Radio Controlled

Soaring Digest

January 2009 Vol. 26, No. 1

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Front cover: Ren DiLeo's 1/4 scale Schweizer 1-26. This picture was taken by Ren at Torrey Pines while the plane was being flown by Mike Lance. Ren's 1-26 has a fiberglass fuselage and built-up wings using a true Clark Y airfoil. It weighs 9 lbs. 10 oz. ready to fly. In the cockpit is one of Ren's RD Enterprises Premier Pilots.
Olympus E-300, ISO 100, 1/800 sec., f5.6, 150mm

Back cover: Carrying the Minimoa back to the ready-area after a successful flight and landing. Photo by Bill Henley, taken at Eagle Butte during the last Tri-Slope Six-Pack, May 2007.
Canon EOS Digital Rebel XT, ISO 400, 1/2000 sec., f8.0, 200mm

R/C Soaring Digest

Managing Editors, Publishers — B² Kuhlman

Contributors — Tom Bean, Lionel Brink, Peter Carr, Greg Potter, Gordy Stahl, Dan Troxell, Frank Weston, Alyssa Wulick

Photographers — Dave Garwood, Dave Beardsley, Ren DiLeo, Jim Harrigan, Bill Henley, Derek Marusich, Greg Potter

Contact — rcsdigest@themacisp.net
Web: http://www.rcsoaringdigest.com
Yahoo! group: RCSoaringDigest
AIM screen name: RCSDigest
Microsoft Messenger: rcsdigest

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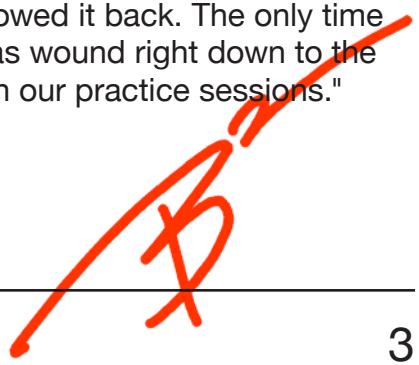
In the Air

This column is being written with snow on the ground and a temperature of 26°F — not what we're used to here in Puget Sound at this time of year.

One of the topics we report, as evidenced in this column just last month, is world record claims and ratifications. Although not an RC soaring record, we highly recommend reading about Mitsuru Ishii's free flight indoor HLG record-breaking flight on the FAI web site <http://www.fai.org/node/512>. The new record, 1:41.2, flown September 10th, eclipses the record flight of 1:30.7 set by Mr. Ishii on September 4th, 2006. The glider looks like a cross between our current RC-HLGs and something designed by Burt Rutan.

The October 2008 issue of RCSD featured an article on Campbell, a black Golden Retriever/Labrador cross who spontaneously began retrieving the winch line parachute after Greg Potter's glider was released. Well, Campbell had a bit of a traumatic experience directly after the article was published when he was hit by a car. Luckily there were no internal injuries, and after two weeks in the hospital he was well on his way to recovery. Greg says, "He had his first winch line retrieval session in late November and he performed brilliantly. When he could not see the chute he performed a search pattern back and forth across the field. When he found the chute he returned to the bottom line and followed it back. The only time he had trouble was when the chute was wound right down to the turnaround, but he's not used to that in our practice sessions." Good for you, Campbell!

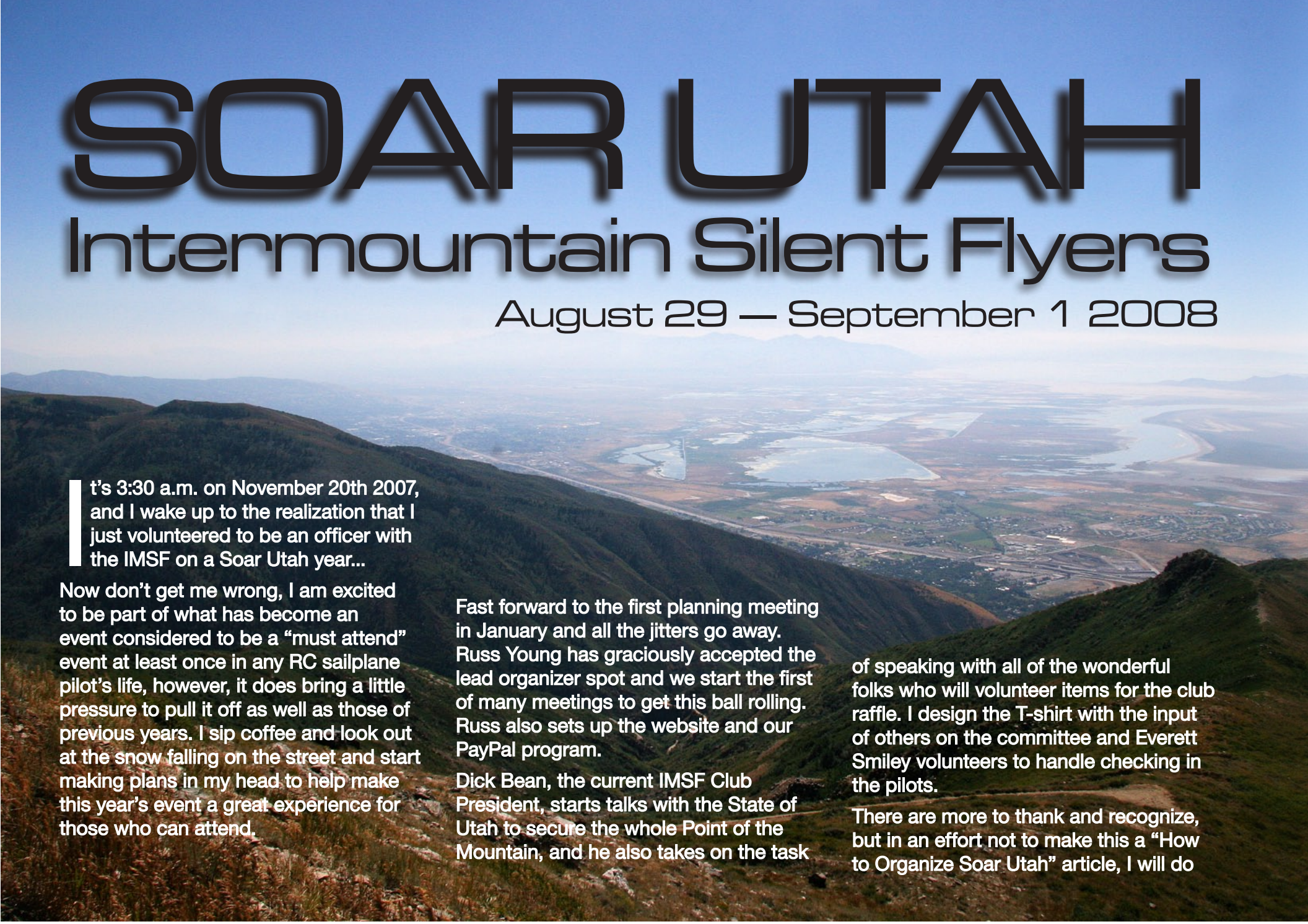
Time to build another sailplane!



SOAR UTAH

Intermountain Silent Flyers

August 29 — September 1 2008



It's 3:30 a.m. on November 20th 2007, and I wake up to the realization that I just volunteered to be an officer with the IMSF on a Soar Utah year...

Now don't get me wrong, I am excited to be part of what has become an event considered to be a "must attend" event at least once in any RC sailplane pilot's life, however, it does bring a little pressure to pull it off as well as those of previous years. I sip coffee and look out at the snow falling on the street and start making plans in my head to help make this year's event a great experience for those who can attend.

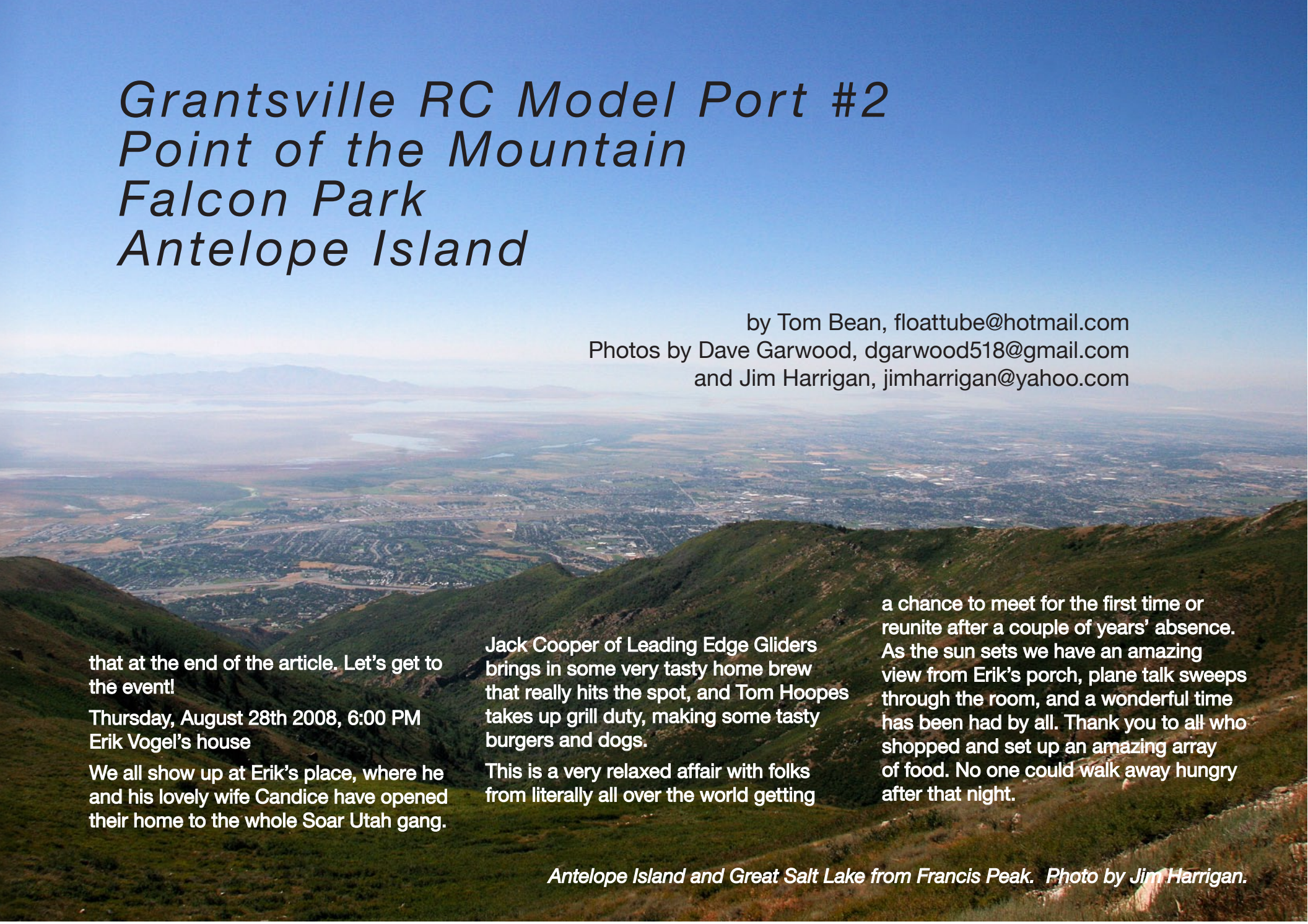
Fast forward to the first planning meeting in January and all the jitters go away. Russ Young has graciously accepted the lead organizer spot and we start the first of many meetings to get this ball rolling. Russ also sets up the website and our PayPal program.

Dick Bean, the current IMSF Club President, starts talks with the State of Utah to secure the whole Point of the Mountain, and he also takes on the task of speaking with all of the wonderful folks who will volunteer items for the club raffle. I design the T-shirt with the input of others on the committee and Everett Smiley volunteers to handle checking in the pilots.

There are more to thank and recognize, but in an effort not to make this a "How to Organize Soar Utah" article, I will do

Grantsville RC Model Port #2
Point of the Mountain
Falcon Park
Antelope Island

by Tom Bean, floattube@hotmail.com
Photos by Dave Garwood, dgarwood518@gmail.com
and Jim Harrigan, jimharrigan@yahoo.com



that at the end of the article. Let's get to the event!

Thursday, August 28th 2008, 6:00 PM
Erik Vogel's house

We all show up at Erik's place, where he and his lovely wife Candice have opened their home to the whole Soar Utah gang.

Jack Cooper of Leading Edge Gliders brings in some very tasty home brew that really hits the spot, and Tom Hoopes takes up grill duty, making some tasty burgers and dogs.

This is a very relaxed affair with folks from literally all over the world getting a chance to meet for the first time or reunite after a couple of years' absence. As the sun sets we have an amazing view from Erik's porch, plane talk sweeps through the room, and a wonderful time has been had by all. Thank you to all who shopped and set up an amazing array of food. No one could walk away hungry after that night.

Antelope Island and Great Salt Lake from Francis Peak. Photo by Jim Harrigan.

Aerotow launch at Grantsville dry lake bed. Photo by Jim Harrigan.

Friday August 29th 8:00 AM
Grantsville RC Model Port #2
Aero Tow

Apparently, all of the special rain and wind dances have paid off.

The sun is shining but not too hot. The wind is staying down around the five knot level, and we have a huge group of spectacular sailplanes being put together. We have four tug pilots in attendance: Mike Gibson, Erik Vogel, Curtis Miner, and Paul Bradshaw.

This site is unique due to its location. We are literally only 500 yards away from the Great Salt Lake.

This tends to create some interesting air, but as we fly it more we learn where to look for the thermal spots.

To the west of this site there is a quarry of sorts and the rock being taken is a very dark charcoal color. This creates some great lift opportunity if you can take advantage of it. The tricky part is that the quarry is a long way off, so gauging distances is difficult.

Aerotow preparation at Grantsville dry lake bed. Photo by Jim Harrigan.

Upper left: Event workers Curtis Miner and Tauno Knuuttila fire up the Pegasus tow plane. Photo by Dave Garwood.

Above: Event worker Erik Vogel, aerotow pilot, with a Skip Miller Models Super Kraft Monocoupe. Photo by Jim Harrigan.

Left: Honored guests Brian Courtice from Hawaii, and Fred Sanford from Minnesota. Photo by Dave Garwood.

The ground for the Grantsville site is an old salt pan which stays very flat and even. The jet guys use this for their turbine planes when we slow pokes are not around. We see some beautiful ships ranging from three meters to 5.5 meters today.

All in all there are somewhere in the neighborhood of 100 tows and one casualty when a tow release fails to execute.

Stomachs have started to rumble all across the flight line as we slide into the tail end of the afternoon. Planes are getting packed up and the folks are heading back to the Point for a fried turkey dinner being put together by Steve Reed and Clarence Ashcraft. Cajun Turkey, deep fried to a golden brown, with a few side dishes and a cold drink or two.

We have told everyone if they get a ticket to invite the police up to the site - that might get them out of it.

Left: Tom Hoopes, Contest Director, with a discus launched glider (DLG) at the aerotow field. Photo by Dave Garwood.

Right: Event worker Clark Miner assists on the line with aerotow launching. Photo by Dave Garwood.

Saturday August 30th 8:00 AM
South Side of
the Point of the Mountain
Draper Utah
Slope Competition

As I pull into the parking lot on the south side of the mountain I am amazed at the number of folks who have turned out for the day's events. Planes are either put together and waiting patiently or being assembled from the backs of over 100 vehicles. It's fun to see the many different license plates that ride the bumpers of the vehicles.

The flight line stretches for a hundred yards and is completely filled with all manner of machines.

The wind is scooting along at about 25 mph and it looks to be a great day.

Steve Reed is manning the transmitter impound and Clarence is hanging out, eyes skyward, watching his Marauder as he passes the four-hour mark for his LSF Level Five slope soaring section.

Tom Hoopes has pulled the pilots together for their pilots' meeting and the scale flying competition gets under way.

Each pilot has a club member/judge with him as he walks to the edge to start his flight.

Tom has designed this contest so that we get to see some beautiful scale ships go through some fun but fairly safe paces. It's a wonder to see these amazing planes in the air and to watch them drop their gear and make for the landing zone.

Once the contest is completed it's free fly time. Many pilots have a chance to experience "The Point" and I hear more than a few say how much fun it must be to live in Salt Lake and have this venue so close. For the record, it is.

As the flying part of the contest ends and the free fly section draws to a close, folks start packing up to head to the Saturday night BBQ, held in a nice little park in Sandy. The final static judging will be taking place there.

Honored guest Fred Maier from Buffalo New York prepares to launch his Leading Edge Gliders FW-190. Photo by Dave Garwood.

Fred Maier's Leading Edge Gliders Focke Wulf FW-190 in flight. Photo by Dave Garwood.

Everett Smiley's Schempp-Hirth SHK in flight. This plane took second place in Vintage Scale. Photo by Dave Garwood.

Left: Mike Neal's English Electric Canberra gets launched at Point of the Mountain. Photo by Dave Garwood.

Below: Mike's Canberra in flight. This plane took second place in Power Scale. Photo by Dave Garwood.

Phil Herrington's (Boulder, Colorado) Lancair in flight at Point of the Mountain. Photos by Dave Garwood.

Honored guests Ian Frechette and Cody Remington, both from Colorado, at Point of the Mountain. Photo by Dave Garwood.

Above: Event worker Everett Smiley's Schempp-Hirth SHK in flight. This plane took second place in Vintage Scale. Photo by Dave Garwood.

Upper right: Everett's Schempp-Hirth SHK gets a launch at Point of the Mountain. Photo by Dave Garwood.

Right: Everett with his Schempp-Hirth SHK. Note the large landing area at the Point of the Mountain site. Photo by Dave Garwood.

Dave Garwood from Albany New York flies a Sky King RC Products DAW Ka-6E from POTM on Saturday. Photo by Jim Harrigan.

Right: Phil Herrington's Leading Edge Gliders Kawasaki Ki-61 in flight. First place in Power Scale Sailplane. Photo by Dave Garwood.

Below right: Honored guest Vic Trucco from Sherwood Oregon prepares to launch Phil Herrington's Ki-61. Photo by Dave Garwood.

Below: Fred Maier's Leading Edge Gliders Focke Wulf FW-190 in flight. Photo by Dave Garwood.

Sponsor George Joy, Peak Electronics, flying his Habicht.
This model placed second in the Vintage Glider category. Photos by Dave Garwood.

Honored guest Ian-Frechette and his Red Tail Hawk, which took first place in the Vintage Glider judging category.
Photos by Dave Garwood.

Saturday August 30th 5:00 PM
Falcon Park
Sandy Utah
Dinner

Over a hundred folks are sitting together discussing the week's events and the great weather we have had. Famous Dave's Barbecue is catering the dinner, and we have a number of wonderful volunteers from the club to help serve the hungry pilots.

Now that dinner is done, the raffle starts and there are a lot of prizes to go around. Here are the final results of the slope contest, along with a list of all the folks that donated items for the raffle. We really appreciate the great sponsors that helped us make this event happen.

SCALE EVENT WINNERS

Scale Sailplane
1. Larry Bennington - DG-8005
2. Everett Smiley - Schempp-Hirth SHK
3. Sam Cook - ASW-28

Power Scale Sailplane
1. Phil Herrington - Kawasaki Ki-61
2. Mike Neal - English Electric Canberra
3. Vic Truco - Bell P-39 Airacobra

Vintage Sailplane
1. Ian Frechette - Red Tail Hawk
2. George Joy - Habicht
3. Pete Petrowski - RFD 1931

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http://mrshobby.ypguides.net

Peak Electronics
www.siriuselectronics.com

Radio Carbon Art
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Dave Nash's original design Lockheed P-38 is launched at Point of the Mountain, Sandy Utah. Photos by Dave Garwood.

Major sponsor Jack Cooper, Leading Edge Gliders, from Lucas Kansas launches Dave Garwood's Ka-6E. Photo by Jim Harrigan.

Sunday August 31st 2008
Point of the Mountain
South Side

This is a free fly day, so as long as you tag your transmitter you can go for it. At times there are five or six planes burning up the sky. Brent Woods has been manning the hot dog cooker for two days and is up here again making sure no one goes hungry. As we fly today, the dark clouds are quite literally on the horizon. The wind is picking up and we are seeing the end of the ideal weather we have enjoyed all week. I have since heard claims of the wind peaking at over 50 mph, but personally the highest wind speed I can speak to was 28 mph from a good wind gauge. In any event, towards the end of the day it is ripping.

Monday September 1st 2008

We are supposed to head up to a nice slope site in the northern part of Utah called Francis Peak. However, it has rained all night and that all but takes that site out of the picture. I am told that Dave Garwood and a few of the boys are heading up to Antelope Island, in the middle of the Great Salt Lake, to try their luck. Since I can't make it, I will ask Dave to speak about his time there on this rainy Monday.

"On Monday, Labor Day, we awoke to an energetic rain and hail storm, and so spent the morning indoors. Around noon the skies cleared, and on the strength of a forecast for south winds 10-15 MPH, we headed for Antelope Island. At Buffalo Point on the island some of the Colorado pilots had flown for a while before we arrived. Ian Frechette had spent some fun moments entertaining tourists with his Red Tail Hawk. About the time we arrived the wind died off and Ian, Cody Remington and Nick Stong headed for home. Joe Chovan, Jim Harrigan and I had lunch, and little by little a pleasant and steady light SW wind came up and stayed with us for the rest of the day. We got to fly light, long-wing planes for as long as we wanted, and we flew until after sunset. On Tuesday, Jim and I toured the Hill AFB Aerospace Museum and then drove up the mountain road to Francis Peak. There was next to no wind at the Peak, but the sun was warm and the views were impressive."

So that draws to an end Soar Utah 2008. This was my first time helping to coordinate the event and I would like to put out a word of thanks to many I haven't mentioned in this article.

To Russ Young for accepting the challenge to put it together and carving the wonderful trophies; Dick Bean for trying to herd cats, contacting vendors and the securing the slope; Everett Smiley for all the invaluable help with registering and detail items; Brent Woods for manning the food wagon and handling the Saturday night dinner; all the great wives and daughters who stepped up to serve a hundred hungry people; Steve Reed for impound duty, and what I understand was an awesome fried turkey dinner; Clarence Ashcraft for helping with that dinner as well; Tom Hoopes for CDing the contest and keeping things running smoothly; Erik Vogel and his wonderful wife Candice for hosting the Thursday night dinner at their home; Coop from Leading Edge Gliders for bringing a ton of planes to donate and some excellent adult beverage to share (can I get the recipe for that Coop?); Wid Tolman for volunteering for Monday (sorry about the rain); all of the amazing vendors that stepped up to help us make this event and raffle a success; my friend Tracy Johancsik for dropping some serious coin on a High Def video camera so we could shoot some great footage of the event; and last but certainly not least the attendees themselves. I had a great time meeting so many nice folks from all over the world. I hope that those of you that made it out had as much fun as I did.

See 'ya in 2010!!!

Jim Harrigan, Rensselaer New York, photographer.

Dave Garwood, photographer, launches a Sky King RC Products DAW 1-26 .

Joe Chovan and Jim Harrigan fly in light air on Monday from Buffalo Point on Antelope Island. Photo by Dave Garwood.

SOUTH AERICA

F3B TEAM TRIALS

Text by Lionel Brink, lionelbrink@perago.com
Photos by Derek Marusich, derek@excelnet.co.za

It rained.

And then it rained some more.

The month preceding the F3B Team Trial was probably the wettest all year and I was getting very nervous that the trials would be postponed again.

Let me put this in context – we have an average rainfall of around 600 mm for the year, and in one month we had almost recorded more than half of that!

Evan Shaw, the national F3B Representative, had the foresight to schedule two days for the trials, but this weather was being caused by intense low-pressure cells drawing in moisture from the warm Indian Ocean and running across 5 – 6 days per cycle.

Fortunately, the rain held off long enough, and we were treated to a fantastic day with some of the best soaring weather that Africa musters. We were also fortunate to witness the elite F3B pilots in SA competing against each other for one of the most coveted prizes – that of holding one of only three positions in the National F3B team.

On 22 November 2008 we arrived early at the GGGC field, finding that Evan and his team of helpers had already laid out the launch corridor, sights and buzzers. Everyone was matrixed and the organization was as smooth as velvet for the rest of the day, too.

Fortunately, the early start was made far more pleasant by breakfast at the field hosted again by Martie's travelling diner, a wonderful fixture at RC gliding events. I seriously doubt that we would have made the day without her, as the temperatures shot up to 34 degrees Celsius in the shade with an oppressively high humidity factor.

The glorious field we flew at also made it very special – the grass farm on which GGGC is based must be rated as one of the finest fields to fly thermal RC gliders in South Africa!

Evan's organisation was equally impressive in its efficiency. We managed six full rounds of F3B, which equates to a total of 144 flights (excluding re-launches) from the eight qualifying pilots.

If you do the math and using the standard FAI required turnaround distance of 200 metres from the winch, we probably ran, jogged, and walked over 57 km to collect individual parachutes! Anyone who thinks that F3B is not a physical activity clearly does not have the ability to understand this sport.

No report on F3B is complete without detailing the flights.

Round 1 saw Michelle Goodrum clinch the duration task with a convincing 9:58 and spot landing, electing to launch a minute into working time with her unballasted Ceres, drifting left and slowly around the field with the available lift which was very light so early in the morning.

Dion Liebenberg flew a 18.8 seconds for his first speed run with his Crossfire, after numerous re-launches into the moderately still air.

Craig Goodrum hammered the distance task home with a winning 26 lap first round score, or roughly 3.9 km in the allowed four minutes, flying a Ceres with some ballast.

Round 2 saw Michelle clinch duration again, improving her time to 9:59 and a spot landing.

This time around Craig Goodrum flew 21 seconds in speed in windy conditions, and also a 20 lap distance to clinch the round. Both flew their Ceres models with ballast.

Round 3 and Michelle shared the top line honours in duration with Paul Carnall flying his F3B Trinity, both recording perfect 10 minutes, but slipping into the 95 point landing (1 – 2 metres).

Dion clinched speed with a 20.2 second run and Herman Weber the distance task with 16 laps in a brief period of sink using a Ceres model.

Round 4 The highlight of F3B is always the speed run, but the humid conditions seemed to hold everyone back a bit. In a slight change of roles from the SA National Championships this year,

Above left: Dion Liebenberg and son Stephen with Herman Weber's Ceres.

Above: Paul Carnall launching Herman Weber's Ceres. Ricky Mitchell in red shirt on the left built most of the winches on the field.

Left: Lionel Brink getting ready to launch Michelle Goodrum's Ceres.

Dion Liebenberg launching Herman Weber's Ceres.

Michelle Goodrum was crowned speedster for the day, clocking the only sub 16 second run at 15.7 seconds with her ballasted Ceres, running at roughly 137.6 kph and which includes three 180 degree turns, during Round 4.

It may appear tough to be "beaten by a girl," but when you are flying against someone of the calibre of Michelle, it is a privilege to simply be on the same field as her!

Round 4 was in fact all Michelle: 9:58 for duration with a 2 metre landing, 15.7 seconds speed run and 23 lap distance saw her recording a perfect 3,000 point round.

Craig flew a 25 lap distance in his matrixed group to record a 1,000 pointer, too, after his #1 Ceres write off from the previous round.

Round 5 and Craig flew a perfect 10 minute duration with a spot landing, and 18.2 second speed run and another 26 lap distance task to clinch the round. Craig used the circle tow technique to maximise stretch in the monofilament nylon (81.5kg speed line) – zipping along just a few feet above the ground and then when he sensed building lift flooring the winch and zooming into the stratosphere with his very, very heavily ballasted Ceres.

The final **Round 6** again saw Craig carrying line honours across all three tasks with another perfect 10 minute duration and spot landing, 17.6 second speed run and 21 lap distance.

Derek Marusich also flew a perfect 10 minute duration with a spot landing to share the "partial" or task honours with 1,000 points.

Although speed and distance are exciting in F3B, the overall quality of the results from the duration task were not to be scoffed at either, and is probably a result of the focus over the past 12 months on F3J and thermal duration events, with most pilots maxing each round using their purpose-built F3B models.

Upper left: The remains of Craig Goodrum's model after he momentarily took his eyes off of it and started flying someone else's model.

Left: Dion Liebenberg bringing back what's left of his Crossfire after a high speed stall on a botched base A turn.

Above: Lionel Brink in action launching Craig Goodrum's Ceres.

Casualties were unfortunately aplenty, too. At the start of Round 3, and in a moment of madness, Craig took his eyes off his #1 Ceres just after the launch and then flew someone else's model until the now pilotless Ceres smote the earth with the most gruesome force some considerable distance away.

The damage was catastrophic – even the v-tails disintegrated. But the worst was that this was his first task for the round, so he had to sit the round out and use up all his throwaways. When I asked him where the forward portion of the nose was, he replied that it was too deep to retrieve and had left it behind!

As we have come to expect from this amazing competitor, he came back fighting in the very next round with his second model, although it did require some "preparation" during his thrown away round to get it flyable.

Next casualty was Dion Liebenberg in Round 4. During his speed run he turned early around Base A and in re-rounding his heavily ballasted Crossfire appeared to tip stall, cart wheeling it into the ground and shedding bits of very expensive carbon across the field. Again, as this was his first task of the round, he paid dearly with the entire round.

Wolfgang Steffny appears to have suffered from a radio "lock-out" when his X-21 spiralled into the ground during the Round 4 duration task and which rather comprehensively destroyed itself within a very small patch of the field. Unfortunately, not much remained to identify the cause of the crash.

Not to be outdone, Michelle lost elevator control of her model on launch in the duration task of Round 5 – possibly due to a bad battery or broken linkage. In her attempt to recover using only flaps for control, the nose snapped clean off in front of the LE, also destroying the v-tail pushrods. Bits of carbon tube joined the pushrods again, copious quantities of CA and kicker, carbon, old saw blades, bits from Craig's previously destroyed Ceres, and lots of tape, soon had her up in the following rounds again, and loosing only her duration score for the round.

Piet Rheeders, one of the veterans of F3B in SA, lost elevator authority on his Makhulu, a local designed and built F3B/J composite model, during the 6th round, but managed to land safely

Wolfgang Steffny flying distance with Peter Joffe calling.

without incurring more damage. He unfortunately had to sit out for the remainder of the round due to a lack of a back-up model.

Interestingly, in 1975 Piet qualified in 16th place for the SA trials of the first F3B World Championships, hosted in SA in 1976. He made the top 15 for the Trials when someone withdrew, and placed 9th. At the time Piet was flying an Aquila and his fastest time was around 30 seconds for two laps. In those days they flew only six minute duration slots and two lap speed runs. So in 34 years he has improved two places from 9th to 7th in the team trial!

We had more fun, too.

Herman's comment about pulling out our calendars to time his "speed" run resulted in a lot of good natured silliness.

Michelle's "touch, slide and go" during a speed run had the resident aerobatics judges awarding her a 7/10 for artistic interpretation/ For the record, she also cut a base during this run, and even with her double turn-around base "B" she still made a respectable 25 second run.

Opposite page:

Upper left: Michelle Goodrum hurriedly repairing broken off nose on her Ceres in order to complete the round.

Lower left: Ricky Mitchell holding Herman Weber's Ceres.

Right: Dion Liebenberg in action on speed with Herman Weber calling, Michelle Goodrum helping and lots of enthusiasm from son Stephen.

Right: Craig Goodrum on Base A speed.

Left: Busy base A for distance task.

Left below: Another base A distance scene.

Below: Wolfgang Steffny discussing damage with Michelle Goodrum after unexplained lock-out.

F3B Team Trails
November 2008

Rnd 1

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	9	58	1	1,000	23.9	787	19.00	731	2,517
Craig Goodrum	9	57	3	984	20.5	917	**26.00**	**1,000**	2,901
Dion Liebenberg	9	57	3	984	18.8	1,000	19.00	731	2,715
Paul Carnall	4	31	1	532	24.8	758	19.00	731	2,020
Herman Weber	9	43	5	950	28.4	662	21.00	1,000	2,612
Wolfgang Steffny	3	59	10	421	28.6	657	13.00	619	1,698
Derek Marusich	9	51	5	961	23.6	797	18.00	857	2,615
Piet Rheeders	9	06	2	918	33.6	560	10.00	476	1,954

Rnd 2

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	9	59	1	1,000	21.6	972	11	611	2,583
Craig Goodrum	9	57	1	997	21.0	1,000	20	1,000	2,997
Dion Liebenberg	9	54	2	986	21.8	963	8	444	2,393
Paul Carnall	9	59	1	1,000	30.7	684	19	950	2,634
Herman Weber	9	53	3	977	32.2	652	18	1,000	2,629
Wolfgang Steffny	9	48	7	941	25.2	833	12	600	2,375
Derek Marusich	9	57	2	990	24.1	871	15	833	2,695
Piet Rheeders	9	57	4	976	26.6	789	11	550	2,315

Rnd 3

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	10	00	2	1,000	25.4	795	8	500	2,295
Craig Goodrum	0	00	0	-	dnf	-	0	-	-
Dion Liebenberg	9	58	3	990	20.2	1,000	11	1,000	2,990
Paul Carnall	10	00	2	1,000	22.1	914	10	909	2,823
Herman Weber	9	53	4	976	22.8	886	16	1,000	2,862
Wolfgang Steffny	9	54	10	934	33.3	607	14	875	2,415
Derek Marusich	4	39	6	509	28.8	701	4	364	1,574
Piet Rheeders	9	57	3	988	25.3	798	4	364	2,151

Rnd 4

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	9	58	2	1,000	**15.7**	**1,000**	23	1,000	3,000
Craig Goodrum	9	58	5	978	19.3	813	25	1,000	2,792
Dion Liebenberg	0	00	0	-	dnf	-	0	-	-
Paul Carnall	9	00	9	866	24.5	641	19	826	2,333
Herman Weber	7	10	3	750	22.3	704	18	720	2,174
Wolfgang Steffny	0	00	0	-	29.2	538	16	640	1,178
Derek Marusich	8	15	0	714	27.4	573	19	826	2,113
Piet Rheeders	7	32	6	760	28.0	561	20	870	2,191

Rnd 5

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	0	00	0	-	19.3	943	25	962	1,905
Craig Goodrum	**10**	**00**	**1**	**1,000**	18.2	1,000	**26**	**1,000**	3,000
Dion Liebenberg	9	54	2	984	20.1	905	17	1,000	2,890
Paul Carnall	9	57	1	996	20.9	871	10	588	2,455
Herman Weber	9	59	6	963	27.2	669	13	765	2,397
Wolfgang Steffny	9	13	0	790	31.8	572	19	731	2,093
Derek Marusich	9	51	1	987	29.7	613	16	941	2,541
Piet Rheeders	9	40	4	950	23.0	791	20	769	2,511

Rnd 6

Pilot	Duration				Speed		Dist		Sub-total
	min	secs	dist	partial	time	partial	laps	partial	
Michelle Goodrum	9	59	2	991	20.6	854	11	688	2,533
Craig Goodrum	**10**	**00**	**1**	**1,000**	17.6	1,000	21	1,000	3,000
Dion Liebenberg	5	48	1	640	24.6	715	16	1,000	2,355
Paul Carnall	9	59	3	984	19.9	884	14	875	2,744
Herman Weber	9	53	3	976	22.3	789	12	750	2,515
Wolfgang Steffny	7	53	0	676	26.1	674	13	619	1,969
Derek Marusich	**10**	**00**	**1**	**1,000**	26.4	667	20	952	2,619
Piet Rheeders	0	00	0	-	dnf	-	0	-	-

Pilot	Throwaway partials			Partials sub-total			Overall	Ranking
	Duration	Speed	Dist	Duration	Speed	Dist		
Michelle Goodrum	-	787	500	4,991	4,565	3,991	13,547	2
Craig Goodrum	-	-	-	4,960	4,731	5,000	14,690	1
Dion Liebenberg	-	-	-	4,584	4,584	4,175	13,344	3
Paul Carnall	532	641	588	4,846	4,111	4,291	13,248	4
Herman Weber	750	652	720	4,841	3,710	4,515	13,066	5
Wolfgang Steffny	-	538	600	3,762	3,344	3,484	10,590	8
Derek Marusich	509	573	364	4,653	3,649	4,410	12,712	6
Piet Rheeders	-	-	-	4,593	3,499	3,029	11,121	7

And when CD Evan Shaw calls lunch break, everyone sits down and eats lunch!

Herman, who achieved a smarter re-entry from a similar touch and go, was scored 8/10 for his efforts, also during a speed run.

A round of applause from the spectators and pilots was provided to Wolfgang when he saved his model from crashing at the end of his speed run.

To thank Evan and the helpers the MGA bought them all a round of beer at the end of the day. When Martie asked how many beers they required, the unanimous response was “all of them”!

In keeping with the National Team Selection Process, the final results were scored using the current 2007/2008 F3B rules from the FAI/CIAM where only the lowest scoring of each task (partial) is considered a throwaway after six rounds have been flown.

As is typical of any well run event, we would like to thank the organisers and particularly the helpers who dedicated their entire day to assisting a handful of RC pilots. I have often felt that there is only one thing worse than not flying – watching everyone else fly! We are deeply ingratiated to these dedicated individuals who make these events possible.

Fly safely!

THE 2M CHALLENGE

November 23, 2008

Greg Potter, mrgregpotter@hotmail.com

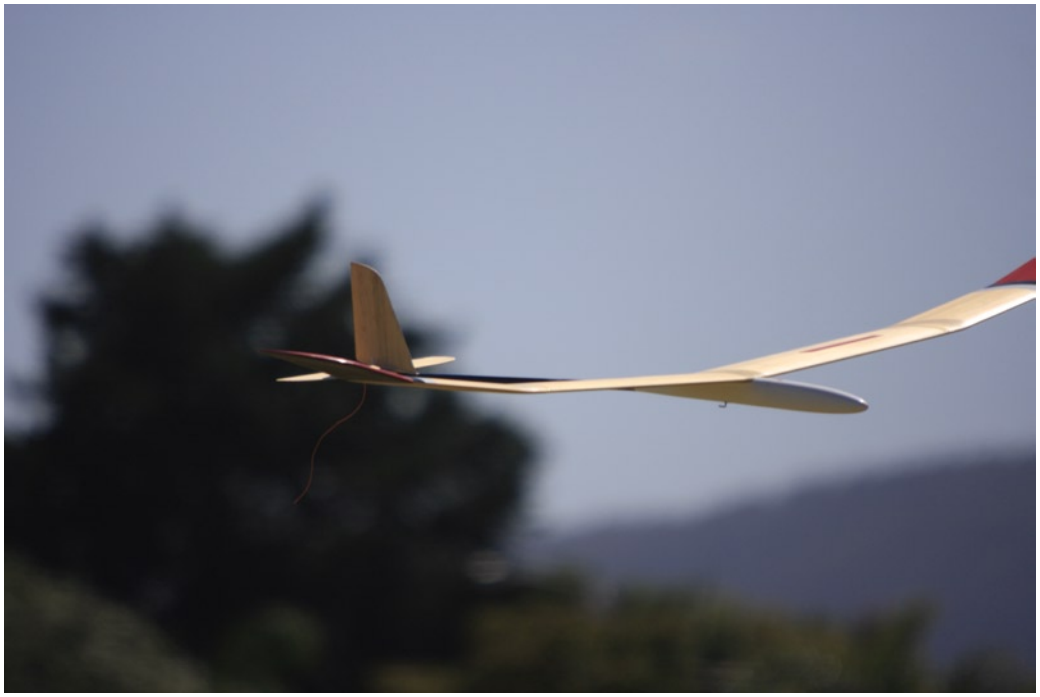
About two years ago Andrew Meyer, who now resides in Chicago, proposed a 2m challenge competition for the Southern Soaring League (SSL) in Adelaide, South Australia, with the aims of being simple to run, short, fun, and cheap to get into.

The competition that has evolved is based on using a single bungee (hi-start) of 100 ft rubber and 400 ft monofilament line to launch, a five minute duration task, and a spot landing inside 10m, with 50 points for 1m, 45 for 2m, etc. We set down about nine comps per year.

All models must be Rudder/Elevator with optional spoilers only. Any type of construction is allowed.

Models used during the year include the ArtHobby Boar, Sagitta 600, Great Planes Spirit, Great Planes Fling 2m, MM Glider Tech Grand Illusion, Goldberg Gentle Lady, Fineworx Miles, and a few scratch built own designs. The Boar is by far the most popular model used this year.

Wim Belgraver launching John Blanchard's Boar. Wim won on the day.



Competitors fly one after the other with everyone else helping out by timing or retrieving the bungee. The launch order is flexible.

Normally we have six to eight flyers per event, so we just use a single bungee and we fly six to seven rounds on a Sunday morning before lunch. Today, however, we had 14 entries so we ran two groups of seven, each using a single bungee.

A perpetual trophy is then awarded based on the best six scores out of nine, or a similar proportion depending on how many comps are actually completed.

For a local glider competition this is one of the largest gatherings for this year for any type of soaring in the state.

Over the year 19 different flyers have competed at least once in the 2m challenge. This competition has been responsible for introducing several new flyers to thermal competition flying.

The event today was flown in light southerly winds with some big lift and the attendant big sink, blue sky with a few clouds. Very pleasant flying conditions with seven rounds completed between 9am and 12 noon.

RESULTS:

1st	Wim Belgraver
2nd	Don Berry
3rd	Greg Potter

Upper: Don Berry's Boar. Don was second on the day.

Lower: A Great Planes Fling

Upper row: (L) Jesse Smith - always willing to help run the event and record the scores, (M) Jamie Nancarrow, (R) Robert Gunn flying his first 2m challenge event.

Right: Greg Potter launching Mark Stone's Boar. Mark is SSL President; Greg was third on the day.

PULL - PULL Cable System for Sailplane Controls

By Peter Carr, WW3O, wb3bqo@yahoo.com

If you have a particularly large ship to build, or are concerned about extra tail weight, you might consider the use of pull-pull cables for your next project.

Several years ago an old flying buddy, Ed Lightcap, from the Pittsburgh Pennsylvania area, told me about using pull-pull cables on his sailplanes. He tried to explain the benefits of the control setup, but I didn't listen.

The main problem was finding a source for the wires that run from the servo to the control surface at the rear of the fuselage.

Later I was told about Pylon Brand 7-strand control-line cables of .015 inch diameter that were very strong and light weight. That solved the cable problem, but I still didn't have a clue about how to connect them to the clevises.

Sullivan Products makes a clevis and threaded shaft coupler that is supposed to be soldered to piano wire. After some trial and error, mostly error, I found that soldering control-line cable to brass didn't work.

I then inserted the cable along with a small diameter dress pin and crimped the brass shaft down onto the two. The result was surprisingly strong and light. I cut off the extra dress pin length and put a drop of CA glue on the joint. Both cable ends were attached to the Sullivan clevises in this manner.

That left the other end of the cables where they attach to the servo. I intended to make any needed rudder adjustments at the rear of the fuselage, so the servo arm connections would be fixed.

I cut two pieces of 1/64th inch brass tubing to about 1/4th inch length. The cable was routed through a tube, then through the outer hole of the servo arm.

It was then folded back and run through the tube again.

To be sure that the joint didn't slip, I folded the cable again and ran it around and back down the tube a third time.

Once this was done. I crimped the tubing and added a drop of CA glue to complete the job.

The fuselage is a Scepter kit from Mountain Models <http://www.. mountainmodels.com> out in Colorado.

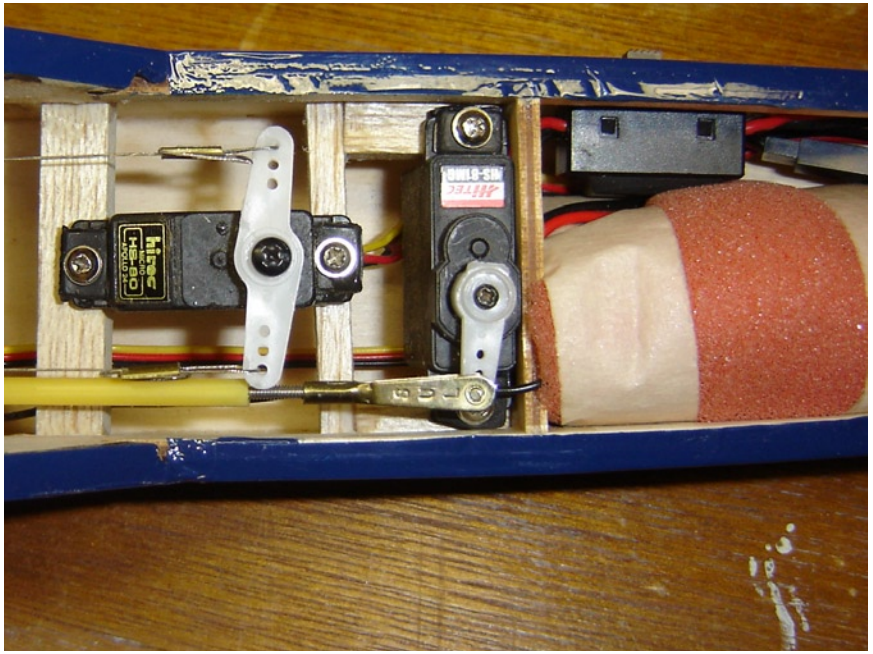
I'd finished the fuselage and tail but left the top rear sheeting off until the controls were installed.

The bulkhead just behind the servos has a horizontal slot where the control cables pass through. There are also bulkheads down the fuselage but they have big cutouts for the controls.

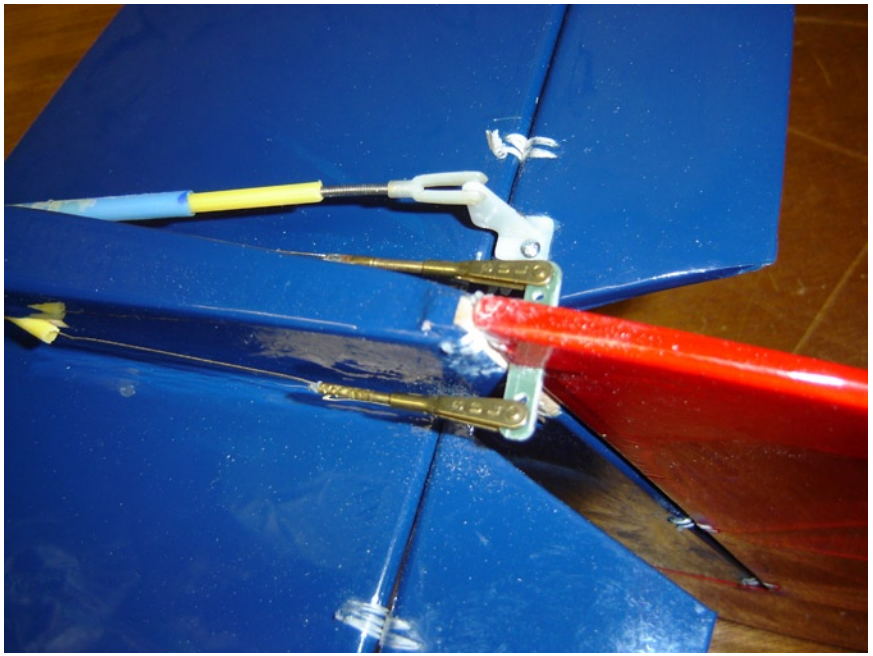
The exit at the rear of the fuselage requires bearings for the pull-pull cables so they don't cut into the wood and bind. I used two short lengths of inner Nyrod (yellow) for these exit bearings.

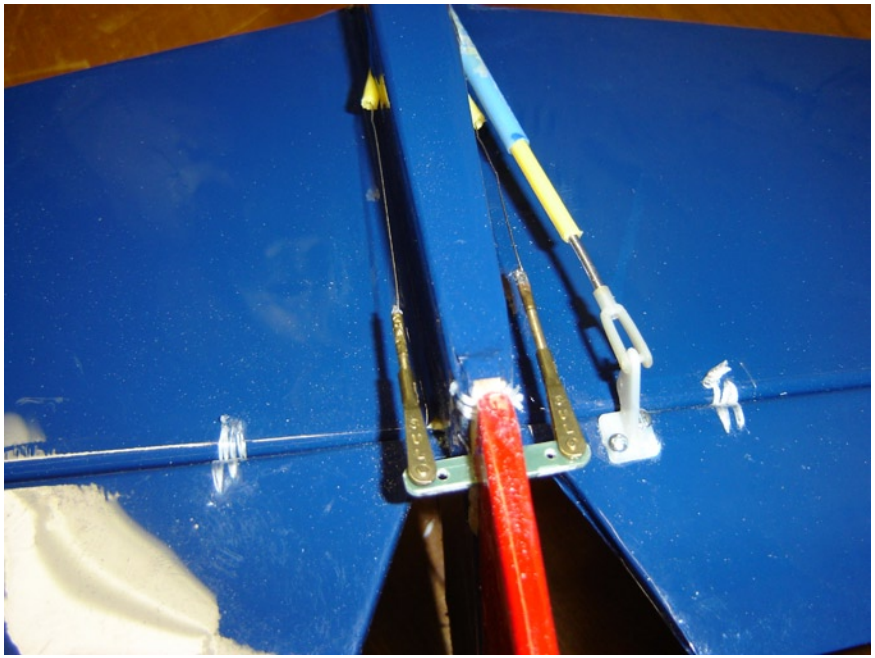
I really like the old "figure-8" stitched hinges. Those on the Scepter are dental floss and make a very strong and flexible hinge. Since the rudder of the model is under tension from the pull-pull cables there isn't any chance

The two servos are mounted in the fuselage and aligned so that the elevator pushrod is underneath the rudder servo arm. The pull-pull cables are attached to the arm of an HS-80 servo. The area around the servo makes it difficult to make adjustments so they are done at the tail.



The rudder and elevator are hinged using dental floss in a "figure 8" pattern. This makes a very strong and slop-free hinge that has practically no drag on the servo.





The rear bottom of the Scepter fuselage with the rudder and elevator controls. The pull-pull cables for the rudder exit the fuselage sides through short lengths of inner Nyrod tubing to prevent binding.

The Scepter fuselage is buttoned up. The Pylon Brand cables are .015 inch diameter and will work with ships up to 56 inches in length. Longer fuselages might require bigger diameter cables. The radio is a MicroStar 2000 encoder with FMA RF deck and a Series 73 Kraft case on Ch-08.

for slop to develop in the linkage or the hinge.

The rudder on the Scepter is an overbalanced design, and this glider can be tricky to fly if slop develops. The use of these pull-pull cables makes that nearly impossible.

By carefully choosing the location of the rudder and elevator servos, it was possible to align the pull-pull cables so they contact only the rear Nyrod bearings along the fuselage.

In terms of maintenance and precise control, this arrangement seems ideal. Luckily, the Scepter has a big radio room, so servo placement was easy.

I also have a Gaggler sailplane, designed by Carl Lorber in 1970, that has these pull-pull cables. The ship has four seasons on it and there has been no trouble with the rudder cables in all that time.

As you may know, the rear fuselage of the Gaggler is mighty small, so cable routing was a challenge. It all worked out perfectly and I expect the same results from the Scepter.

If you have a particularly large ship to build, or are concerned about extra tail weight, you might consider the use of pull-pull cables for your next project. The small amount of extra time and work will be well worth it.

Eric Eiche's OBS, flown by Bill Hanson, comes in for a landing.
Photo taken at a Monroe Washington aerotow event by Dave Beardsley. Nikon D1X, ISO 125, 1/1000 sec., F5.3, 210 mm.

Supryssa

My entirely homemade Supra

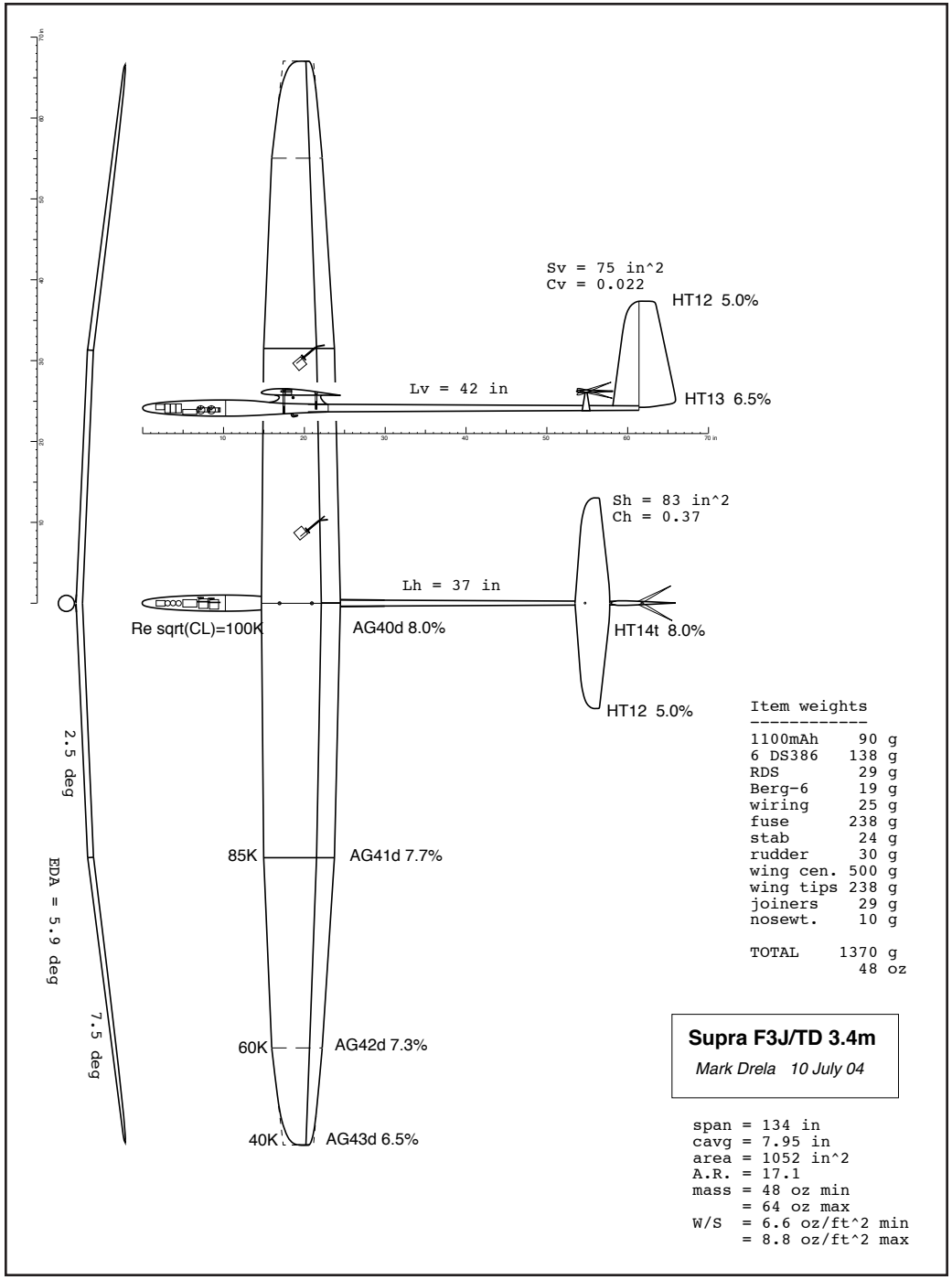
by Alyssa Wulick, awulick@hotmail.com

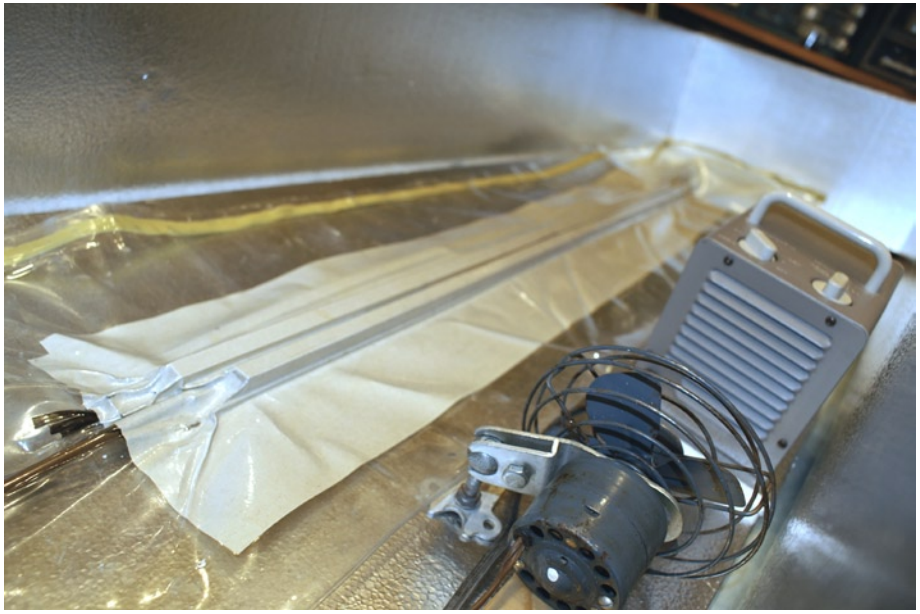
I have been building and flying model sailplanes since I was six years old. The first plane I built was a Highlander (stock), then a highly modified House of Balsa 2x6 (see *RCSD* September 2003), then the tailless (and nearly flightless) plane I call Diva, based on a German design.

Three of my good friends, Brendon Beardsley, Michael Knight, and Connor Laurel, went to Chicago in 2007 for the F3J Trials in anticipation of the World Championships that was to be held in Turkey in 2008. I decided to step up my career as a model airplane builder, designer and flier and try to one day join my friends and go to Chicago and fly in the trials as well.

I originally wanted to buy an ARF Supra, but with my teenage salary I didn't have enough to buy one! So I asked my grandpa if he could help me out. He said that he would help me not buy a Supra, but build a Supra. So I got to work. I started my Supra during Christmas vacation, December 2007.

I got the plans and construction details for the Supra online <http://www.charlesriverrc.org/articles/supra/supra.htm>. There are a few modifications I made to the basic design because of the materials





Interior of “the oven” with spar caps in the vacuum bag in the left photo, and the fuselage halves being bonded together in the photo on the right. The oven is made of half inch styrofoam with a silvered interior. The heater has a built-in thermostat which is quite accurate, but its fan only runs when the heating element is on so there’s a small fan which runs continuously.

I used and because this was another learning experience for me.

I used West System epoxy number 105 and hardener number 206 which I bought at a boat shop, along with mold release wax and PVA.

My grandpa had a lot of three ounce fiberglass cloth and several small rolls of carbon fiber tow, plus a couple of sheets of pink foam.

The only part I had to buy was the carbon fiber stabilizer platform which I bought from Kennedy Composites <http://www.kennedycomposites.com/supra-repl.htm>. Everything else was made in the shop, including the carbon fiber spars.

OVEN

All of the parts I made had the first part of the curing process take place in an oven at 120 degrees for at least four hours. First I had to make a small oven out of Styrofoam with a reflective covering on the inside to help hold in heat. I held the box together with duct tape. The heat came from a small electric box heater with a very accurate thermostat. A small fan was placed behind the heater and ran continuously to keep the air moving. I cut a small space in the side of the box against the bottom for the wires for the heater and fan along with the vacuum bag tubes. I also put a small hole where I could stick the thermometer to make sure I was maintaining constant heat. The hot box was 66" in length, 20" in width and 9" in height.

HOT WIRE BOWS

We had two hot wire bows available, a 26” bow and a 45”. My grandpa had these sitting around at home from previous projects. I was thinking that the 26” bow would cover everything, but I

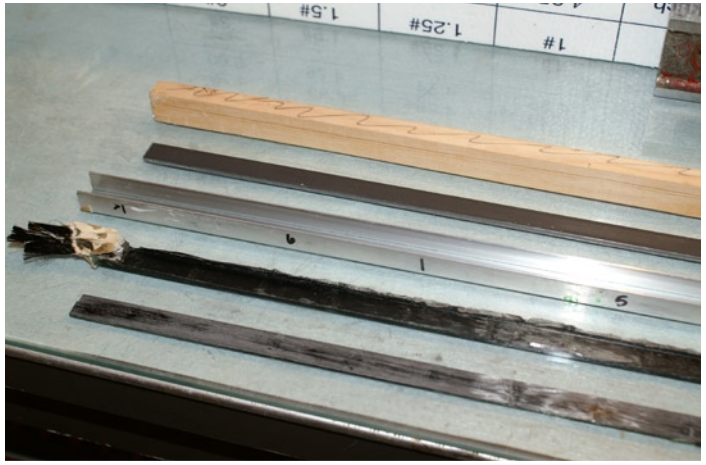
was wrong. I ended up using the 45” bow for the pivot cuts.

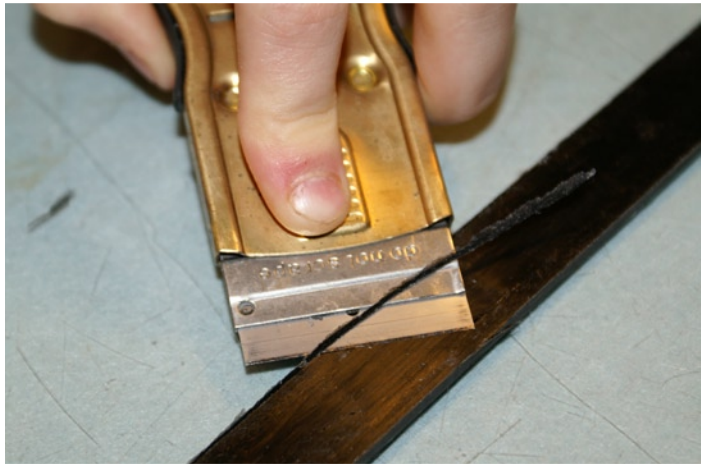
SPAR CAPS

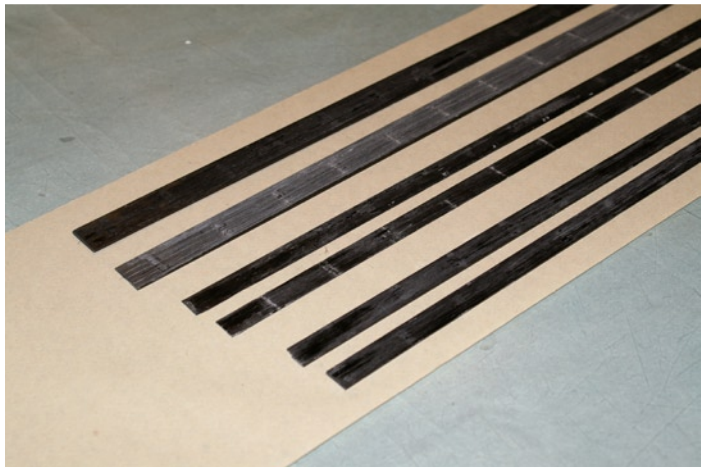
I made all of the carbon fiber spar caps using carbon fiber tow grandpa picked up from Merrill Brady at Visalia a couple of years ago. I went to Home Depot and bought spar molds (3/4" and 1/2" aluminum channel), cleaned them with acetone, and used wax and PVA.

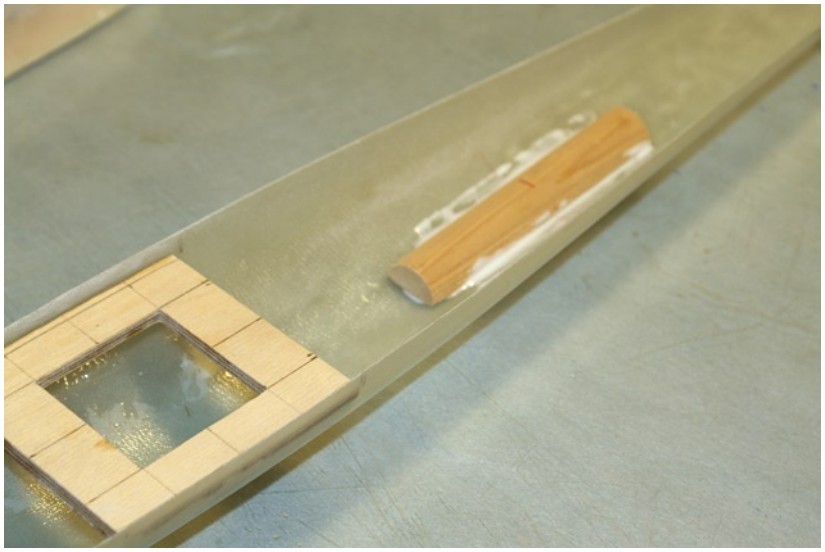
By putting long pieces of carbon fiber tow down in the channel, epoxying it down, then shorter pieces, and repeating this process, getting smaller and smaller each time, I made spar caps with tapered thickness — six layers to one layer for the wing tip caps, and 11 to six for the center panel caps. With the carbon fiber tow and epoxy laid down, I put an iron bar into the channel, and then a strip of wood. This was so I could vacuum bag the spar caps and all the excess epoxy would work its way out.

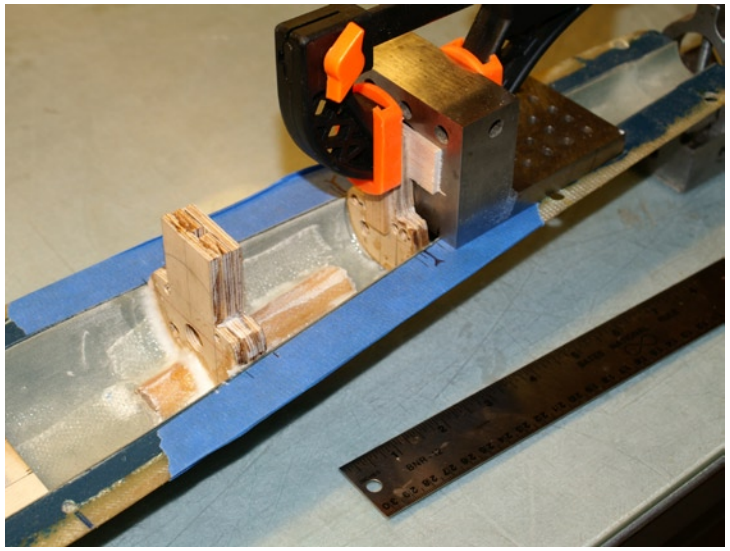
When the vacuum bagging process was over, I took the channels out of the hot box and bag, removed the piece of wood and the metal bar, and then used a wooden chisel to get the spar caps out of the channel. All the excess epoxy had squeezed out (Eeeeew!) so I had to trim off a small amount of carbon fiber and











epoxy flashing. Then I sanded them down so that the surface would bond with the spar webbing.

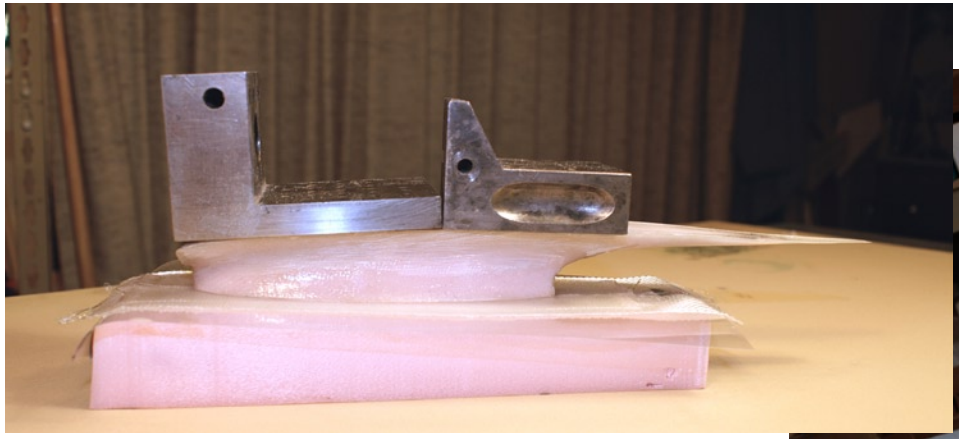
FUSELAGE

I made the fuselage using a female mold and fiberglass cloth. The mold came from Garry Jordon, who lives in Brisbane, Australia. He used this mold for his Australis, an F3B plane. This was a pretty easy job, because all I had to do was wax the mold, put some cloth in it, epoxy it in, then place it in the oven for about a day. I used ½ oz. cloth for the first layer, and then four layers of 3oz. cloth.

Before popping the glass out of the molds, I went around the edge of the molds with a chisel to trim off all the excess material.

Along with the fuselage, I also had to make a canopy, about a fifteen minute job. I laid down layers of fiberglass inside the fuselage mold with epoxy so it would be the correct shape. About a day later it was fully hardened. I then trimmed the canopy to fit the molded opening. To hold the canopy on, I added some 1/16" music wire to the ends with some more fiberglass and some 30 minute epoxy.

I put more fiberglass cloth in the bottom of the fuselage where the tow hook block went for more support during launch, then I made the plywood bulkheads for the wing hold down system. After getting the servo tray



mounted, I put the two halves of the fuselage together and reinforced the seam with fiberglass tape from TAP Plastics.

PYLON

I had to build a pylon because the fuselage mold doesn't have one — the Australis has a shoulder-mounted wing. To build the pylon, I took a block of pink foam and used the fuselage as a guide to cut the lower surface. For the upper surface I used the lower surface of the wing root template. Then I used a round Permagrit sanding tool to make the block a more aerodynamically sound shape.

I covered the surface of the pylon with wide fiberglass tape. There are three layers of this tape. I cut out the tunnel for the wiring and the bulkheads later.

BOOM

I decided to use a pool cue as the form for the boom, and bought special woven fiberglass tubing that is like a Chinese finger trap from CST <http://www.cstsales.com>.

I waxed the pool cue and then put on a thin coat of Vaseline. I put a piece of this glass tubing over the prepared pool cue using a cardboard tube, then wrapped a layer of unidirectional cloth with the grain running down the length of the boom, then put on another layer of the woven tubing. I used my plastic gloves like a squeegee to get rid of the excess epoxy (which was extremely fun!) and to stretch the fiberglass layers tight.

When it came out of the hot box, I used a six inch length of drill rod and a hammer to knock the boom off the pool cue. It worked, and I had a perfect boom!

Like the pylon, I put lightweight spackle on the boom to make it smooth.

I trial fit the boom on the pod of the fuse and it fit perfectly, and it was HUGE! I slipped on the "V" mount, taped on the fin and rudder, and screwed on the elevator just to see what it looked like, and it looked much better than I thought it would.

TEMPLATES

I had to make upper and lower surface templates for the wing (four sets), stabilizer (one set) and fin and rudder (one set).

MacFoil < http://dogrocket.home.mindspring.com/macfoil.html> was used to print out the patterns, then it was off to the jig saw to do the rough cutting.

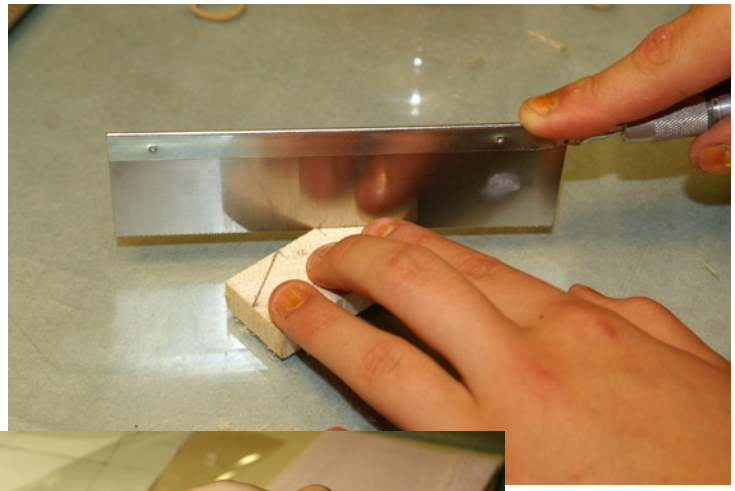
Back in the workshop, I put each template in a padded vice and used Permagrit bars to sand the plywood down to the template line.

I used fine sandpaper to finish the edge so it was smooth, and I didn't have any trouble hot wiring the foam cores.

I put lightweight spackle on the wing pylon to make it smooth and mounted it to the fuselage using epoxy and micro-balloons. The plywood bulkheads got a final trim to match the top of the pylon.

FIN AND RUDDER

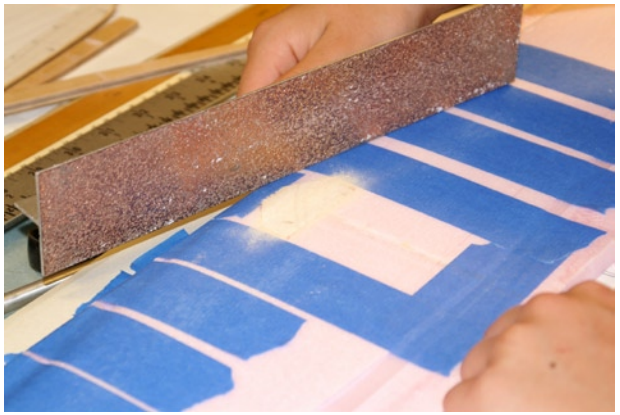
This was the first flying surface that I actually made. I used the long bow and a pivot point to do this. After the foam core was cut, I had to sand the tip to shape, and make the grooves for the pieces of carbon to go in. All I did was tack the carbon in, because I knew that when I epoxied all the glass on, the excess epoxy would sink into the groove, keeping the carbon in place.

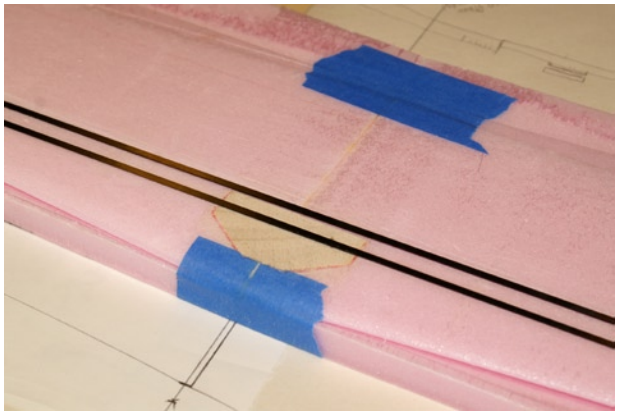


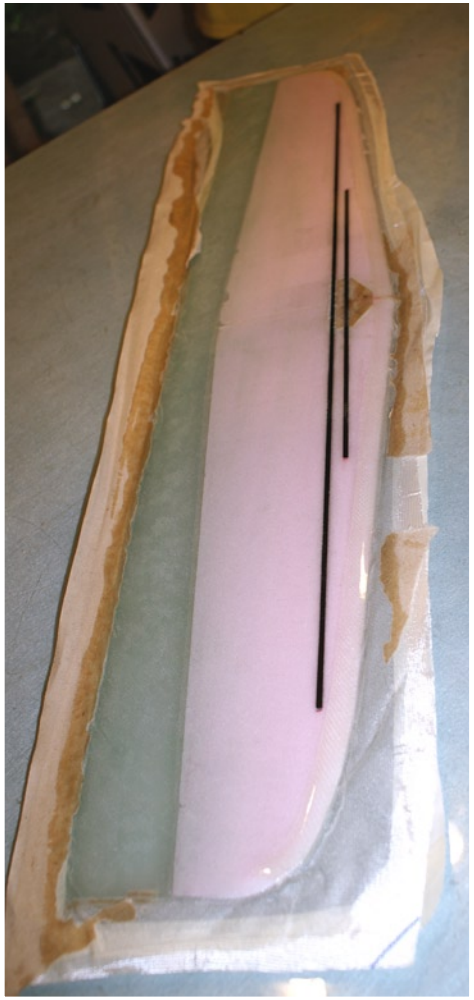
I cut the hinge line, faced the edges, and then added the control horn. The control horn I used was a nylon ½A horn. I cut off the base, roughed it, and epoxied it into the foam.

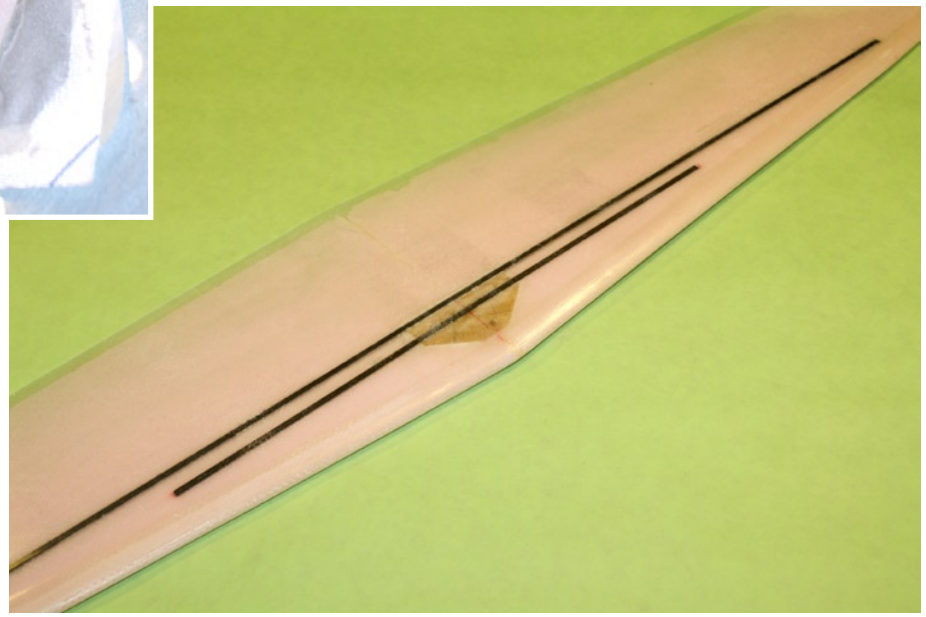
STABILIZER

To make the two stabilizer sides, I used the 45” bow and the pivot point again. I made the stabilizer a little bigger than the Supra stabilizer, for more control.



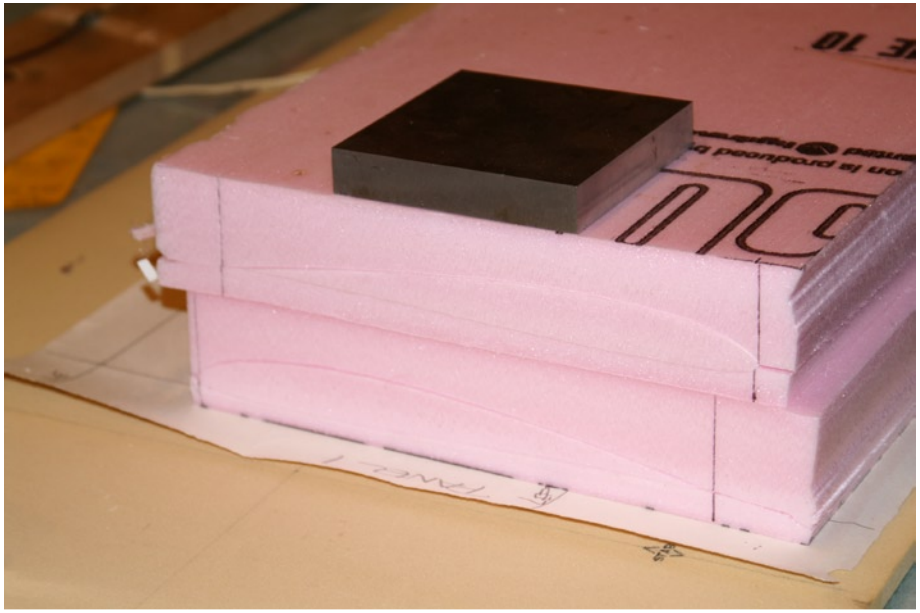






I put in an oddly shaped piece of end grain balsa in the stabilizer foam. This is to add support for “V” mount. I epoxied the piece in and sanded it down to match the stabilizer surfaces, then used a sandpaper strip attached to a piece of balsa to make the channels for the carbon fiber rods that were to go in next, after they was trimmed to size. I glued in the carbon fiber spars, then shaped the stabilizer ends.

My progress as of mid-July 2008. The pylon is made but not hollowed out or attached to the fuselage at this point.



After the stabilizer came out of the vacuum bag, I trimmed all of the extra epoxy and fiberglass off that got squished out. I routed out the indent in the small wood block for the “V” mount, and drilled the hole for the mounting screw. A few drops of CA on the end grain balsa hardened it a lot. Done!

WINGS

Obviously, I had to do the wings next. So I started up the 45” long bow and got out some pieces of foam that would be the appropriate size and thickness for the wings with a bit of extra room for the foam beds. I used the SD7037 airfoil. I chose this because it is slightly thicker than Dr. Drela’s Supra sections (AG 41, AG 42 and AG 43), and Dave Beardsley told me that the 7037 would carry the weight a little better.

The tip panels were cut using the pivot method. I was going to use a weighted arm system to get the taper for the center and middle panels, but it took too much time to set up, so I cut them by hand.

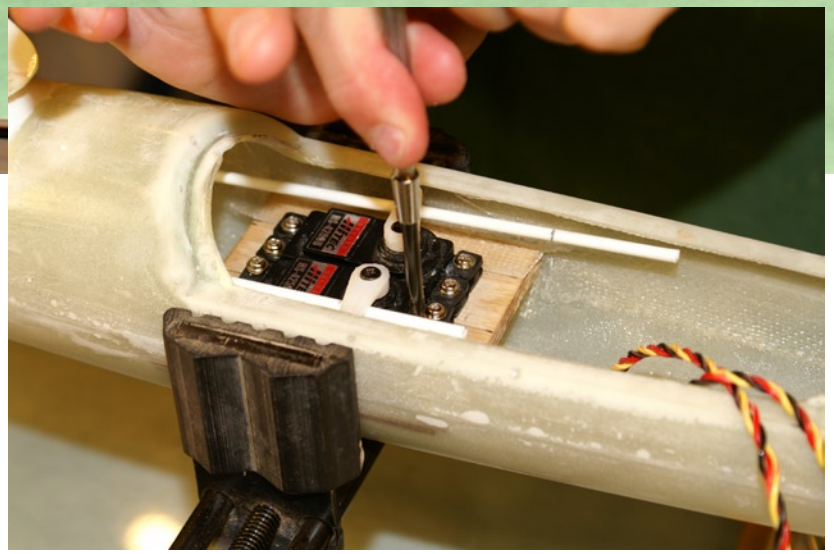
I cut out the slots for the spars. For the center section, there is a specially made piece that the wing bolts go through. It’s a piece of end grain balsa with circuit board plates on each end. The front circuit board plate goes between the two center panel spar caps. This piece I wrapped in two layers of the woven glass tubing. I cut a hole in the foam core where this piece will go inside the wing.

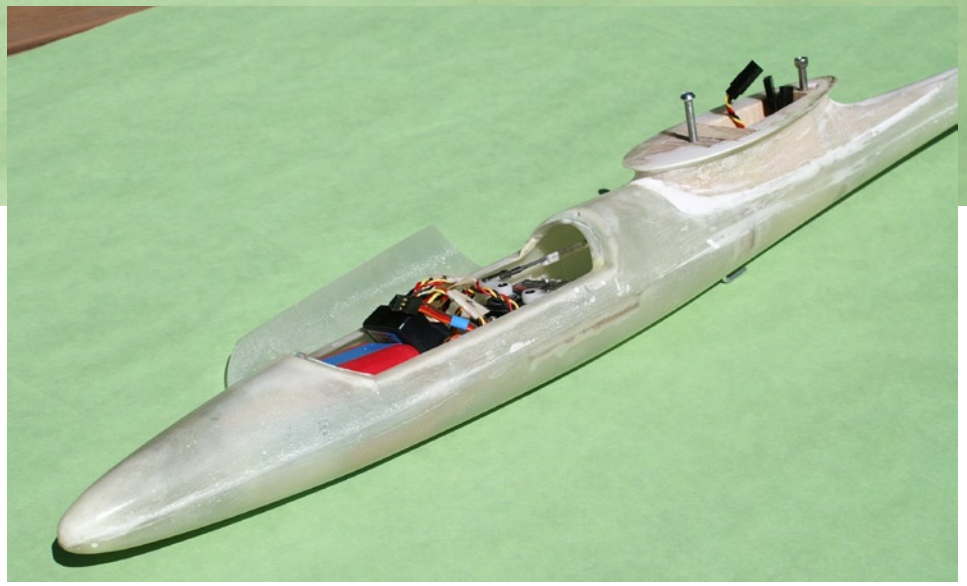
The center panel spar system uses the carbon fiber spar caps and vertical grain balsa webbing. Cutting the webbing was an adventure, and getting the webbing down to size took quite a bit of sanding. I took the spar caps that I made a while back and cleaned them with acetone. I took the balsa webbing and “sandwiched” it in between the two spar caps and epoxied them together.

My wing joiners are two ¼ in. square carbon fiber rods side-by-side. I used end grain basswood for the receptacles.

(This has worked out very well.) Instead of wrapping the spar with Kevlar tow, I used the braided fiberglass tube again. Once the wrap had cured and was trimmed, I made a small hole just big enough for the circuit board piece to fit through. Installing the spars was next. I put it in the slot that I made for it in the wing and tack-glued it in, made a slight angle for the dihedral, and filled in the empty space above the wing hold-down with soft balsa, then filled in the other spaces with ten-minute epoxy and micro-balloons or light spackle.

After I finished this process, I covered the wings in glass cloth and vacuum bagged them in the hot box. Before I knew it, the wings were due to come out of the hot box. I took them out and started to cut the ailerons and flaps out. I decided to not cut out the flaps above the fuselage because they would not clear, so I





left it a solid wing there instead of cutting the piece entirely off. When I finished, I faced all of the bare foam with glass tape and epoxy and threw all of the parts back into the hot box again for another couple of hours. The wings were finished, for now.

ASSEMBLY

I epoxied the boom to the fuselage and epoxied the fin and the stabilizer mount to the boom.

The other things that I had to do were really simple, but very time consuming. I had to reverse a flap servo, install the pushrods, and make some wire extensions for the servos in the wings, then install all of the radio gear — receiver, battery pack, and six servos. My grandpa helped me out a lot with all of the wiring.

I cut out the spaces for all of the servos and realized that it is a bad idea to put wiring in and then cut the holes for the servos. I had to make a new wiring harness for the right wing because I completely destroyed the one I had put in before. This brought my project to a halt while I got everything straightened out.

Grandpa made a cool 5-cell battery pack for me. There are four cells in the usual square configuration and one cell that sticks out in front. The cells are 3300 mAh subC NiMH, and the pack nestles right into the nose of the Australis fuselage. The fit is snug but not tight.

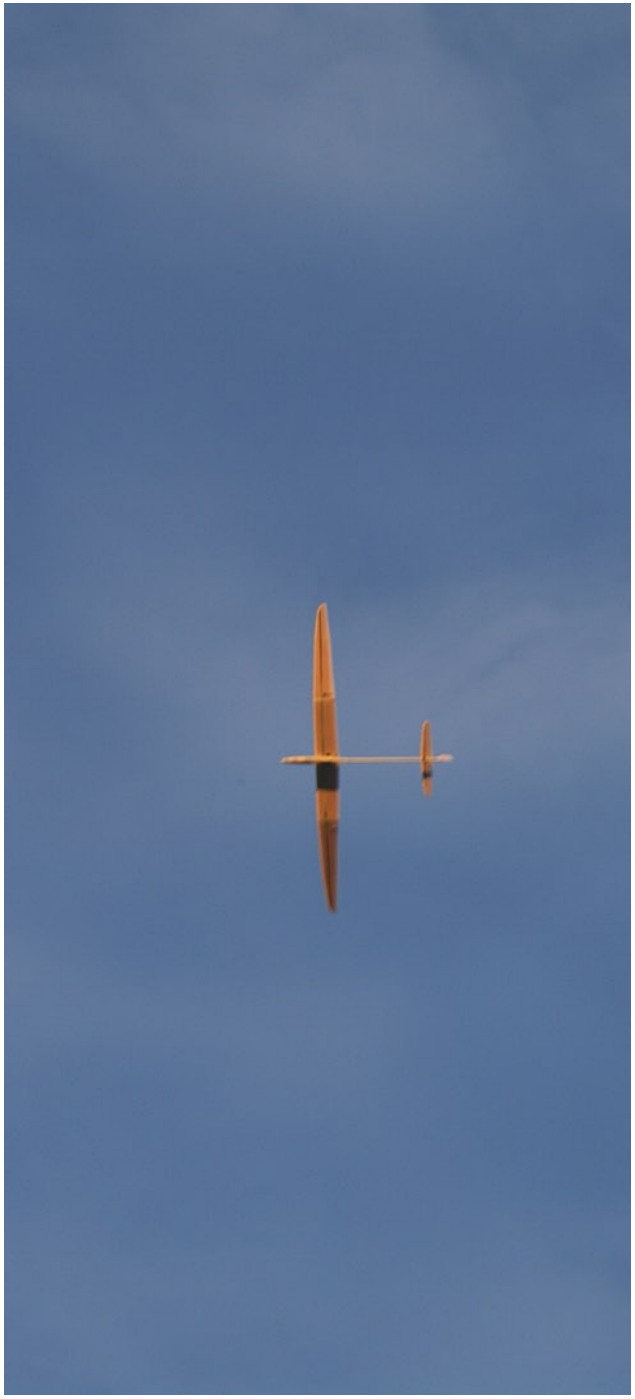
After installing all of the pushrods and radio gear, and programming my JR XF421EX 5-channel transmitter, Supryssa was ready for its maiden flight, and so was I.

The following Wednesday, September 3rd, I went to 60 Acres with my new plane and set it up. Dave Beardsley and his son Brendon helped me with the maiden flights: Brendon launched and Dave flew. It didn't crash like in the dreams I was having weeks before!

Dave put in two flights and I put in one.

Dave said it flew so slow, even though it was heavier than the ARF Supra. He was so impressed that he loaned me his "spare" JR 9303 transmitter so I could

Photos from the maiden flights at 60 Acres South, the SASS home field.



My first contest flight. Brendon Beardsley is launching, Michael Knight is watching, and that's me over on the left, transmitter in hand.

actually have wing camber changing and separate flight modes.

Sherman Knight also flew my Supra and recommended that I should take about an ounce and a half out of the nose, so I did.

My grandpa and I decided to help with a SASS contest on the following weekend. I took Supryssa with me, just to show it off.

Before I knew what was happening, Brendon Beardsley talked Sherman Knight into programming the borrowed JR 9303 transmitter to match my plane and, despite my lack of experience flying Supryssa, I was entered in the contest!

Brendon launched, timed, and coached me, and my first flight was 2:37 for a 3:00 task, and I actually landed on the field!

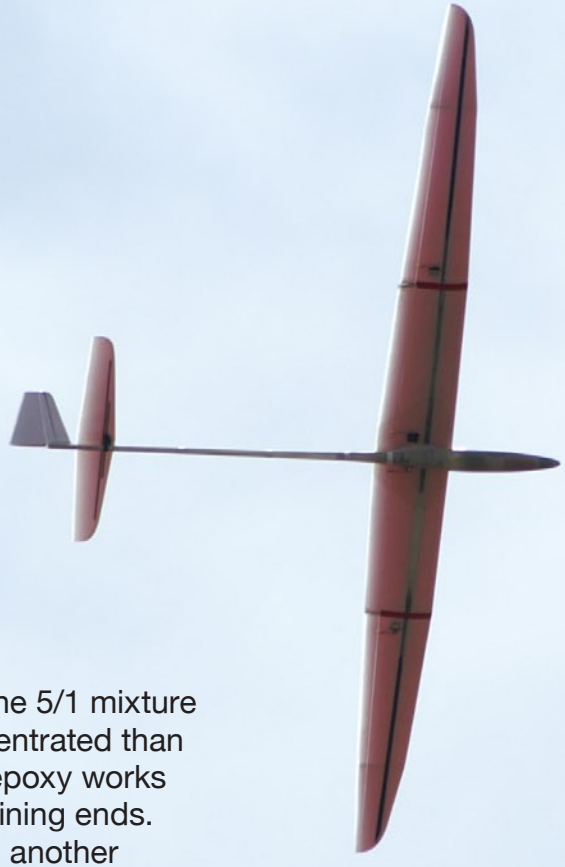
I didn't place in the contest, but I did get some flight time with Supryssa and a sophisticated transmitter. Launch, cruise and landing modes — cool!

I think it flew great at 60 Acres, but it flew even better in Visalia, maybe because of less nose weight. In Visalia, Dave Beardlsey set up a zip-start and put me on the buddy box after duplicating my 9303 "Sherman" programming into his. One of my flights was more than a half hour, a couple were over fifteen minutes. Later on, Sherman Knight took over for Dave and I was able to put in a few more flights.

When I was in Visalia, I was thinking about the way epoxy works and the reasons why the mixtures are 50/50 for fast hardening or 5/1 for slow hardening. So I asked the one person who could maybe help me out, Jim (JT) Thomas, a

Visalia!

Dave Beardsley put me on the “buddy box” so he could help me learn to fly thermal turns without spiralling in or stalling. Sherman Knight helped me later on, and cringed when I did sort of an F3J-style landing.



chemist. Jim told me that the 5/1 mixture hardener is just more concentrated than in the 50/50 mix. The way epoxy works is kind of like dumbbells, joining ends. There's one dumbbell, then another dumbbell comes and attaches to the end of it, then another, and another, etc., until a long chain is formed. The hardener is what makes the "dumbbells" join together and also affects the curing speed. He also said that you should mix and spread epoxy cool and cure it hot. Even not knowing this vital piece of information, I did it correctly, based on some information I got from Daryl Perkins through the RC Soaring Exchange.

I really owe a special thanks to the entire SASS club and especially to Dave Beardsley and his son Brendon, Sherman Knight and his son Michael, Jim Thomas, as well as my grandpa, who went through a lot of thinking, and about $300 to buy extra materials, to help me fulfill my dream of having my very own Supra... Supryssa.

Receiver
Hitec RCD3800 7/8 channel FM/PPM

Transmitter
JR XF421EX 5-channel FM/PPM (initial)
JR 9303 9-channel FM/PPM (current)

Servos
Ailerons: 2 — HS81MG
Rudder & Elevator: HS311 each
Flaps: 2 — HS225 (one reversed)

Weights
Stabilizer: 1.9 oz.
Fin and rudder: 1.3 oz
Wing center panel: 25.1 oz
Left tip panel: 7.4 oz
Right panel: 7.3 oz
Fuselage with fin and rudder, stabilizer mount, all radio gear: 44.7 oz
Wing rods: 1.3 oz

Where to Fly

By Thermal Sage Frank Weston
Courtesy of the Santa Clarita Soaring Association <http://home.earthlink.net/~djndan/> and Dan Werner

For those of you who don't remember the Magic series of TD sailplanes, it was designed by Frank Weston. Frank was an innovator and mentor to the ultimate foam core wing producer... Phil Barnes! Frank moved on in his life but provided a lot of great information to all and much of what our models are today are because of some of his work and ideas.

Frank ran a number of articles in a series of newsletters he produced. I was looking through my archives recently and found his article entitled "Where to Fly" on finding and using thermals in contests. This is information that helps take you from the middle of the pack, or "I could'a been a contenda!" category, to a woodsman (winner).

So if you are interested in making that move up the score sheets, or that LSF5 win is just always out of reach, or you find yourself always one flight round short on time every contest... read and learn!

GordySoar@aol.com

Being in the right place at the right time is paramount in the world of thermal duration. In the last issue of *Waco Technical Newsletter* we told you how fast to fly, which is only one part of the solution to the problem of being somewhere. In this article we will present some ideas about where that somewhere is. Curiously, while speed to fly is mostly a statistical question, the issue of where to fly is mostly a relative one, i.e. where to fly relative to other competitors, to wind direction, to geographical features, to natural thermal indicators (airborne debris, smoke, fauna), to your position on the ground, even relative to previous experience. Let us examine the list of "where to be clues" in descending order of their value to you as a competition pilot.

Where to Fly Relative to Other Competitors

The clues given by other competitors are not easy to miss or difficult to interpret, but there are some dangers, the most deadly of which is herd instinct. The desire to go where everyone else goes is very strong in humans. In soaring this desire must be controlled. Usually if a group of planes is circling, they're in lift, and it is a good bet to join them. But be cautious! If the pilots are all herd animals, and if the lift is marginal to negative, the situation frequently arises where three, four, or even more planes are all circling in down air. All of these pilots are secure in the knowledge that they are circling where everyone else is. They are losers. Don't get sucked in to joining them just because there is a crowd. Look, but go only if everyone really is going up, and only if they are within reach. Trust your own eyes and judgment. Consider this: if the crowd is in neutral air or going down, valuable intelligence is still to be gained. Stay away from them but look for signs of lift downwind of their location. Usually the herd picks a spot where there is lift and stays there long after the lift has moved on.

The antithesis of the herd animal is the lone wolf. This guy avoids the herd, even if it is rocketing skyward at Mach 5. He feels that any lift that he doesn't find all by himself is tainted. This guy never wins contests. Don't be a lone wolf or an ungulate. Be an opportunist. Take the easy pickings when they come along. In any decent contest you'll have plenty of chances to demonstrate your real skill before the fat lady sings.

It is very important to know your competition. Some guys are always worth following, some never. Some guys can find and fly in lift that will do you no good; some are so rough that it is impossible to read the air they fly through. The more you watch other competitors the more you learn about the air, and about them as sources of intelligence. When the good guys are itching to get to a winch, you should look around and find out why. When they're hiding in the parking lot, there is also usually a reason. If you are on a road trip, find out who the good local flyers are, then watch them. A little "local knowledge" can go a long way. These guys fly this field all year long. Chances are they know the spots that work. If your competition is higher than launch height, he had to get there by flying in lift. Look for it.

If your competition is higher than you, the column of lift he is in is usually upwind of him at lower altitude. Start your search upwind of his position. If he is lower, start downwind. If he is very, very much higher than you, chances are the lift has already gone. Make one pass through the likely area, and then get away quickly if you don't find something. Big sink frequently follows strong lift. Use your ears as well as your eyes. If your competition is singing "Born Free", chances are he has found big lift. If he is muttering obscenities or talking in panicked tones to his timer, stay away from his quadrant of the sky.

Where to Fly Relative to Wind Direction

It is common knowledge that the streamer on your antenna will usually point to a thermal if there is one around. For example: If the wind has been steady, then suddenly there is a lull, or even a 180 degree shift, chances are there is a thermal moving in upwind. If your streamer begins to point left or right from average, chances are there is some thermal activity in the direction it is pointing. The streamer provides good information, but don't rely on it for all of your decision-making. Sometimes you are too far away to take advantage of the information. If your plane is a half-mile away to the left, and suddenly your streamer moves right, don't waste time chasing it. Sometimes the information itself is erroneous. On gusty, turbulent days, the wind direction can shift all over the compass and indicate nothing of real value.

Did you ever notice that all of the really good pilots seem to end up way downwind on most of their flights? Moreover, the windier the day, the more they tend to head straight downwind right off the launch. Didn't notice? Well, you should have, because there are some very, very good reasons to start a thermal search downwind.

Reason Number One: If you have been paying attention prior to your launch, you already know what conditions exist downwind. You have very few clues as to what's upwind. The Devil you do know is better than the one you don't. If the air prior to launch has been still, start your search overhead or downwind. If a major thermal came through within a minute prior your launch, go downwind to get it. DANGER! If a really big thermal comes through, and if it is moving fast, think twice before chasing it downwind. Really big, fast moving thermals leave nothing but down air in their wake, and unless you catch them you will be very low, very quickly, and land out very far downwind. In this situation, the best course of action is to find something wrong with your radio just before launch and take about five minutes to fix it.

Reason Number Two: Light lift is easier to detect if the airplane is downwind. An airplane upwind is usually flown at a higher angle relative to the horizon

than one flown downwind thus the horizon is of less use as a reference. Further, the upwind airplane drifts downwind increasing the angle relative to the horizon and giving a false impression of slight altitude gain. A downwind airplane always looks to be in trouble, and the lightest lift is far more readily detected.

Reason Number Three: The WACO Theory of Thermal Lines of Flux which asserts that you are more likely to find lift flying downwind than flying upwind.

Assumptions (acknowledged as facts by most soaring pilots): Thermals are generated by randomly distributed sources such as roads, parking lots, automobile junk yards, large open dry fields, etc. On a good day, these sources will generate thermal after thermal at a cyclic rate determined by the amount of energy falling on the source, and the velocity and physical properties of the air moving over the source.

Thermals move away from their source at a rate proportionate to wind speed and vertical speed of the thermal. As thermals move away from their source and gain altitude, they become stronger and larger until they reach an inversion layer or the stratosphere. Small lower thermals also tend to join other small low thermals to become bigger higher thermals. There is a minimum altitude at which a thermal can be detected and worked, and this minimum altitude decreases as wind increases. It is better to encounter a bigger thermal higher than a smaller thermal lower.

The figure adjacent (Figure 1) is the basic thermal model. The thermal source can shed rising air bubbles at a rate ranging from nearly continuous to once daily. The rate at which the air bubble rises and expands is determined by the physical properties of the atmosphere and by the amount of energy contained within the rising air bubble or column. The direction in which the rising air moves is determined by the wind, the vertical speed of the bubble, and probably coriolis force, which for our purposes is not considered.

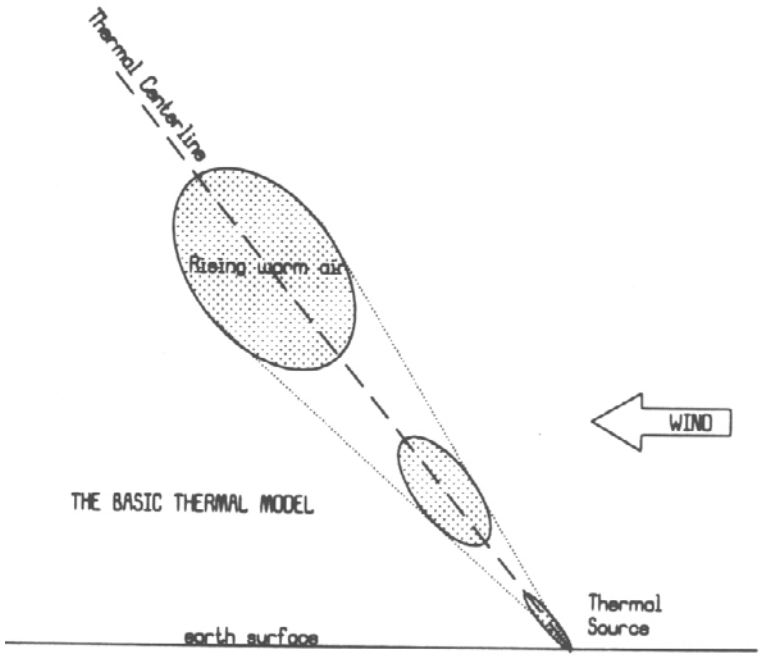


Figure 1

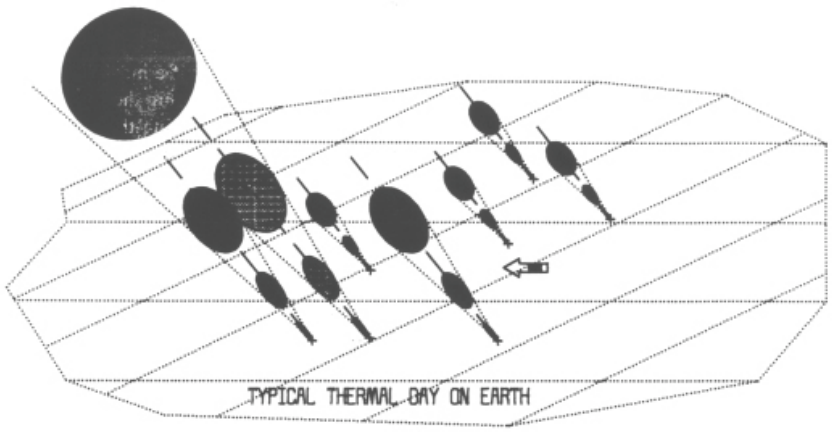


Figure 2

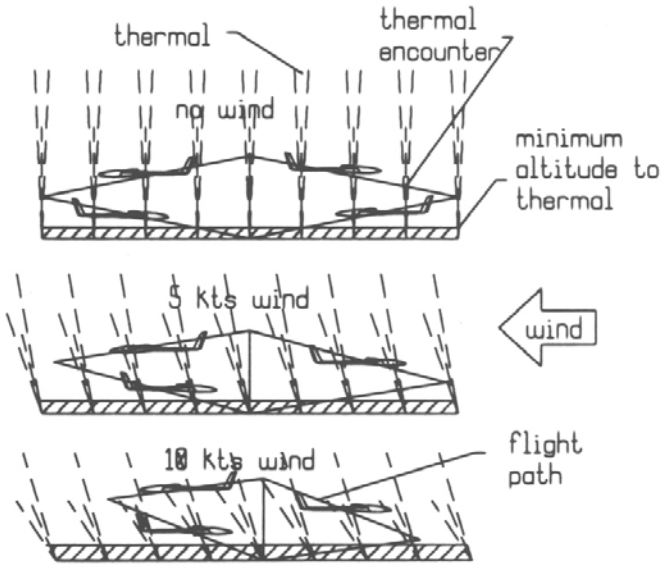


Figure 3

The figure above (Figure 2) shows the random distribution of thermal sources, the different sizes of thermals, the joining of smaller thermals to create a larger one. What is not shown is the different rates at which thermals can generate, and their less than uniform movement and joining.

The adjacent figures (Figure 3) are the meat of the theory. A sailplane with a 20 to 1 glide ratio at 20 knots is assumed. All thermals are going up at 5 kt. A minimum usable thermal altitude is assumed at 60 feet for no wind (the top figure), 75 feet for 5 knots of wind (the middle figure), and 90 feet for l0 knots of wind, (the bottom figure). Scale has been compressed along the X-axis for clarity. The wind is blowing from right to left. The top figure shows that in no wind conditions our sailplane will encounter the same number of usable thermals flying in any direction. Eight are encountered.

The middle figure, which portrays a 5kt breeze, shows that going upwind five thermals will be encountered; while going downwind, seven usable thermals will be encountered. This is only part of the story, since the thermals downwind will be encountered higher where they are wider, and stronger. The ratio of encounter downwind to upwind is 1.4.

The bottom figure shows what happens when the wind picks up to 10 knots. Maybe four usable thermals are encountered going upwind, while six are encountered going downwind. The ratio of encounter downwind to upwind is 1.5. It would appear that the ratio of success downwind to upwind increases with wind speed!

Theory: The probability of encountering a workable thermal (given no other indications) is greater flying a downwind search pattern than flying an upwind pattern. The ratio of downwind to upwind probability of success decreases as wind strength decreases and is equal to one in zero wind conditions.

Reason number four: Most contests are held at the biggest, most level, most clear, most sun-drenched field around. The field itself is probably the best source of thermals for miles. All of the thermals generated by the field on which you are standing will be either overhead or downwind. Except in the Midwest where fields are delineated only by other fields, a vertical barrier of some kind such as a tree line usually defines fields. It is impossible to fly an upwind tree line effectively. If you fly downwind, the downwind tree line is always available for some last minute scratching. A good pilot can lurk for minutes at 50 to 100 feet on a downwind tree line and wait for a thermal to break from the field. Try that upwind!

Where to Fly Relative to Your Own Position

Don't fly overhead unless you are carried there by a thermal! Lift is very difficult to detect when your plane is directly overhead; thus, a search pattern that passes overhead is not usually a good one. Further, looking straight up is a pain in the neck. If lift is overhead, you will want to fly in it, so if the lift overhead is not moving away, try moving yourself away.

Don't fly straight away or toward yourself when looking for lift. It is very difficult to see the plane, much less detect lift when viewing from end-on. The best search pattern is one that gives you a good side or quarter view of the model for most of the time.

Where to Fly Relative to Previous Experience

If you had luck in a particular spot before, chances are you will find lift there again unless some major variables have changed. On your first launch you should consider the conditions and fly what you think is the search pattern with the highest probability of success. If you find lift, try the same search pattern on subsequent flights. If you have no success, next time out (unless there are indicators to the contrary) fly a different search pattern. For example: you know you want to search downwind to a tree line. If, on your first flight you go left and find no lift, next time at the winch, instead of running downwind to the left, try it to the right.

Where to Fly Relative to Geographical Features and Natural Thermal Indicators

Geographical features which you should look for include: Roads, parking lots, rocky or dry fields, junk yards, tank farms, residential areas, and any other piece of real estate which has the capability to heat up under direct sun. Certain features are of more value during different times of the day. A hillside that receives the direct rays of the morning sun will be among the first locations to begin shedding thermals. This same hillside may be useless in the afternoon. Rocky or sandy areas may take longer to heat up, but will release stored heat late into the afternoon. Late in the afternoon on still days, wooded areas sometimes release weak thermals. Topographical irregularities such as tree lines, tall corn, steep hills, buildings, and anything else which will cause air to be disturbed can not only be good spots for slope lift, but also seem to be a catalyst for thermals.

Natural thermal indicators include smoke, dust, and airborne plant material. Also included are zoological-type indicators such as birds and insects. Thick smoke from fires and dust devils going straight up are pretty obvious indicators, less obvious are little items like dandelions and other airborne seeds. If these materials are floating around in the air over your head, something had to put them there. There are those who claim to be able to see thermals, and I don't believe they are all crackpots. Under certain circumstances, a hazy tint to the air can indicate the presence of lift. Call me crackpot if you want, but I have seen and used contrasts in sky color to find lift. I think these slight differences in

color are caused by debris that has been borne aloft by thermal activity, or are the initial stages of condensation to form a cloud. Clouds themselves can be indicators; in fact, cumulus clouds are the direct and visible result of thermals rising. Usually (but not always) the clouds themselves are too high and/or too far away to do any good as a thermal marker, but the passage of a band of clouds can indicate a general up-cycle, and a zone of clear blue sky can indicate some serious down air.

Birds, like other competitors, are obvious indicators of lift. The best birds to watch are usually swallows or the like which swarm around insects being carried aloft by thermals. This type of bird is best, because they are there when the thermal is and gone the minute the thermal dissipates. They are a visible outline of the thermal. Buzzards and hawks, on the other hand, seem to hang around even after the lift is gone. Pay attention! If the buzzard is circling, chances are there is lift, but if Mr. Buzzard is flying straight and level, beware. Hawks calling to their mates are often a good thermal indicator. Usually you hear the call before you see the hawk, and it has been my experience that when they are calling it is when (or because) they are in lift. Look for the source of the noise. Seagulls are the worst of all birds for indicating lift. They're so efficient, they can make down air look good. Worse, they tend to circle over landfills and dumpsters, over farmers plowing fields, and any other source of food, but not necessarily lift.

Thermal Tip from Country Bob

It is a little known fact that cows usually stand with their tails to the wind.

Feeding birds also hang around cows to chow down on the insects the cows attract and/or stir up.

The cow/insect/bird combo can be a potent weapon in the search for thermals. The cows indicate wind direction and shifts, and the birds chase insects up into the lift.

Just remember, cows always look at lift.

Summary

If there are obvious and reliable indicators of lift, and if you can get to them with acceptable risk, go there.

If there are no obvious indicators, but if you have had success in one area before, look there first.

If there are no other indicators, search downwind, in a pattern that takes the plane to your left or right so that you have a good side or quarter view of the model.

Look and listen, pay attention to wind shifts, other competitors, birds, insects and cows.

Fred China's AVIA P41
photo by Dave Beardsley
Nikon D2X
ISO 100, 1/2500 sec., f2.8, 200 mm

This ARF version of the German glider is an absolute treat in many, many respects.

First of all, it's the kind of kit that makes you want to wash your hands before you take anything out of the box — it's that well done, covered and finished.

Any one who has spent an entire winter building one of those German wooden vintage kits knows just what a blessing an ARF is... Not to mention you don't need to learn German first!

Fuselage: The fuselage is completely framed up, covered and trimmed, complete with I.D. numbers, as is the entire airframe! I sprayed some satin clear-kote on mine so I could wash the fabric with a damp cloth after a day of flying.

The wings are attached with a stout steel wing rod and two finished and fitted

Hobby Club

Grunau Baby

A review of an ARF vintage glider in 1/3 scale by Dan Troxell

struts. The kit comes with a preformed 5/16" laminated skid, mounting shocks, and the aerotow is ready installed in the nose.

The outer bowdens for the rudder pull/pull are installed, as well as the mounting holes for the stab.

It's extremely light, yet very strong, and it's DONE!

Wings: Like all the best wooden kits, this one is built with a full rib-spar wing, sheeted leading edges, with a planform and construction that is very faithful to the original.

Generous size balsa stock for the leading edge and sub-trailing edges makes a bullet proof wing. I loop mine fearlessly, do spins and some nice speed passes on the deck. (It makes a terrific "whooshing" sound.)

Aileron servo bays and hatch covers are built in, and in mine the wings were already fitted with blind nuts deep in the wing for the struts. They're not marked in the covering, so I had to put the wings on the fuse, bolt the strut to the fuse (the hard-points are already in) and then mark where the hard points in the underside of the wing should be. Sure enough, they were there!

Spoilers are neither included nor needed. Just push the nose down at the end of the runway, flair at around 10 feet, and it comes in at "mach-slo" for landings that are so realistic, you want to fly again and again!

Stabilizer and Rudder: Stabilizer mounting holes are pre-drilled, and the servo opening is pre-cut in the stab, though you'll have to put in your own servo tray and wiring.

Both the stab/elevator and rudder are completely finished, covered, and trimmed, and are pre-slotted for easy hinging with the included hardware.

This kit gets two thumbs up. I noticed Alberto also had a "Kirby Kite" and a few "Minimoas" which at first glance looked equally impressive. The Minimoa looked to have knuckle-hinged ailerons!

ARF Grunau Model $899.00
Saving a winter's worth of evenings in the shop... PRICELESS!

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Carrying the Minimoa back to the ready-area after a successful flight and landing.

Photo by Bill Henley, taken at Eagle Butte during the last Tri-Slope Six-Pack, May 2007.

Canon EOS Digital Rebel XT, ISO 400, 1/2000 sec., f8.0, 200mm