen the Eastern European countries are to host events that two towns were competing – bitterly – for the privilege.)

But no! Another turn-up from Lausanne: the 2004 F3J World Champs will be held in Alberta, Canada.

I am told that the Slovaks are very angry – who can blame them. I am reliably informed that their proposal last year to host the 2004 F3J-WC was the only one on the table for CIAM to consider. Since it was welcomed, the Slovaks assumed that that was that.

But this year, Jack Humphries of Canada, backed by a beautiful brochure, presented another proposal. The Slovaks had turned up with nothing,

assuming the matter cut and dried. CIAM's plenary opted for Canada.

Selfishly I am pleased: I shall enjoy crossing the Rockies to Vancouver after the event. Secondly I think that Aaron Borst has been robbed of two F3J World Championships, and therefore Canada deserves to be host sometime soon.

Most importantly however, it has become more than a habit for the East European countries to host aeromodelling WCs, partly because the cost of living remains relatively cheap and the organisers find they can make money out of the hard currency entry fees. Also wealthier nations don't like the risk and struggle to muster the volunteer support so vital to run the event. But the imbalance of locations has become too much of a good thing.

Slovakia is a lovely place, and I shall return one day. But I am especially pleased at the prospect of Canada!

End of digested gossip!



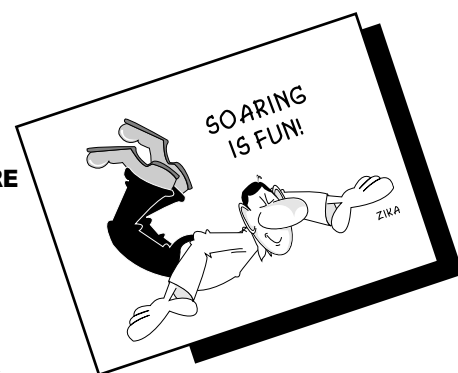
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 Visalia CA 93292

Make checks out to: Christopher Pratt

Club Web Site <http://www.cvrcoaring.com> is having a problem, contact me for directions to the field.

_____ CUT here and mail lower part only _____

NAME _____ AMA # _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE #(____) _____ CLUB _____

E-MAIL ADDRESS _____

Sailplane Channel Numbers 1ST _____ 2ND _____ 3RD _____ 4TH _____ 5TH _____

Are you bringing or piloting a tug? _____ Tug Channel/s _____
 (Tug channels used in the past are: 25,33,35,44,50, & 58)

T-SHIRTS L ____ XL ____ XXL ____ XXXL ____ @ \$15 each = \$ _____

Dinner Buffet _____ X \$27 each = \$ _____

Lunch BBQ _____ X \$6 each = \$ _____

Non Refundable Entry Fee -Tug Pilots get in free ____ X \$30 = \$ _____

Early Bird Special #1(see below) _____ X \$60 = \$ _____

Early Bird Special #2(see below) _____ X \$35 = \$ _____

TOTAL = \$ _____

NOTE!!! Early Bird Specials (Good until May 15, 2003)

#1 - Entry fee and 4 meals (Dinner Buffet and 3 lunches) for \$60 ** YOU SAVE \$15

#2 - Meals only (Dinner Buffet and 3 lunches) for \$35 ** YOU SAVE \$10