

Radio Controlled Soaring Digest

November 2006

Vol. 23, No.11



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Front cover: Paul Measel, Seattle Area Soaring Society, brings his Thermal Dancer in for a flaps-down landing during practice for the Visalia Fall Soaring Festival (see page 23). Photo by Bill Kuhlman.

Konica-Minolta Maxxum 7D, 1/500 sec., f8, 500mm, ISO 100

3 *RC Soaring Digest* Editorial

4 World Soaring Masters 2006

With sponsorship spearheaded by Horizon Hobby, and support from a number of major manufacturers and the League of Silent Flight, the first World Soaring Masters brought the big names in RC soaring to the Academy of Model Aeronautics national flying site in Muncie, Indiana. Detailed event coverage by Ben Wilson, with photography by Mark Nankivil

18 Central Valley R/C 33rd Annual Fall Soaring Festival

The largest RC soaring event in the United States, "Visalia" is an environment which any RC soaring enthusiast can thoroughly enjoy, whether competing or not. Just make sure you arrive at least a day or two early! Coverage by Bill Kuhlman, with assistance from Brendon Beardsley. Photos by Bill Kuhlman, Dave Beardsley, et al.

Schweizer SGU 2-22 EK 34

At one time the most popular two-place trainer, the SGU 2-22 is a well known glider with a long and successful history. The simple structure of the SGU 2-22 makes it relatively easy to build, and it's a good candidate for scale aerotowing. Photos by Mark Nankivil

Jojo flies his Crossfire near Beitostølen 42

A spectacular mountain view, a DS-capable glider... What else does anyone need? How 'bout DS-capable glider that's *really* capable of DSing? Photo by Jojo Grini

A question from full size soaring... 43

Given the FAI weight limit of 5.0 Kg, should RC sailplane designers ask a similar question? Hey, it's all about span loading. Derived from an e-mail message by Al Bowers

Back cover: Russ Light had an awesome end-of-day flight with his Ava on September 10th. There was booming lift all day, then the sun went down and the air "glassed off" into a smooth, bouyant layer that you could just float in forever... Photo by Jim Laurel. Canon EOS-1DS, 1/1500 sec., f6.7, 200 mm, ISO 800

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In the Air

Nearly three gigabytes of photos from the World Soaring Masters and the Central Valley RC Fall Soaring Festival were evaluated for publication in this issue. Eliminating photos turned out to be a daunting task, as the overall quality of the photos submitted was quite incredible. Our thanks to Mark Nankivil for photographing the World Soaring Masters (while CDing the event), and also to Dave Beardsley for not only doing some exceptional Visalia photo work of his own, but for allowing others to use his camera over the several days of that event.

During the 29th FAI World Gliding Championships in Eskilstuna (SWE), the "TherMap"-Project was presented on 14 June 2006 at the OSTIV <<http://www.ostiv.fai.org/>> Conference (International Scientific and Technical Soaring Organisation). "TherMap" is a private initiative of Dr Beda Sigrist, a senior Swiss glider pilot with solid background in engineering and computing. Impressed by the success of meteorological forecasting tools RegTherm/TopTherm, Dr Sigrist started investigating how topological data currently available could be used in his "TherMap" model. Digital maps produced with "TherMap" allow visualizing the formation of potential thermals at a given date and time, assuming that local weather conditions do not interfere with the model. Maps for Alpine regions of South-East France, Switzerland and Austria are currently available free-of-charge on Internet. Technical details and maps can be downloaded at TherMap <<http://www.aerodrome-gruyere.ch/thermap/index.html>>. Now if we could just get something like this in realtime for flatland RC fliers in other areas of the world! Time to build another sailplane!

World Soaring Masters 2006

Mark Nankivil CD



Academy of Model Aeronautics National Flying Site, Muncie Indiana

Event coverage by Ben Wilson
Photography by Mark Nankivil



World Soaring Masters *Diary*

Setup Day

Thursday 21:21 EDT

Arrived in Muncie on this beautiful Thursday afternoon around 2 PM. Windy, but with beautiful blue skies and a perfect fall temperature. About 30-40 pilots (maybe more!) already here. Bungees were the preferred choice of transport today, with some just handlaunching to get the hang of this whole skeg-less thing. I noticed a lot of Supras out today, along with good number of Sharons and Icons - and a few Espadas were spied as well. Weather is going to be positively heinous (but par for the Muncie course) the next couple of days - winds 15-25 with a 60-70% chance of rain Friday and Saturday, lessening on Sunday. Excellent contest weather, though!

High winds, wet grass with an 80-point tape and 12-minute tasks will no doubt make this a "soaring" contest and not a landing one :)

Day One

Friday 22:12 EDT

Got off to a little bit of a late start today, on account of rain showers that started up *right* as my alarm went off in my tent here on the spacious AMA Flying Site. CD Mark Nankivil got things rolling as soon as it cleared up and we got in four remarkably rain-free rounds before calling it while we still had light to pack up. With the weather

being as it is, you could call this the Fall 2006 Soaring NATS! Winds were a steady 15 MPH the entire day, gusting to 25 MPH according to wind gauges. I could count on one hand the number of honest thermal turn attempts I saw today - surfing was the name of the game. I'm not sure if anyone got their 12 minute tasks, though I know a few who got very close. Thornburg mentions in *The Old Buzzard Goes Soaring*, and I'll paraphrase here: "fly in all types of weather if you want to win contests," and that is where those Soaring Masters in attendance beat the pants off of the non-Masters. There are plenty of guys out there who stay at home if it's overcast or blowing too hard - today would've no doubt made them think twice about getting off the couch. But where's the challenge in flying in pristine conditions? To me, this hobby is about challenging, learning and expanding, and that's why I'm here.

As far as what I've learned today, I figure that this high-wind stuff requires a mind-set that is similar to, but altogether different than your normal calmer-air flying. If normal TD work is "macro," then high-wind stuff is very "micro." Fine, clean control of your plane and accurate deduction of what the fast-moving and quick-changing air was doing in front of your ship were the keys to success today. The Masters here did those things - and the rest of us hung on for dear life. Me? Well, while I'm here at the Soaring Masters, I'm no Master yet! My goal is to get on the first page of the results tomorrow. :)





Yes, there was some carnage along the way - though honestly today was the day to test the limits of all manner of equipment, airborne or otherwise. Model throwers were the rule, not the exception along the flight line today! Safety was on the minds of everyone after the incident at the NATS with a pilot struck on the ground, and the winch bosses were quick to hand out warnings and kindly suggest that someone toss your plane. There were line breaks, but with NATS-like efficiency, they were easily handled and the contest continued on. And while there aren't "official" Turnaround Trolls, there was a good crew of kiddos and of-legal-age volunteers out there doing a thankless job. Not to forget Marney and the well-oiled machine in the transmitter impound - flawless!

The weather was heinous, and at the end of the four rounds, there wasn't a perfect 4000 on the board even out of some of the best pilots from the West Coast, East Coast or beyond the lower 48 states. I don't have the Day One scores, unfortunately, but suffice it to say there are some familiar names up there, but there are some unexpected as well. A good contest, and anything could happen in the next two days. Thunderstorms this evening and Saturday isn't looking any better - "maybe severe with damaging winds" in the afternoon. Another challenging day, but one that hopefully the "Soaring Masters" will make the most of.



Day Two (Rain Delay) Saturday 14:28 EDT

Well, we're in the middle of a second rain delay here in Muncie. We're battling the north end of some storms that have poured half a dozen inches of rain back at home in Louisville. It's not raining now, so we might be able to finish up Round 8. Radar indicates that we're right on the cusp of this precipitation, so it's kinda 50/50 at the moment. CD Mark says we'll probably get one more round in in the AM before flying the finals.

Weather has toned down just a bit today, with winds not quite as stiff as yesterday, and some successful down-wind runs have been made, though only through the use of super-telescopic vision. ;)

Joe Dirr is here staying dry under one of the circus tents and cooking up something mean - two turkeys and some deep fryers and a plate full of jalapenos wrapped with bacon or some such appetizer. Rain or shine, we should be in for a treat.

7th round scores have been posted:

Page 1:
<<http://louisvillesoaring.org/tmp/2006worldsoaringmasters-rd7scoresA.jpg>>

Page 2:
<<http://louisvillesoaring.org/tmp/22006worldsoaringmasters-rd7scoresA.jpg>>





End of Day Two Saturday 17:51 EDT

Well, the rain quit and we've finished up Rounds 8 and 9. One more round in the AM says CD Mark.

The rumors of severe weather seem to have been erroneous. It's a marvelous fall evening out here now, with the sun (what's that?) poking through the clouds!

Here are the scores as of Round 9:

<<http://louisvillesoaring.org/tmp/2006worldsoaringmasters-rd9scoresA.jpg>>

<<http://louisvillesoaring.org/tmp/2006worldsoaringmasters-rd9scoresB.jpg>>

Day Three AM Sunday 8:22 EDT

The weather finally looks like it's going to play nice today - the radar is clear, and so are the skies above the AMA Flying Site. Not too warm today, though, with the highs expected in the mid-60s and only a 20% chance of rain. Winds are now out of the west at 10-15, and the winches were re-strung yesterday to point out towards the campground/power lines.

Yesterday saw some amazing performances by any number of Masters, though one in particular stayed true to his reputation as being a guy who can thermal in from WAY out - Tom Kiesling is in 10th place - with a ZERO. Jim Thomas and Joe Wurts are

also up in the standings with a zero and an "11," respectively. With weather like we've had the last few days, no one has stayed perfect, and there are 500, 600 and 700 scores penetrating even the top 10. The leaderboard has been shaken up a number of times, and with the money on the line as it is, no one is being counted out.

Speaking of the "top 10"... Rumor has it that two-time F3J Worlds Champ David Hobby is in town - though as of late last night there was only speculation among some of the OVSS brass enjoying Joe Dirr's awesome food fare.

One more round of qualifying this AM, and I expect we'll be seeing some long flights today, given the weather. Impound is open and I'm up in round 10, group A! Figuring that I'll have plenty of time to kick back and take some photos, I should have more later...

Revised WSM Round 9 Scores Sunday 8:37 EDT

A scoring error was fixed last night after I posted the Round 9 scores - one of those count down/count up things, ya know? Anyway that has shifted Tom Kiesling into 9th and Jon Padilla into 10th.

<<http://louisvillesoaring.org/tmp/2006worldsoaringmasters-rd9scoresA.jpg>>

<<http://louisvillesoaring.org/tmp/2006worldsoaringmasters-rd9scoresB.jpg>>

Day 3 Prelims are Done! Sunday 12:04 EDT

We ended up flying two rounds (10 & 11) this AM in partly cloudy, windy conditions. Joe Wurts walked back from the flight line with a literal shovel in his hands! Another shake-up in the top 10. Speaking of the top 10 going into the finals:

1. Arend Borst
2. Skip Miller
3. Daryl Perkins
4. Cody Remington
5. Ben Clerx
6. Mike Smith
7. Larry Jolly
8. Rich Burnoski
9. Mike Lachowski
10. Mike Reagan

Full Scores here:

<<http://www.louisvillesoaring.org/tmp/2006worldsoaringmasters-prelimFINALscoresA.jpg>>

<<http://www.louisvillesoaring.org/tmp/2006worldsoaringmasters-prelimFINALscoresB.jpg>>

First look at the trophies Sunday 12:11 EDT

Hard to get a good photo of it, they're so shiny! While they are beautifully engraved, rest assured they don't have my ugly mug painted on them. :)



<<http://www.louisvillesoaring.org/tmp/2006worldsoaringmasters-firsttrophy.jpg>>
Gotta run! Finals are starting just now.

Final Pilots and Planes Sunday 12:33 EDT

Everyone asks “what were they flying” at every contest, so here are the pilots and their planes in the finals:

Perkins - Sharon
Burnoski - Espada (white?)
Remington - Espada
Miller - Pike Perfect
Clerx - Fazer
Borst - Kennedy Supra
Jolly - Pike Perfect
Smith - Sharon
Lachowski - Own Design (Supra-esque)
Reagan - Kennedy Supra

(I believe those to be correct, sue me if they ain't.) :)

They launched a few minutes ago, I believe Burnoski was first and as if on cue a few hawks flew in to greet him on a spectacular launch from his Espada. Ben Clerx was last to launch with his green and yellow Fazer.

Finals, Round 1

Sunday 12:47 EDT

They are flying three rounds back-to-back, then a charging pause and then three more rounds. Scores may not be available

until the break or after it all. But in the meantime... Larry Jolly and Rich Burnoski had zero landings in the first round. All others made their landings. Not sure on times, but they all landed very close to one another. Tight!

Here's how the finals started - note the graduated scores:

<<http://www.louisvillesoaring.org/tmp/2006wsm-finalpilots.jpg>>

Finals, Rounds 2 and 3 Sunday 13:15 EDT

Burnoski and Clerx both early (7/8 minutes or so) in the second round. A south-easterly thermal sucked every one up in Round 3. Mike Reagan and his Kennedy Supra made an excellent kinda low save to hook up. Everyone came in close to time, and with landings. Birds aplenty now! Still windy and mostly cloudy with a little sunlight now and then.

Charge break now - flights to resume 1:35 EDT

Halfway through the Finals Sunday 13:39 EDT

Here ya go! Fresh off the score billboard:

<<http://www.louisvillesoaring.org/tmp/2006wsm-finals-halfwayscores.jpg>>

Sky has opened up a bit here to “partly cloudy” conditions. Official timers stand ready, and the 4th round is about to begin.

Finals, Round 4 Sunday 13:59 EDT

An absolute meat-grinder!

Arend Borst line-breaks, though initially it appeared to be a pop-off. A quick relight and a massive launch gets him back into the air.

A low, long northeast thermal was chased by everyone, and it spit out half of the field, with the other half sky-ing out:

Lachowski: zero landing, short on time

Reagan: zero landing, short on time

Skip Miller: zero landing, short on time

Larry Jolly: deep in the beans on the east side of the field (it has been found)

Burnoski: just missed the beans, but out of bounds by 30 feet or so on the east side of the field.

Everyone else made a landing, and they were all close on time.

Finals, Round 5 Sunday 14:18 EDT

If you thought last round was a shake-up, just WAIT for Round Five.

First, two line-breaks in a row, Larry Jolly and Mike Smith, I *think*. Doug Pike says he

saw Mike Smith line break, and I couldn't see the other, but Larry came in very early on time. Mike Smith got a relight because he had a line break to spare (you are only allowed two all contest long).

Arend Borst - early, landing
Jolly - early, landing
Skip Miller - early, landing
Burnoski - early, landing

Daryl Perkins - landed early, clipped a car in the pits, slid down the hood and landed nose first, top of the tail touching the hood! The car was not damaged at first glance, nor was the plane.

And as I am typing this, Mike Smith just landed and buried the group, to the applause of the group at hand! He's switched to a white Sharon.

Finals, Round 6 Sunday 14:36 EDT

An amazing round again here at the WSM's. Burnoski had a line break and Skip Miller had a break as well.

A pack went left, some right and a few deep, but nothing was working very well. A lot of people down low early.

Jolly was first down, early
Clerx was second down, early
Cody was low over the pits, early and with a landing
Lachowski was early, made a landing
Reagan was early, landing

Mike Smith, early/landing
The Goodyear blimp made an appearance on the horizon as Skip Miller started working a small thermal 50 feet over the LZ. Arend Borst and Rich Burnoski joined Miller as he worked it out, and battled against each other deep over the beans. Miller made a landing early, with Borst landing shortly before Burnoski.

Meanwhile, Daryl Perkins was seen headed out to the beans!

Scores next!

Finals are FINAL Sunday 15:19 EDT

10. Jolly - 4582
9. Burnoski - 4853
8. Daryl Perkins - 4968
7. M. Reagan - 5164
6. M. Lachowski - 5193
5. Skip Miller - 5694 (\$250)
4. Ben Clerx - 5790 (\$500)
3. Cody Remington (Junior) - 6118 (\$750)
2. Arend Borst 6397 (\$1250)
1. Mike Smith 6793 (\$2500)

Mike Smith had three 1000's, a 999, a 960-something and 708 to finish up.



The last rounds of flying were some of the most exciting I've ever witnessed - you truly didn't know who was going to win until the very end.

Congratulations everyone! Thanks to all the sponsors: LSF, JR, Castle Creations, Horizon, Kennedy Composites, and I'm sure I'm leaving some out.

My final post live from the AMA Flying Site - hope everyone enjoyed, I know I did. ;)

WSM Wrap-up

The initial announcement of the World Soaring Masters generated much excitement in the RC Soaring world. An LSF-exclusive, sponsored, for-pay contest with rules and a format tweaked to intensify the level of competition. A veritable honey-pot to lure the best of the best from around the world to compete for cash and the title of "World Soaring Master". Capped at 150 pilots! All of this to raise the level of RC Soaring competition in this country and to hopefully raise the awareness of the soaring discipline within the RC world and beyond. Who wouldn't show up for that?! It was right in my back yard, so I had to be there.

The initial response to the WSMs was good. Nearly 100 pilots signed up for the WSMs, with 90% of those attending. While there were no pilots from outside of North America (bringing the "World" moniker into a bit of question), there were pilots from the East Coast, West Coast, North, South and even a few from Canada. The majority of our US F3J and F3B teams were there. As evidenced by the stacked pilot roster, the competition was intense with weather conditions that only served to ratchet up that intensity. The flying that I saw that weekend was of a level of skill and of excitement that I have never experienced. The soaring was definitely world-class. However, I can't say that the event itself was all that I had imagined it might be. The expectations in the soaring community

for the WSMs indicated that it *would* be an event beyond compare. The flying site would have been packed with pilots, sponsors, vendors with banners waving, etc.

That wasn't the case, though -- the event surrounding the world-class competition was somewhere in between a club contest and the Soaring NATS. Rest assured that my intent in saying so is not to detract from the support that JR, Horizon and the other sponsors of the World Soaring Masters have given to this event (not to mention the OVSS and other soaring events). The success of this event benefits all parties, and thus should be of major concern by the soaring community at large. Even if the event for the nearly 100 pilots wasn't as flashy as it could have been, at least the news of it could be, and that's where I had the idea to do live on-the-field reports. I had planned on making my day-to-day reports as I've done for other events, though I hadn't really planned on making my round-by-round finals reports like I did. After packing my planes away after the preliminaries, and watching my fellow un-finalists make a "grandstand" out of patio chairs out on the flying site turf, it clicked.

This was the WORLD Soaring Masters, and there had to be an audience for live reports. I was inspired by the recent F3J Worlds in Martin, Slovakia and their excellent website with some really exciting reports that kept me off-task at work.

Thanks to the AMA's flying-site-wide WiFi network access across I was able to post my daily and up-to-the-minute reports to the RC Soaring Exchange.

The up-to-the-minute reports were an absolute blast!

Pencil clenched in teeth and notepad in hand, I kept notes on every launch, every flight and for those things I missed I had my operatives in the field (you know who you are). I didn't know if anyone would read the reports - and to tell you the truth I was having so much fun, I didn't care! I was elated to see the emails that came in from all over the nation from people glued to their email awaiting the final round reports.

I couldn't help but to imagine the WSMs a few years from now, wherein we'll have streaming audio and video and an audience not of dozens but perhaps hundreds or thousands around the world. Call it daydreaming if you will, but I don't think it's that bad of a goal.

The World Soaring Masters aren't to the level of my daydream yet, but I feel fortunate to have been present at the inception of something that could be historic for our hobby.

I was glad to help in whatever way I did, and I'll be back the next time, press credentials tucked firmly under my I BEAT GORDY button.

See ya next time!

Ben Wilson



Visalia '06, Thursday & Friday

Thursday started with we Seattleites being treated to a familiar sound - rain - outside the Visalia Holiday Inn. As the rest of the Seattle contingent was scheduled to arrive around mid-day, we early-arrivers settled in for a leisurely breakfast at the hotel's Cafe California.

The rain ended around mid-morning, and a large number of entrants, participants, and vendors were already on the field by the time we arrived. Planes were being assembled, launched by winches and zip-starts, flown, and landed, and a good portion of the frequency pins were already out and in use by pilots practicing turns and landings.

But it wasn't all practice for the upcoming contest, scheduled to start in less than 48 hours...

People were launching HLGs into the air, and there were a couple of electrics buzzing around the west end of the field.

The highlight of late afternoon/evening flying involved an electric aerotowing a sailplane. Dave Beardsley had a Multiplex TwinStar II <<http://www.multiplexusa.com/models/ParkFliers/twinstar2.htm>>, powered by two brushless motors and a LiPoly pack, and the relatively new Multiplex EasyGlider <<http://www.multiplexusa.com/models/ParkFliers/EasyGlider.htm>>.

Dave's TwinStar II will climb straight up with the installed power plants, and the EasyGlider performs surprisingly well for a foamie. Dave's promised to write up a full description of the mechanics and techniques involved for a future issue of *RCSD*.

Friday morning was shrouded in gray. That's right, the hotel and all of Visalia was wrapped in fog. Doug Brusig, knowing the wait staff were "natives," inquired about the dense humidity enshrouding everything in the valley. "Well, the fog follows the rain, and it rained." Doug had a follow-up question, "How long will it last?" We all expected to hear something like, "Oh, it'll burn off by noon," so the response "Until February" came as quite a shock.

The fog did clear later in the morning, but there were several pilots launching aircraft into the oblivion of low clouds and gray skies when we arrived at the

field. By noon the sky had turned the usual California blue.

Zip-starts and winches were in use all day long, with only a couple of tragedies.

The landing zones were marked out in the usual grass area, so nearly everyone wandered over to take a look to get an idea of the space available to garner points.

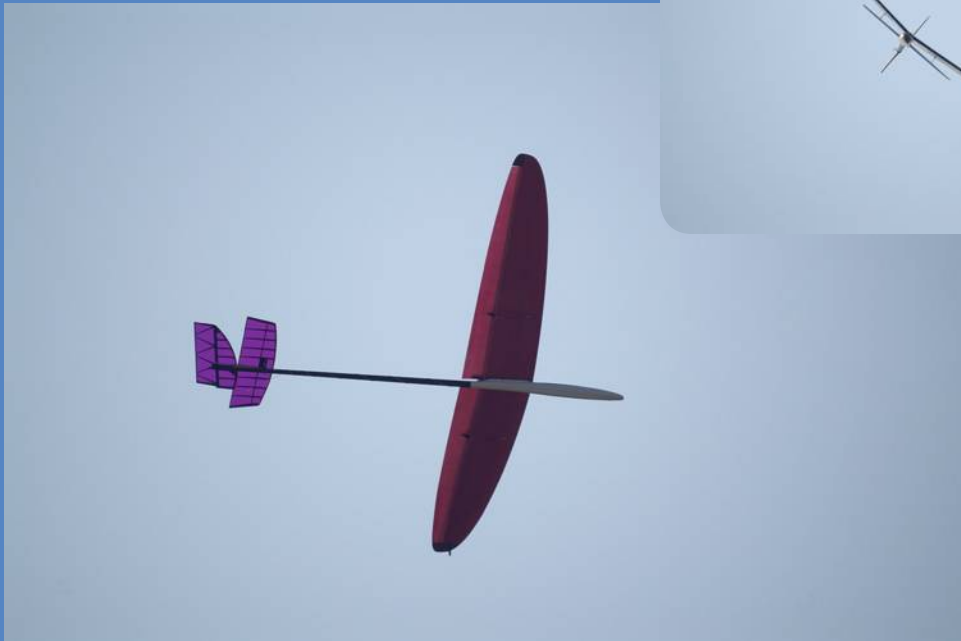
By late afternoon, the sky was filled with HLGs, and Dave was out teaching people the glory of aerotowing.

As Thursday, we didn't leave the field until dark. But this time it was different... Fall Fest started in the morning!













Vísalia '06, Saturday

With so many entrants, the Fall Soaring Festival must get started early... The pilots' meeting is scheduled to start at 7:30 AM. The parking area is completely filled by 7:00, however, and aircraft are assembled and ready to fly before the CD starts the meeting.

There were several notable changes to the contest format this year:

First, the landing zones were reconfigured. The past two years have seen a five cell rectangular "ladder," with the center cell worth 25 points the next cells 10 points, and the outer cells 15 points. This year the cells were valued as a percentage of flight time, with the center cell worth 25%, the next cells 15%, and the outer cells worth 10%. Additionally, the ends of the 10% cells were rounded, giving them a bit more area than in years past.

Second, the general landing area (the green area in the included field sketch) was the only place you could put your plane down and still garner your flight time score. Your flight time score was zeroed if you landed past the foul line, the west border, or on the far side of the east berm. Also, and as in past Fall Fests, your aircraft had to pass between the two red cones as it entered the landing area.

The new rule regarding off-field landings was designed to thwart pilots' attempts to get exact times at the expense of landing scores. This has been a problem in the past, as recovery of aircraft landed off-field delayed event progress.

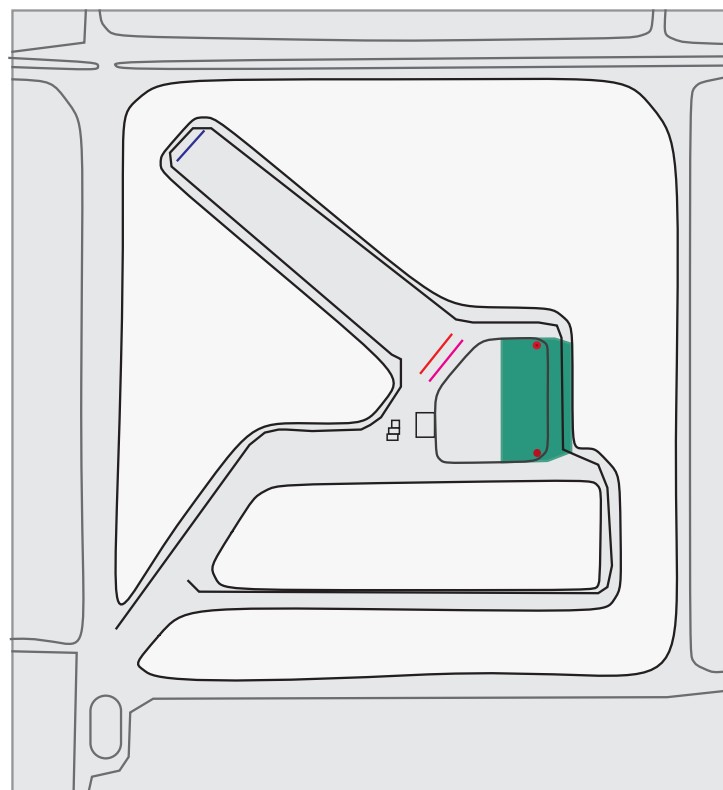
With off-field landings resulting in zeroed flight times, and the change from straight landing points to a percentage of flight scores, landings were very heavily weighted this year.

Four rounds were scheduled be flown on Saturday, with flight times of 3, 5, 7, and 3 minutes.

There was not much in the way of thermal activity during the first round, but small areas of good lift could be found as the second round started. The usual California thermal cycle was in progress during the third round - if you could find a thermal you could easily make your time. Thermal activity was still in evidence for the fourth round, and most pilots found the three minute task relatively easy.

Throughout the day, Merrill Brady (M&M GliderTech) was handing

out carbon fiber tow to anyone who would provide something to wrap it on. The most popular item was a folded piece of cardboard, and Merrill had a special fixture to make the winding task easier. He gave out a lot of carbon fiber tow...



CVRC Fall Fest field layout. Ready and winch lines in red, turnarounds in blue. Landing outside the green area resulted in a zeroed flight score.







Visalia '06, Sunday

The three tasks for the day were a four, six and eight minute flight, with the first flight group ready to launch by 8:00 AM.

The four minute flight was a bit more challenging than the three minute first round of Saturday, as would be expected, but thermal activity (and sink cycles) increased as the morning went on, and the six minute round saw pilots either skying out in good lift or falling out of the sky in sink.

The last round of the contest, an eight minute task, was the final challenge. Those who chose to ride a thermal high and downwind could easily make their times, but making it back to the field and into the landing area was not always possible. Getting a zero flight score because of an off-field landing was a harsh reality for some.

While scores were being tabulated, the Fall Fest raffle garnered a lot of attention. Raffle prizes included tools, ARFs, an Airtronics Stylus radio, and Starbucks coffee. The number and quality of donations to the raffle is always astounding, as is

the sheer number of tickets sold - a number of attendees bought 100 or more.

Visalia 2006 was Central Valley R/C's 33rd running of this annual event. As usual, the entire contest was run smoothly - from processing entry forms, to assigning flight groups, laying out contest rules, calling out flight groups and pilots' names, running four winches and retrievers for two solid days (approximately 2,500 launch cycles), compiling scores, handing out awards, and cleaning up the site afterward. CVRC members do an astounding job of putting on the largest RC Soaring event in the U.S.

Complete scores for the 2006 CVRC Fall Soaring Festival can be found at <http://www.cvrcoaring.com/2006_scores.htm>.

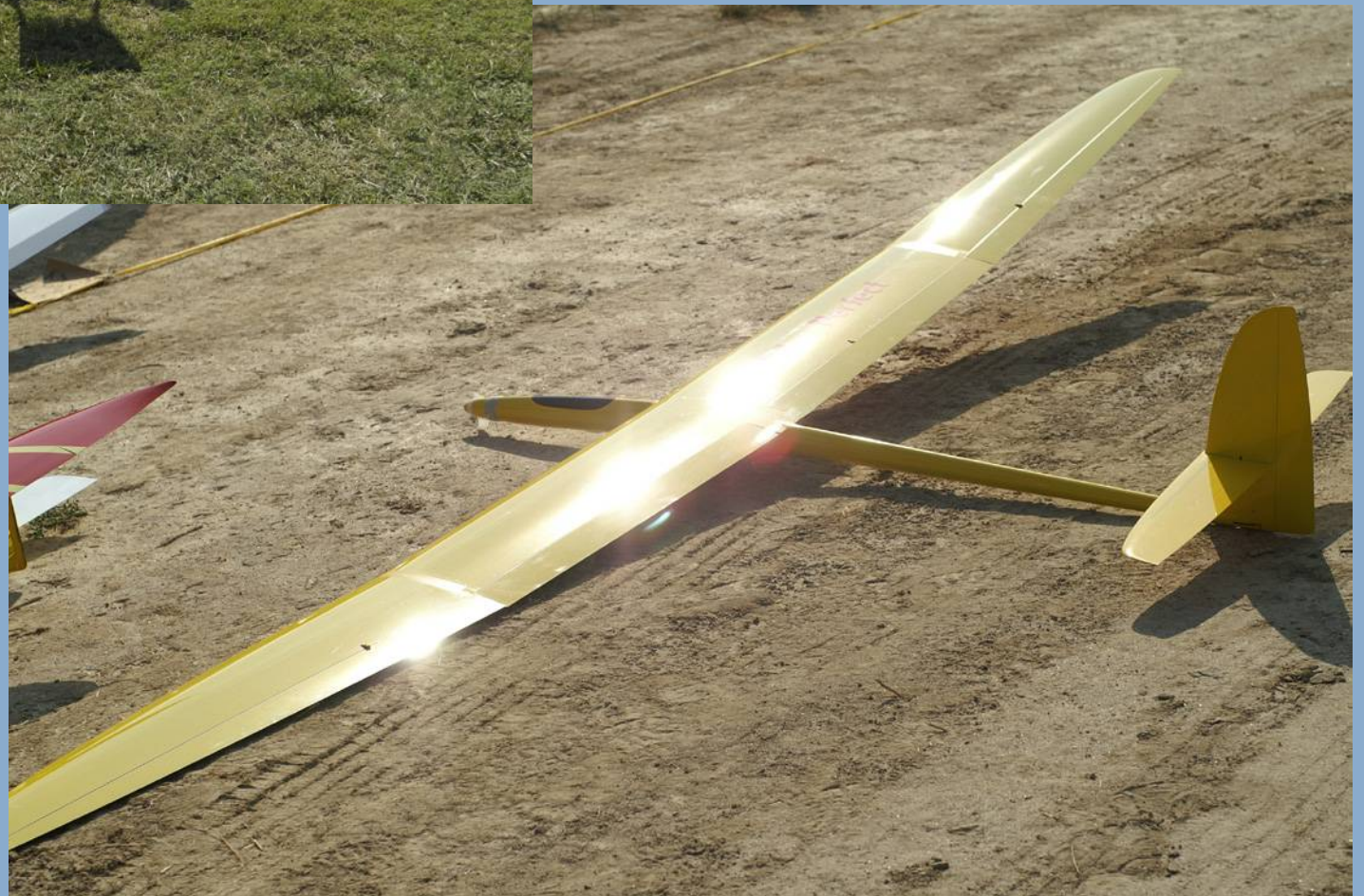
Arriving in Visalia a few days early gave me a chance to talk with other participants, get involved in extra-contest activities (like flying a tailed EasyGlider), and be well-rested for the contest itself, so it's highly recommended.

Can't wait for next year!















Schweizer SGU 2-22EK

Walk-around by Mark Nankivil, nankivil@covad.net

Designed by Ernest Schweizer, the 2-22 was introduced in 1945 and became the most used two-place trainer in the the United States until the 2-23 “replaced” it.

The 2-22 was derived from the SGU 1-7, and was eventually produced in A, B, C, D, and E models. It was originally produced with an empty weight of 450 lbs. and gross weight of 830 lbs. , without rear side windows and lacking doors.

A redesign for the U.S. Air Force Academy, designated 2-22 A, included a lengthened nose, full canopy, and increased gross weight to 900 lbs.

The B model is the original design, modified to increase the gross weight to 900 lbs.

The 2-22 C incorporated both the A and B changes, plus a modification to decrease the size of the ailerons.

The 2-22 D is the original model with smaller ailerons.

The 2-22 E was the last production model, with larger spoilers, a roomier cockpit, and new canopy with wing root modifications which allowed inclusion of a skylight.

The K suffix indicates the glider was built from a kit.



Performance:

L/DMax: 17 76 kph / 41 kt / 47 mph

MinSink: 1.07 m/s / 3.5 fps / 2.07 kt

Dimensions:

Span: 13.11m/43 ft.

Area: 19.51 sq.m/210 sq.ft.

Empty Weight: 213 kg/470 lbs., Payload: 195 kg/430 lbs., Gross Weight: 408 kg/900 lbs.

Wing Load 20.91 kg/sq.m/4.8 lb./sq.ft.

Aspect ratio: 8.81

Airfoil: NACA 4301 2A

Structure: metal/ fabric 1-spar, constant chord, 1-strut braced wings; metal/ fabric tail; steel-tube/ fuselage

N2727Z is an SGU 2-22 EK, owned by Lynn Erickson of Fountain Valley, California.















The location is mid-Norway near Beitostølen. At 1300m (4200ft) Jojo DS'd his Crossfire until it suddenly blew up in the air. The speed was increasing from whistling to screaming, through rumbling and beyond... The wing fluttered, the nose came off, and the parts came down slowly, so with a new fuselage it flies today. Jojo says he could not stop smiling for ten minutes afterward, despite

A question from full size soaring... Given the FAI weight limit of 5.0 Kg, should RC sailplane designers ask a similar question?

Derived from an e-mail message by Al Bowers

At the recent Experimental Soaring Association's Western Workshop in Tehachapi California, Leo Benetti-Longhini gave a talk on Dick Butler's Concordia project. <<http://www.aerokurier.rotor.com/AKHEFT/AkH0508/Aeh0508e.htm>> <<http://www.glidingmagazine.com/default.asp?id=1536>> Dick has never been one to leave well enough alone. But to understand Butler's obsession, you need to understand the ultimate production sailplane first.

The ultimate production sailplane is the ETA <<http://www.leichtwerk.de/en/projects/index.html>>. When the ETA came out (30m span, two-place motorglider, open class unlimited sailplane) it was intended to be the new plus ultra of sailplanes.

Dick fought back against the ETA at first by flying a modified ASW-22 (28m span) he calls the "ETA Biter." But he wanted MORE. You see, ETA claims a max L/D of 70:1. You read right, SEVENTY to one. Butler is talented as a pilot, and the ETA Biter has a max L/D of 67. Not quite equal to the ETA. And if you are wondering about the motorglider part of the ETA, let me explain.

There are two things that are the constraints on sailplane size (and hence performance). They are span and weight. Sorta obvious at first, but not necessarily in ways you'd expect. Standard Class are constrained to 15m (no winglets and no flaps). 15m racing Class are constrained to 15m span (but winglets AND flaps are allowed).

Finally, you get the Open Class (no span limits). At first glance you might think that there is no size limit on open class. But there is. They are limited on WEIGHT.

And it isn't a straight across weight limit. Currently two-place with motor are allowed to go to 850kg, but if you're single place without motor you're limited to 650kg. There is a proposal to change the rules to allow all open classers to go to the 850kg limit.

So Butler wants to build the ultimate ETA killer. He got help from his friend Gerhard Waibel (the "W" in ASW sailplanes). Concordia is a 30m custom one-off. There are pieces from the ASW-27 in the fuselage, but most of the aircraft is custom. Concordia also has a very small horizontal tail, but the characteristic huge vertical that Gerhard always makes. Dick and Gerhard went to an even more extreme aspect ratio than the ETA. They are shooting for max L/D of 70.

Waibel is a legend in sailplane circles. He was one of the four that designed the first all-composite ultimate D-36 Circe sailplane. Gerhard Waibel has said we should be thinking of the ultimate sailplane with a max L/D of 100.

Remember, span is unlimited, BUT the mass of the aircraft cannot exceed 850kg. What is the minimum induced drag of an aircraft weighing 850 kg and with no span limitation?

Okay, if we discard solar powered boundary-layer control (BLC sucking off the boundary-

layer to maintain 100% laminar flow on the whole wing) then what are the limits? Without BLC we can probably get 100% laminar flow on the lower surface and about 70% laminar flow on the upper surface. Fuselages get about 50% laminar flow. I am also assuming the fillets at all junctions are well designed and have no separated flows, and the maximum extent of laminar flow can be maintained in local areas of fillets. For an open classer, there are no winglets.

I am guessing, but I am going to do some analysis. I am guessing that if you want to vary W/S (wingloading) by about 50% with water ballast then the span limit is around 36m (using vacuum bagged carbon and 850kg with full water) and the max L/D is about 85. Not 100. And if you build a sailplane without water ballast at the 850kg limit out of all carbon you end up around 45m with a max L/D just under 100 (like ~95).

And both of these would be a flying wings, not a conventional tailed sailplane. A conventional tailed sailplane is gonna be about 5 points lower on L/D. The ultimate is going to be a flying wing sailplane. A very Horten-looking sailplane.

John McMasters proposed a super-sailplane once he called the Altostratus. I am going to pull from that, and look at what are the limits of a conventional sailplane and what the limit might be for a flying wing.

What ARE the limits? Maximum performance for minimum structure.

