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

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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R/C Soaring Digest
556 Funston Drive
Santa Rosa, CA 95407
phone: (707) 578-7871
e-mail: rcsdigest@aol.com
http://www.b2streamlines.com/RCSD.html

TABLE OF CONTENTS

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.

Advertiser Index

RCSD ON THE WEB

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Monthly Feature Photography & Web Version of the Printed Article (where appropriate)
Highlights & Mailing Status of the Current Issue
About RCSD
..... **Subscription Information**
..... **Advertising Rate Card** (Adobe Acrobat PDF format)
..... **RCSD Feature Columnists, Reporters, and Editors**
..... (E-mail/web addresses, plus general information about their areas of interest)
"Getting Started in RC Soaring" ..... Getting started guide - Adobe Acrobat PDF format
Links to Organizations, Special Interest Groups & Clubs
On-Line Articles - Great articles originally written for the printed version of *RCSD*.
..... "Trimming Your Sailplane for Optimum Performance" by Brian Agnew
..... "Flys 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, 1984-2002

In the News:

Several items of interest were forwarded via e-mail this past month, from Bill & Bunny Kuhlman. Making news around the world, the first tidbit is regarding the World Championship F3B.

World Championship F3B

From D'Anne Thompson:

F3B Individual Results

1. Andreas Böhlen (SUI)
2. Pasi Väisänen (SWE)
3. Reinard Liese (GER)
4. Martin Weberschock (GER)

17 Daryl Perkins (USA)
19 Darrell Zaballos (USA)
20 Michael Lachowski (USA)
30 Gavin Botha (USA)

F3B Team Results

1. Switzerland
2. Germany
3. Sweden
4. Austria
5. Belgium
6. USA

Check out the following sites:

USA F3B website: http://www.speakeasy.org/~gavinb/index.html

WC website: http://www.f3b-wm-2003.de/

Photo of the USA team during the opening ceremonies: http://www.f3b-wm-2003.de/pictures/03.08.03/Seiten/03_08_03%20-%20077_jpg.htm

New Model Aircraft World Record Claims (2) - 13.08.2003

"This is a message from the FAI 'Aeromodelling Information mailing list.

CIAM Home Page: http://www.fai.org/aeromodelling/

"FAI has received the following Class F (Model Aircraft) record claims:

Claim number 7882 :
Sub-class F3A (Aeroplane, piston motor)
F3: Radio controlled flight Category
Type of record : N°142: Distance in a straight line
Course/location : Cape Spear, NF (Canada) - Mannin Beach (Ireland)
Performance : 3039 km
Pilot : Maynard L. HILL (USA) & Team
Date : 11.08.2003

Current record : 832.43 km (14.06.1998 - Ronald C. CLEM, USA)

==

Claim number 7883 :
Sub-class F3A (Aeroplane, piston motor)
F3: Radio controlled flight Category
Type of record : N°141: Duration
Course/location : Cape Spear, NF (Canada) - Mannin Beach (Ireland)
Performance : 38h 23min
Pilot : Maynard L. HILL (USA)
Date : 11.08.2003

Current record : 33h 39mn 15s (01.10.1992 - Maynard L. HILL, USA)

"The details shown above are provisional. When all the evidence required has been received and checked, the exact figures will be established and the records ratified (if appropriate)."

New Aeromodelling F3B World Record Attempt - 22.07.2003

"This is a message from the FAI 'Aeromodelling Information' mailing list.

"FAI has received the following Class F (Aeromodels) record claim:

Claim number 7851 :
Sub-class F3B (Glider)

PSS Festival 2003

Boeing B-29 Superfortress, designed and scratch built by Carl Maas Jr. It has a carved blue foam fuselage, molded engine nacelles, balsa-sheeted foam wings, and caries a model Bell X-1 rocket plane.

Photography by Dave Garwood.

Back Cover
PSS Festival 2003

Brian Laird's latest design, an EPP-foam "Air Rage" Mustang Reno racer. After designing in fiberglass for 15 years, Brian applied his talents to EPP foam, and this development led to two new kits from Leading Edge Gliders, a P-51 and a Me-109.

Photography by Dave Garwood.

F3: Radio controlled flight Category
Type of record : N°157: Gain in altitude
Course/location : St Vincent les Forts (France)
Performance : 2068 m
Aeromodeller : Frédéric JACQUES (Monaco)
Date : 19.07.2003

Current record : 1950 m (11.06.82 - Jack R. HINER, USA)

"The details shown above are provisional. When all the evidence required has been received and checked, the exact figures will be established and the record ratified (if appropriate)."

TransAtlantic Model

Note the record claim above for Maynard Hill is dated the 11th. And, we received the following message dated the day before from Bill Kuhlman...

Per Bill Kuhlman, "TAM is a TransAtlantic Model airplane. Last year four attempts all ended in failure. This is #5 and the first of another four attempts for this year, and it looks pretty good so far."

"For more information and an up to date map of aircraft location, go to <http://tam.plannet21.com> and follow the link for TAM 5."

And, the message from Maynard reads:

2016 UTC - 1081 MILES!
From Maynard Hill

"This is just over half the total distance to Ireland.

"As of 1708 UTC (18.9 hours after launch), TAM-5 had traveled 903 miles on course towards Ireland. The airplane appears to be flying slower than projected for two reasons. 1) It seems to be flying in a "draggy" mode with nearly full up elevator trim, and the engine is running a little slow (3800 on the average vs. 3900 desired). 2) Our tailwinds have been substantially less than were predicted when we committed for the flight. The latest speed numbers say we're traveling at about 55 miles per hour. If we continue at that rate we have yet 17.9 hours to go for a total projected flight of 36.8 hours for the whole crossing.

"If the engine is running slow because it is lean, we probably have 38 hours of fuel. But if it is running slow because it is rich, we'll be in the drink well before we reach Ireland. Yet another factor is that our weather maps here show that we will have still less tailwind and more crosswind as we approach Ireland. That could put the total required flight time up to 40 or so hours. With a little luck, it might go that long!

"What this message says is that our arrival in Ireland will be somewhere around 1030 UTC (11:30 am Ireland daylight time). We are presently at 32 degrees longitude, about ten hours away from the 20 degree longitude line. The estimated time after we cross the 20 degree longitude line would be another 10 hours.

"If you want me to give you my bet, I'd say the odds are 50 percent that we'll make it. But if you want me to say absolutely we'll make it, I will quote the famous lines of Abraham Lincoln to General Joe Hooker when Hooker bragged about how he was going to annihilate General Lee and the Confederate Army at Fredericksburg during the winter of 1863. Lincoln wrote him to say I am pleased with your confidence and wish you well. But back in Illinois, we had a saying the hen doesn't cluck until she lays the egg. I hope we all get to cluck on Monday morning."

Successful Landing

And, the next message spelled out their success!

"TAM 5 successfully landed within 35 ft. of designated spot in Clifden Co. Galway Ireland after 1888 mile flight from Cape Spear, Newfoundland, duplicating Alcock and Brown 1919 Vickers Vimy Flight. Another Brown - Dave Broun landed it.

"See http://tam.plannet21.com/

From John O'Sullivan, Nova Scotia
Wind and Wave Models
http://www.windandwavemodels.com

So, in the news this month, some exciting news, indeed! Our best to all!

Happy Flying!
Judy Slates

SCHEDULE OF SPECIAL EVENTS

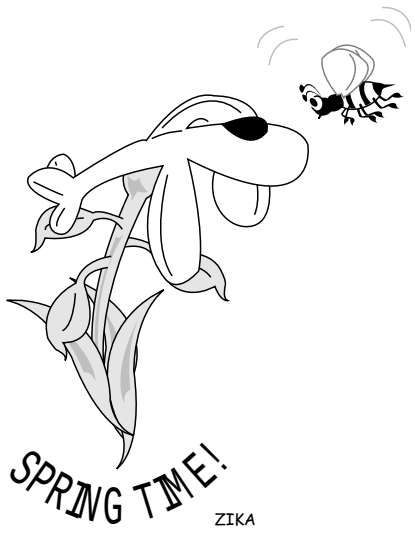
September 20-21, 2003
Last Fling of Summer — Broken Arrow, OK
Dave Register, (918) 335-2918
regdave@aol.com

October 10-12, 2003
Texas National Tournament (TNT) — Dallas, TX
www.SLNT.org

October 17-19, 2003
2003 Electric Soaring World Challenge — Moriarty, NM
www.soarabq.org

November 29-30, 2003
Tangerine Soaring Championships — Orlando, FL
www.orlandobuzzards.org

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



TULSOAR

TULSA RC SOARING CLUB

AMA CLASS A SANCTION CONTEST

22nd ANNUAL LAST FLING OF SUMMER

BLUE SPRINGS SOD FARM, Broken Arrow, Oklahoma
September 20 and 21, 2003

Saturday, Sept 20th, 9AM:	Class D: Unlimited	6 Rounds
Sunday, Sept 21st, 9AM:	Class B: 2 Meter	4 Rounds

Awards:

1st Place Overall 2m and Unlimited	Trophy For Combined 2m and Unlimited scores (Flyoff in case of tie)
	1st thru 3rd (Cash awards, Certificates thru 5th place)

Event	Entry Fees	
Saturday Unlimited	$20.00	T1(modified) / L6
Sunday 2 Meter	$20.00	T1(modified) / L6
Event Discount	-$5.00 (More than 1 event)	
Total:	$_____	

CD:
D.O. Darnell
4227 E. 83 St.
Tulsa, OK 74137
(918) 481-5855
e-mail: doznmagz@swbell.net

ASSISTANT CD:
Dale Nutter
7628 S. Oswego Place
Tulsa, OK 74136-8008
(918) 492-3760
e-mail: DENDKN@aol.com

ENTRY FORM

Name:_____ Phone:_____

Address:_____ e-mail (optional):_____

City/St/Zip:_____ AMA (Required):_____

Frequency (1st/2nd) UNL (Sat)_____/_____ Frequency (1st/2nd) 2M:(Sun) _____/_____

Amount Enclosed:_____ (Payable To: Tulsa RC Soaring Club)

Cancellation prior to September 15th will receive a full refund. Mail or e-mail entries to:

Dave Register
737 Brookhollow Lane
Bartlesville, OK 74006

e-mail: regdave@aol.com
Phone: 918-335-2918

Soaring Society members have had turns at the controls. The aircraft is incredibly stable in the air, and a number of pilots have stated it responds very much like a trainer.

The 2.5% static margin has not been changed. The aircraft reacts actively to control input, but elevator control is not in any way overly sensitive. Additionally, there is no "nodding" during sustained straight and level flight. This indicates the aircraft pitching moment and center of gravity are well coordinated.

The tow hook has been moved back to a point a quarter inch in front of the CG. This gives a good steep climb without any tendency to pop off or wander on tow.

The zoom off launch is strong enough that we've had to replace the main wing rod - 3/8" drill rod - with the same diameter hardened steel. The replacement rod has survived powerful launches with no residual bending in evidence.

on the Wing B²

P.O. Box 975
Olalla, Washington
98359-0975
bsquared@appleisp.net
http://www.b2streamlines.com

Blackbird XC.3 Update and BW 05 02 09 Revisited

A couple of related topics this month. First, an update on our Blackbird XC, then some notable improvements to the BW 05 02 09 airfoil, including added coordinate points, which was used on this latest Blackbird rendition.

Blackbird XC.3 update

A few days after the second installment of the Blackbird XC.3 series was submitted for publication in *RC Soaring Digest*, we had the opportunity to fly the aircraft again and we were able to make the minor changes we outlined at the end of the original article series.

Since then, a large number of flights have been put on the airframe, and more than a dozen Seattle Area

We finally settled on a flap-to-elevator mix of 75%. This setting thoroughly inhibits any pitch change as the flaps are deflected or retracted. Putting the flaps down 45 degrees noticeably slows the aircraft, steepens the glide angle, and dramatically improves steadiness in both pitch and yaw when flying through turbulent air. The available down elevator deflection which remains, although small, is sufficient to maintain full control during landing approaches.

As is common with this design, you can take advantage of small bubbles of lift by flying straight through them. The nose rises as the aircraft climbs. Once you see the climb slowing, a touch of down elevator brings it back to level flight at the higher altitude. If substantial lift is found, the Blackbird XC can be banked steeply and brought around quickly to center the thermal.

The Blackbird XC is truly a joy to fly, a sentiment shared by an increasing number of SASS members.

BW 05 02 09 revisited

We first learned of the BW 05 02 09 section when we found it as an alternative airfoil on the plans for Dave Jones Raven S. We scanned the best of the outlines, then used the coordinate creation function of Gregory Payne's Foil 1.2 to obtain the basic coordinate table. We've now used the airfoil on a number of aircraft with chord lengths ranging from five to 27 inches and have found its performance to be downright exceptional. The pitching moment is less than that of the CJ-252 09, and it is definitely more "slippery," both of which are gross improvements. As we're going to use the BW 05 02 09 on another project, we decided to take a look at how smooth the contour of our plotted sections had turned out to be.

We now use Dave Johnson's MacFoil 1.5 for all of our airfoil plotting. MacFoil does not use a spline to smooth the contour but rather draws straight lines between coordinate points. This is OK for most model use where the chord is usually less than ten inches, but blow up the chord to 27 inches, as we did for the Blackbird XC we just finished, and you begin to see some minor but obvious variations. This is particularly true given the limited number of coordinates we've been using. In addition to smoothing the contour, another goal was to increase the number of coordinates for MacFoil to use during the plotting process.

We took our original BW 05 02 09 coordinates and plotted a 100 inch chord on our Sony 21 inch flat screen display using MacFoil 1.5. We looked at the "jaggies" on the screen and made adjustments to a couple of the points so the step increments appeared better proportioned.

Once everything looked good on the screen, we printed the 100 inch section on paper — eighteen sheets of legal size bond. Using ships curves and an oblique viewing angle down the length of the chord, we refined the existing points and took measurements using a decimal ruler. We also decided where additional points were needed and wrote down rough ordinates for each.

From there we began adding points between the previously established points within the coordinate table, adjusting the Y ordinates until the airfoil segment looked good on the large monitor.

We then used MacFoil to increase the camber by a factor of ten and the airfoil thickness by a factor of five. This accentuated very small differences so that any irregularities could be easily seen. Smoothing this contour consisted of fine tuning the ordinates of just a few of the added points.

The next step was to remove the camber entirely and make sure the thickness distribution looked smooth. A bit more tweaking was found to be necessary. By alternately increasing and decreasing the camber and thickness, we eventually had a shape which looked smooth across both the upper and lower surfaces. Camber percentages ranged from zero to 50, thickness percentages from zero to 100, and lengths up to 200 inches.

Overlaying the new profile over the old showed a few very small differences, but nothing of great significance. In fact the variations between the original and modified sections at ten inch chord length are probably smaller than variations in contour when using an X-Acto blade and a metal template. The added points provide a more defined surface.

Once completely satisfied with the modifications, we took the EH 1/9 airfoil which we know to be smooth and changed its thickness and camber to match that of the BW 05 02 09, plotted it at 200 inch chord on the monitor, and then overlaid the BW 05 02 09. With the smooth contour of the modified EH 1/9 as the background, the red BW 05 02 09 profile looked very good indeed.

The differences between the two sections, EH 1/9 and BW 05 02 09, when adjusted for the same percent thickness and camber, are noteworthy: The BW 05 02 09 has a sharper leading edge back to the area of the high point at 30% chord. This applies to both the upper and lower surfaces. The maximum thickness point of the BW 05 02 09 is about two percent further aft than that of the EH 1/9. The upper surfaces aft of 60% chord match fairly well. The trailing edge of the BW 05 02 09 is thicker. This is especially desirous if you're constructing the trailing edge with wood sheeting. Because of the greater camber line reflex, the lower surface is much deeper.

The coordinate table for the enhanced BW 05 02 09 is included here. As stated previously, this section is extremely close to that used on several of our own aircraft with excellent results. This coordinate table is also available as a downloadable file at our web site: <http://www.b2streamlines.com/BW050209.txt>.

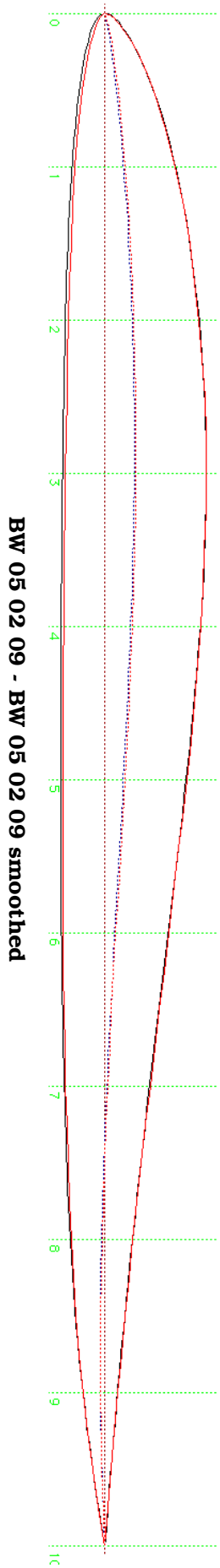
To assure a smooth surface contour, a fellow member of the nurflugel e-mail list, Andre L. Martins, ran our expanded coordinate table through XFoil. The XFoil smoothing process uses inverse design; that is, it smooths the pressure distribution and then derives a "new," practically identical airfoil, using the smoothed pressure distribution. As a bonus, the number of coordinates was increased to 200.

Full geometry similarity was not transferred to the smoothed airfoil. The smoothed section ended up with a slightly greater thickness (from 9.15% to 9.34%) and slightly less camber (from 2.14% to 1.93%). The main

BW 05 02 09

1.00000 0.00000	0.00000 0.00000
0.97500 0.00207	0.00010 -0.00050
0.95000 0.00410	0.00040 -0.00117
0.92500 0.00623	0.00100 -0.00175
0.90000 0.00835	0.00200 -0.00265
0.87500 0.01072	0.00375 -0.00375
0.85000 0.01310	0.00750 -0.00550
0.82500 0.01570	0.01250 -0.00722
0.80000 0.01833	0.01875 -0.00883
0.77500 0.02104	0.02500 -0.01025
0.75000 0.02375	0.03750 -0.01262
0.72500 0.02661	0.05000 -0.01445
0.70000 0.02948	0.07500 -0.01716
0.67500 0.03247	0.10000 -0.01931
0.65000 0.03547	0.12500 -0.02081
0.62500 0.03852	0.15000 -0.02186
0.60000 0.04157	0.17500 -0.02269
0.57500 0.04453	0.20000 -0.02337
0.55000 0.04749	0.22500 -0.02402
0.52500 0.05043	0.25000 -0.02467
0.50000 0.05337	0.27500 -0.02513
0.47500 0.05603	0.30000 -0.02549
0.45000 0.05853	0.32500 -0.02579
0.42500 0.06067	0.35000 -0.02611
0.40000 0.06236	0.37500 -0.02642
0.37500 0.06372	0.40000 -0.02665
0.35000 0.06475	0.42500 -0.02691
0.32500 0.06565	0.45000 -0.02706
0.30000 0.06605	0.47500 -0.02721
0.27500 0.06585	0.50000 -0.02734
0.25000 0.06490	0.52500 -0.02733
0.22500 0.06325	0.55000 -0.02731
0.20000 0.06135	0.57500 -0.02721
0.17500 0.05848	0.60000 -0.02711
0.15000 0.05521	0.62500 -0.02685
0.12500 0.05125	0.65000 -0.02660
0.10000 0.04605	0.67500 -0.02609
0.07500 0.03955	0.70000 -0.02556
0.05000 0.03173	0.72500 -0.02471
0.03750 0.02692	0.75000 -0.02385
0.02500 0.02125	0.77500 -0.02281
0.01875 0.01798	0.80000 -0.02174
0.01250 0.01415	0.82500 -0.02041
0.00750 0.01043	0.85000 -0.01875
0.00375 0.00685	0.87500 -0.01662
0.00200 0.00455	0.90000 -0.01400
0.00100 0.00285	0.92500 -0.01100
0.00040 0.00183	0.95000 -0.00777
0.00010 0.00050	0.97500 -0.00405
0.00000 0.00000	1.00000 0.00000

thickness = 9.15%, camber = 2.04%,
C_m = 0.018, zero lift angle = -0.15 degrees



contour differences between the two sections are a larger leading edge radius and a significantly deeper lower surface beginning at the leading edge but tapering in magnitude to the trailing edge. The effective aerodynamic differences appear to be negligible. The zero lift angle and pitching moment depend on the Reynolds number, but for a tentative value of Re = 0.3 million (300K), the smoothed section zero-lift angle is -0.33 degrees and the pitching moment is 0.014. This compares favorably with our numbers for the original Foil 1.2 derived section zero lift angle of -0.15 degrees and a pitching moment of 0.018.

Coordinates for the smoothed version are available for download at <http://www.b2streamlines.com/BW050209sm.txt>. Additionally, a five page PDF document showing the before and after pressure distributions can be downloaded from <http://www.b2streamlines.com/BW050209.pdf>.

Our thanks to Andre for the XFoil smoothing. Anyone using either our enhanced version or the XFoil smoothed version of the BW 05 02 09 is encouraged to share their experiences with other *RCSD* readers.

Suggestions for future columns may always be sent to us at either P.O. Box 975, Olalla WA 98359-0975 or <bsquared@b2streamlines.com>.

_____

References:

Drela, Mark. XFoil. <http://raphael.mit.edu/xfoil/> (There are several versions of XFoil available for various Windows systems. According to some members of the XFoil e-mail list, it's possible to run XFoil on an OS X Macintosh. We're trying to track down a version which will work with OS 9.2 and earlier.)

Johnson, Dave. MacFoil 1.5. <http://dogrocket.home.mindspring.com/macfoil.html> (MacFoil 1.5 will run on any Mac using OS 8.6 and greater. MacFoil v1.0b3 works on older Macs using System 7 and OS 8.1.)

Payne, Gregory. Foil 1.2. (Gregory Payne's personal web page with a link to Foil 1.2 has been down for some time. We do, however, maintain Foil 1.2 as a downloadable file on our web site. <http://www.b2streamlines.com/Foil12.sit.hqx>)

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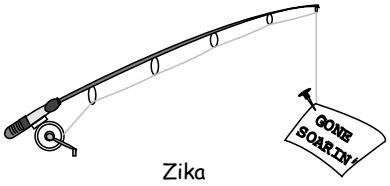

PSS Festival 2003

Patton Aircraft EPP-foam P-51 Mustang. Steve Patton is known for thinning the wings for reduced drag and increased speed. His slope planes are kitted by Patton Aircraft.

Bell X-1 rocket plane, built by Carl Maas Sr. a model of "Glamorous Glennis" the plane in which Chuck Yeager broke the sound barrier. Built from carved EPP-foam and released from Carl Maas Jr.'s B-29.

By Jack Mullen
Rialto, California

Photography by
Dave Garwood
& Jack Mullen (as noted)

The Inland Slope Rebels (ISR) held their 6th annual Spring PSS Festival May 23-25, 2003 at Southern California's Cajon Summit. The PSS Festival, held over the Memorial Day weekend, attracted more than 50 pilots, some from as far away as Hawaii and New York, looking for good wind and pleasant weather.

They weren't disappointed. In the 5 previous years that the ISR have hosted the Festival, they have never had to postpone due to lack of wind, and this year was no exception. Plenty of lift all weekend allowed the pilots to make impressive flights with a collection of planes that numbered into the hundreds. Excellent weather saw shorts worn by many and a slight

The Bell X-1 rocket plane enjoys its free ride to altitude nestled in the belly of the B-29 mothership. Photo by Jack Mullen

Jack Cooper's huge EPP SR-71 Blackbird takes flight for the first time. Photo by Jack Mullen.

(L) Brian Koester's Sukhoi Su-35 Super Flanker, his own scratch built design. Brian turned to designing his own Su-35 when he was unsatisfied with the flight performance of a commercially available kit. It's interesting to see this unfinished third prototype in the air, a tribute to Brian's tenacity. The plane flew very well.

Steve Greenfield's new "Monster Tigershark." A 60-inch span slope jet carved from EPP-foam, this plane flies very well and will be made available as a kit by California Sailplanes.

Jeff Fukushima flew a prototype 33-inch span Curtiss P-40 Warhawk, with molded fuselage painted in the mold. Jeff kits the Mini Warhawk along with a Mini Zero, and you can order either slope or electric power versions from Vortech Models.

afternoon cooling added to our comfort, making a sweatshirt or windbreaker a welcome, but not necessary, addition.

Power Scale Soaring (PSS) sailplanes, for those unfamiliar, are slope gliders modeled after full-size power planes. A wide range of planes are available to be modeled, from military bombers and fighters to civilian passenger jets and props. World War II fighters are very popular with the PSS crowd since the large wing planforms of the day work well when used as a slope glider.

Cajon Summit is situated about an hour east of Los Angeles in the San Bernardino National Forest. During the summer months, daily heating of the High Desert north of San Bernardino causes an on-shore flow in the afternoon that draws cooler air from the ocean towards the desert. That wind, funneled through the Cajon Pass on its way to the desert, gives Cajon Summit its normally abundant wind that can usually be counted on to keep the PSS Festival from being a bust.

With the Cajon flying site overlooking the pass along a large ridge line, there are multiple locations that are slopable with the incoming wind. As in years past, the Rebels set up two separate flight locations so that they could separate the planes into two groups. By separating the planes into slow and fast groups, having a ballistic slope sled ripping huge half-pipes through a group of slower planes was prevented. At times, between the two locations, nearly twenty planes were ripping

Brian Koester's flies a Sukhoi Su-35 Super Flanker, his own scratch built design. Joe Chovan works behind the camera.

Cajon Summit 2003 Winners

Expert Class:
1st Carl Maas / Messerschmitt Me-109, Cavazos Sailplane Design Kit
2nd Brian Laird / Me-262 Stormbird, Scratch built
3rd Jeff Fukushima / F9F Panther, Vortech Models Kit

Best Foam:
1st Ren DiLeo / Messerschmitt Me-109, Scratch built
2nd Jack Cooper / Lockheed SR-71 Blackbird, Scratch built
3rd Brian Koester / Sukhoi Su-35 Super Flanker, Scratch built
4th Jack Mullen / Bell X-1 FSW variation, Scratch built
5th Rick Schwemmer / P-51 Mustang, Leading Edge Gliders Kit

Best Prop:
1st Jeff Fukushima / F4U Corsair, Vortech Models Kit
2nd Jeff Vosburg / Me-109, Scratch built
3rd Tim Neja / Kawasaki Ki-61, Dave's Aircraft Works Kit
4th John Beaver / Corsair, Scratch built
5th Tony Matyi / F6F Hellcat, Cavazos Sailplane Kit

Best Jet:
1st Dan Sampson / Aeromachi MB339, Scratch built
2nd Mitch Schwartzburg / F-20 Tigershark, Cavazos Sailplane Kit
3rd Thomas Fowler / F-20 Tigershark, Cavazos Sailplane Kit
4th David Cairns / Boeing B-52 Superfortress, Scratch built
5th Steve Greenfield / F-20 Tigershark, Canterbury Sailplane Kit

Best Civilian:
1st Jeff Vosburg / Yak racer "Mr. Awesome", Scratch built
2nd Tim Neja / Bell P-63 racer, Cavazos Sailplane Kit
3rd Dan Schramm / Gulfstream Jet, Scratch built
4th Thor Nordstrom / Beechcraft Bonanza, Scratch built
5th Ken Kopas / Beech Staggerwing, Mountain Models Kit

Carl E. Maas Craftsmanship Award: Jeff Fukushima

Jack Cooper's Patriot, a combat-rated EPP-foam plane that flys exceedingly well. Jack kits several advanced EPP-foam planes at Leading Edge Gliders, including Brian Laird's new designs in EPP-foam, the Mustang and the Me-109.

Some of the planes at Cajon 2003 including a pair of Cavazos Sailplane Design F-20 Tigersharks, California Sailplanes 60" EPP-foam F-20 Tigershark, and Jack Mullen's original design Forward Swept Wing Bell X-1.

(Below) David Cairns Boeing B-52 Stratofortress, his own design, scratch built from balsa. This plane was impressive in the air and conjured up images of conflicts in which the plane flew over the last 50 years.

through the air. Even with that many planes in the air, the large flight zones, along with experienced pilots, kept mid-air collisions to a minimum.

Each year, the level of competition improves with pilots bringing better and better aircraft in an attempt to smoke the competition. During the judging process, quality of workmanship and scale outline were scrutinized closely with the best planes in some classes separated by mere points. The fiberglass models featured some of the most detailed finishes I've ever seen, rivaling that of the best static models. Jeff Vosburg's scratch-built Yak racer "Mr. Awesome" was just that, awesome. That attention to detail took 1st place in the Civilian class.

The foam class has made great strides in quality also. "Semi-scale" poorly covered planes that were competitive in the past were replaced with very scale planes with detailed coverings and paint jobs similar to their fiberglass brothers. Some of the best models, such as Ren DiLeo's scratch built Me-109, were crafted so well that they appeared to be fiberglass models. Not until the model was felt, was the fact that it was a "foamie" known.

What I enjoy about the PSS Festival is the wide selection of planes to check out. Planes that you never get a chance to see at your local hill show up during the festival. Rarely modeled scratch-built designs are plentiful, along with more common kits that are detailed to the hilt. Museum quality planes get thrown off the side of a hill with no guarantees that it will return in the same condition. Many times the planes make their first flight at the festival. Some pilots, I believe, feel that if the plane is going to crash on its maiden flight, better to crash at the Fest than to have all that hard work destroyed a week before the Fest in a test flight. Dan Schramm built a Gulfstream Jet

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Best Civilian Awards: Jeff Vosburg, scratch built Yak racer; Tim Neja, Cavazos Sailplane Design P-63; Dan Schramm, scratch built Gulfstream Jet; Thor Nordstrom (missing from photo); Ken Kopas, Mountain Models Beech Staggerwing.

Craftsmanship Award: Four years of winners are Brian Laird, Ralph Roberts, Carl Maas Jr., and Jeff Fukushima. In the center is Carl Maas, Sr., donor of the award commemorating "100 Years of Powered Flight."

that took its maiden flight while at the Festival. Dan mixed an EPP fuselage along with sheeted foam-core wings in order to make the 7' wingspan bizjet a reality.

Jack Cooper's ambitious SR-71 Blackbird also attempted to fly at Cajon for the first time. The large EPP foam aircraft made several test "flights" while attempting to balance the plane properly. The "lifting body" fuselage made finding the optimum CG location hard to determine and each toss saw it closer to maintaining flight. Hopefully the proper balance will be sorted out; the big lift that Cajon generates will help. However, even if it never flies right, sometimes there are planes that just have to be built. If they end up flying well, that is just icing on the cake.

For those who would rather build a proven design than scratch-building their own, a few new designs flew at the Festival. Jeff Fukushima flew a prototype 33" fiberglass P-40 Warhawk available from Vortech Models and Steve Greenfield demoed a prototype 60" EPP F-20 Tigershark kit now available from California Sailplanes. New 48" EPP P-51 Mustangs and ME-109s, designed by Brian Laird and available from Leading Edge Gliders, were brought out by a couple pilots.

The ISR added to this year's Fest by putting on a few instructional clinics. Brian Laird showed how the application of a few panel lines could really add to a PSS bird. Jack Cooper showed how to achieve a good tape/covering of EPP foam planes. And Ralph Roberts gave some pointers on the art of airbrushing and weathering. The clinics were very well attended with hopefully something learned by all who attended.

The stars of the show were the Boeing B-29 Superfortress built by Carl Maas Jr. and its companion Bell X-1 rocket plane built by his father, Carl Maas Sr. The B-29 was built with a fiberglass-covered blue foam fuse, and balsa-sheeted foam wings. The X-1 was built from EPP foam. With the planes having never flown in the joined configuration, the flight did not occur until the winds had reached their maximum in the late afternoon. In a scene that reminded me of "The Pied Piper of Hamelin," the combo was carried down to the "big" hill for the launch with most of the festival attendees in tow.

With the large crowd gathered, the huge bomber was launched with its little partner slung underneath for the first time. After a few minutes of graceful flight, the orange rocket plane was dropped from the B-29 in the same manner that Chuck Yeager in his "Glamorous Glennis" was dropped from the real Superfortress in his famous assault on the Sound Barrier. A clean release brought relief to the pilots and crowd, as the pilots were now able to put on a flight show for the crowd. Carl Maas Jr. put the B-29 through maneuvers that would have surely ripped the wings off the real Superfortress. Carl kept flirting with disaster with huge loops and rolls that bottomed out just feet from the ground. Formation flying with the two planes was so close at times that it appeared that the X-1 was trying to re-attach itself to the large bomber. Although a collision knocked off a wingtip from the B-29, the two planes were able to land otherwise undamaged to fly another day.

The Slope Rebels once again showed that they can put on an excellent event. Tons of amazing planes, friendly pilots, good weather and wind, and a large impressive raffle makes the PSS Festival an event that draws a crowd every year. With another great PSS Festival in the books, I've got to figure out what to build for next year. For more information about the Inland Slope Rebels and future events like the PSS Festival and Warbird Air Races, visit the ISR website at: <www.inlandsloperebels.com>.

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(Abovbe) Best Foam Awards: Ren DiLeo, scratch built Me-109; Jack Cooper, scratch built SR-71 Blackbird; Brian Koester, scratch built Sukhoi Su-35; Jack Mullen scratch built Bell X-1 FSW; Rick Schwemmer, Leading Edge Gliders P-51 Mustang.

(Middle) Best Jet Awards: Dan Sampson scratch built Aeromachi MB-339; Mitch Schwartzburg, Cavazos Sailplane F-20 Tigershark; Thomas Fowler, Cavazos Sailplane F-20 Tigershark; David Cairns scratch built Boeing B-52; Steve Greenfield, Canterbury Sailplane F-20 Tigershark.

(Bottom Left) Best Prop Awards: Jeff Fukushima, Vortech Models F4U Corsair; Jeff Vosburg, scratch built Me-109; Tim Neja Dave's Aircraft Works Ki-61; John Beaver, scratch built Corsair; Tony Matyi Slope Scale F6F Hellcat.

Expert Class Awards: Carl Maas, Cavazos Sailplane Design Me-109; Brian Laird, scratch built Me-262 Stormbird; Jeff Fukushima, Vortech Models F9F Panther.

"The Sloper's Resource"

By Greg Smith of slopeflyer.com
greg@slopeflyer.com
http://www.slopeflyer.com

So, the guy hasn't sent in a story for a while. Frankly, I hoped for, and expected, more chastising from the masses to help me keep on track. I guess guilt finally got the best of me so I took some time to get an article together. Actually, I am cheating this month because flying buddy Russ Whitford had given me the article below a few months ago and all I had to do to get it to you was tidy up the drawings a bit. What a deal! So, without further ado, I give you:

Bernoulli and the Slope
By Russ Whitford

Most of us believe in Bernoulli's principal as the theory that keeps our planes in the air. This principal has been observed to affect the amount of lift at a given slope. Thinking about this effect can help determine how good the lift conditions will be before tossing out your favorite plane.

Bernoulli's principal states that a gas (air) moving at higher velocity has a lower pressure than air moving at a lower velocity. The curved upper surface of our airfoils causes air to move faster than the flat or less curved lower surface. Lower pressure on top than the bottom causes lift.

Yes, you in the back, how do symmetrical airfoils create lift? Symmetrical airfoils must be at a positive angle of attack to the flow of air to create lift. This way, the air that hits the leading edge separates below the front of the LE. The air that travels over the top has a longer way to go and must go faster. The air that travels under the airfoil moves in more of a straight line and goes slower. See above.

Now, to the slope. We have all seen the classic representation of slope lift (fig. 1). Wind blowing into the slope is curved upward. This vertical flow of air is rising faster than our planes are sinking. We can fly all day in these conditions.

What happens at the edge of the slope? Most slopers have found that there is a calm or dead spot just behind the edge of the slope. We seek this spot to stand while flying in Wisconsin in January. The wind seems to go straight up at the edge, not follow the contour of the slope (fig. 2). There is a nasty "rotor" of air behind the edge. The wind swirls like a horizontal tornado, not the place to land.

Our planes experience a rotor effect when given too much up elevator while going too slow. The flow of air, which normally follows the top of the airfoil nicely, separates and causes a big rotor on top of the wing. Can you say, "Stall?"

The rotor behind the edge of the slope is a stalled condition. Airflow separates from the slope curve and continues up, causing a stalled rotor behind the edge. This is a great condition for slope flying. The stalled rotor acts like the slope is taller than it really is. This rotor forces the airflow to continue

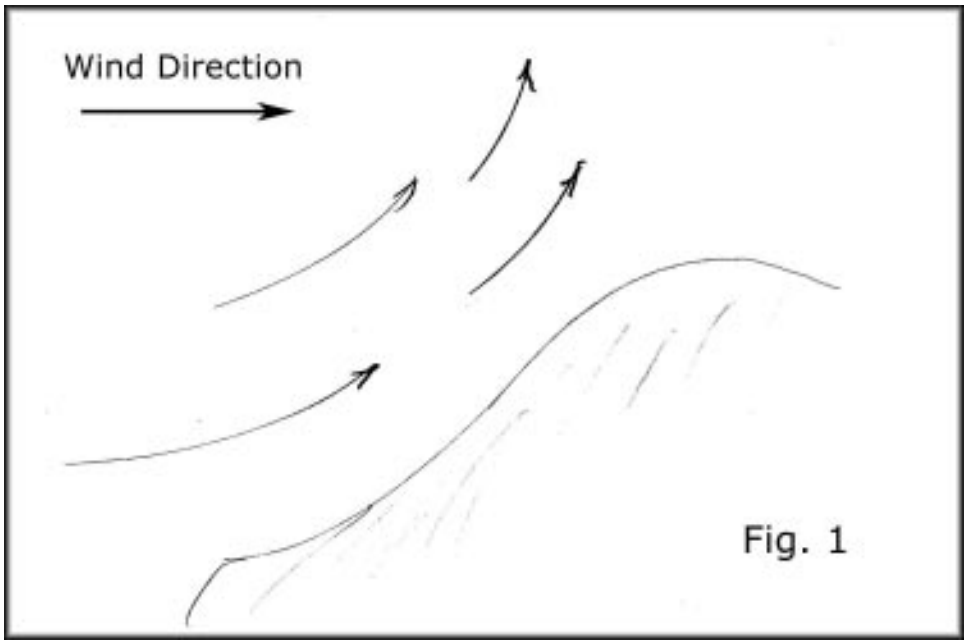

Fig. 1

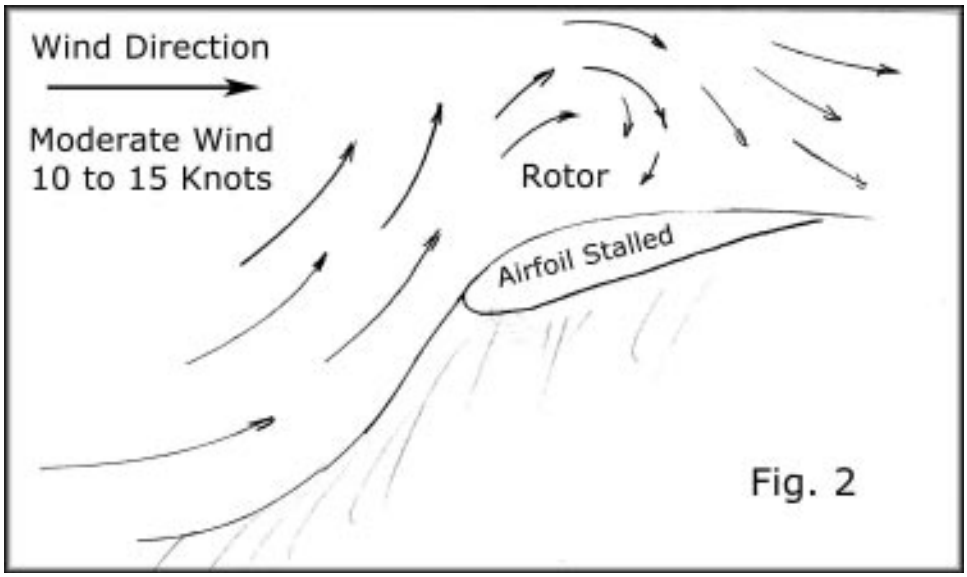

Fig. 2

higher and the air behind it continues in a vertical path. Good slope conditions.

A powered aircraft can get out of a stall by applying power when a stall begins. The increased power increases airflow over the airfoil, causing the air to remain attached or following the top surface of the airfoil. This same effect happens when the wind is really blowing at the slope. The wind continues to follow the slope instead of going vertical above the edge of the slope (fig. 3).

For several years, we have been observing a phenomenon at a local 70-foot slope facing Lake Michigan. In 10 to 15 knots of wind, the lift is great. When the wind gets over 20, the lift degrades. The lift will only exist right in front of the edge and you have to have a fast clean plane to fly. We theorized that in higher wind, the wind follows the hill and little rotor effect is felt. Bernoulli may have the reason for this.

So, when you approach a hill and try to determine if there is enough lift to fly, observe the presence of a rotor. Throwing a handful of grass over the edge is the best way. If this grass lifts, then circles around behind you, there is a significant rotor. If the grass blows up and straight back, the wind may be too strong for good lift. A taller, more vertical slope does not seem to suffer from this problem. I have a hard time imagining it blowing too hard to have lift at Fermin.

Thanks, Russ! Well, there you have it. Until next time, here's hoping there's wind in your face, unless you are a DSer, then, here's hoping there's wind at your back!

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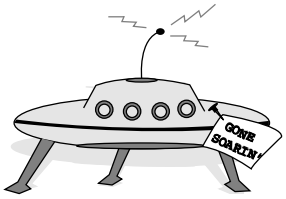

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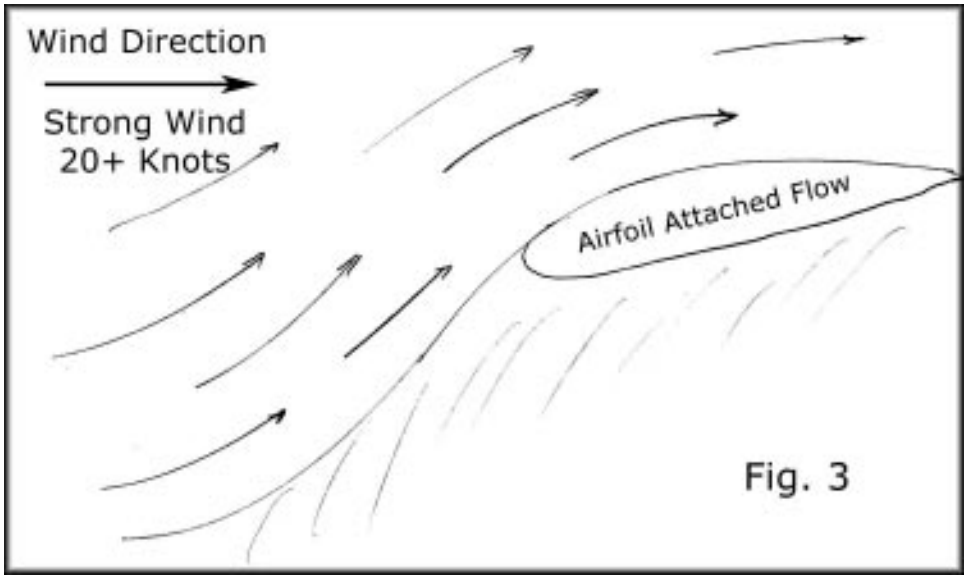

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