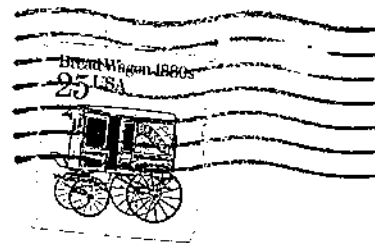


Harbor Soaring Society
P.O. Box 1673
Costa Mesa, CA 92626



5.10 EXPRESS #90

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(The Soaring) Society Column

President:	Chris Hurley	(714) 458-9251
Vice Pres:	Roger Lowery	(714) 756-9356
Secretary:	Jared Stalls	(714) 722-1846
Treasurer:	Frank Chastler	(714) 545-2185
Contest Coord:	George Joy	(714) 556-6385
General Dir:	Ross Thomas	(714) 638-0705
News Letter Ed:	Bob Sliff	(714) 895-1203

"The Oldest Sanctioned Soaring Club In the AMA"
Chapter # 128

May 1989

Volume 26 Number 5

May Club Meeting: The May club meeting will be held on Wednesday, May 3, 1989, 7:30 pm at the Consolidated Water District Office, 1965 Placentia Ave., Costa Mesa, Ca. The program for the evening will be a presentation by Larry Jolly on Cross Country flying. Larry will be discussing the various aspects involved such as the models, the launch equipment, the vehicle requirements, and the tactics for success. The Monthly club contest will be on the 7th of May, field conditions permitting.

June Club Meeting: The Juneclub meeting will be held on Wednesday, June 7, 1989 at 7:30 pm at the Water District Office.

Minutes of April 1989

The meeting was called to order by President Chris Hurley at 7:30pm.

1. The minutes of the March 1, 1989 meeting were approved as published.
2. The treasurer's report was given by Frank Chastler, and was approved as read.
3. New Face: Blair Hamelton was introduced to the club.
4. A raffle of the Airtronics Eclipse Deluxe kit (donated by Airtronics at the last meeting) was held at the beginning of the meeting. Dick Pantzar was the happy winner.
5. Old Business:
 - a. Dick Pantzar announced that he has club jackets for a mere \$20.00
 - b. Will Conrad provided more information on the field, and added that if anyone has any questions or concerns with the construction going on to call him--and NOT TO INTERFERE WITH THE WORKERS.
 - c. Frank Chastler provided more information on the new pilot program.
6. New Business:
 - a. George Joy made a motion to purchase John Lupperger's retriever. It was seconded and passed by the members present.
 - b. Felix Vivas suggested that the club have a 4th of July party. He would like some feedback.
 - c. Chris Hurley would like to get a group together to complete LSF Level 4 goal and return. Call him if you're interested.
7. The meeting was closed at 8:45pm for break and program.

Jared Stalls

The SSC Editor SPEAKS:

This last month has been quite busy.

It started off with the Fresno (2nd) 8th Annual Dr Pepper contest. Several of our members attended and some did reasonably well. Tony Martin was 4th in Expert and Larry Enger was 15th. Al Cron was 2nd in sportsman with Dick Pantzar placing 4th. So, congratulations to our members for a good showing. In addition, some of us did OK in Hand launch--this was flown after the finish of the contest on Sunday. Any way, Tony Martin came in second, and I came in third. And last, but not least, Larry Enger won the top prize at the Raffle, a Futaba Attack 4 channel radio. All in all, it was a fine contest at a fine flying field, with excellent weather, and a great bunch of people operating the affair. Those of you who did not go ought to consider going next year to the (3rd) 8th annual affair, though it will probably be known as the 9th annual.

Just the other day, the first SC2 contest was held at North County Clouds. It was a rather strange day weather wise, with good but spotty lift, and tremendous sink in some areas. The results are printed elsewhere in this news letter, but check out the winner. Tony Martin killed the competition with a score that was only 18 points off of perfect. Congratulations, Tony.

To you other News letter editors on our mailing list, I wish to thank you for reciprocating. The several articles you have published I find to be very interesting, and I am selecting some of them for reproduction for my club members. This month, I have found some material in the Torry Pines Gulls News Letter on the Schuermann Wing and on glue joints for Carbon Fiber. And I also have some other stocked up for the future from other publications. In behalf of the members of HSS I want to thank you for this help in making information available for a wider audience.

Finally, I want to thank Rich Garner for his second article, published herein, on the spirit of participation.

Thermals, Bob Sliff

HSS CONTEST DEPARTMENT

George Joy, Contest Coordinator

The following contest schedule is complete to the best of my knowledge as of this date, 3 Mar 1989

DAY MONTH CONTEST DIRECTOR OR INFORMATION

6 MAY SULA 2 Meter

6-7 MAY LSF Soaring Nats (N. Calif.-Morgan Hill-Bay Area)

7 MAY Steve Fink (HSS Monthly) (Consider possible change for LSF Soar Nats to 21 May.)

20-21 MAY SMSS X-Country, Santa Maria Ca.

21 MAY SULA Monthly

4 JUN ISS Hand Launch Annual

10-11 JUN WUSSC Modesto (?)

11 JUN Herman Hall (HSS Monthly AMA Sanctioned)

17 JUN SULA Monthly

17-18 JUN John Lupperger (Astro Champs)

25 JUN SULA SC2

8 JUL SULA 2 Meter

9 JUL _____ (HSS Monthly)

15-23 JUL AMA Nationals

16 JUL SULA Monthly

5 AUG SULA 2 Meter (\$\$\$\$)

6 AUG John Lupperger (HSS Monthly)

19 AUG SULA Monthly (?)

19-20 AUG Felix Vivas (7CELL F3E)

27 AUG TOSS SC2

9 SEP SULA 2 Meter

9-10 SEP SAM 26, Taft, Old Time Events incl. R/C Old Timer Glider.

10 SEP _____ (HSS Monthly)

17 SEP SULA Monthly

24 SEP ISS/SWSA SC2

8 OCT Dave Nemecek (HSS Monthly)

14 OCT SULA Monthly

15 OCT PSS SC2

4 NOV SULA 2 Meter

5 NOV _____ (HSS Monthly)

11-12 NOV SAM 49, Taft, Old Time Events incl. R/C Old Timer Glider.

12 NOV SULA Monthly

19 NOV George Joy/Frank Chastler (HSS SC2)

3 DEC _____ (HSS Monthly)

CONTEST DEPARTMENT

There have been many changes so far this year. I hope that we can continue to operate with fewer changes throughout the rest of the year. Our contest last month was run by Steve Hendry. I think Steve found out that it isn't as easy as it sounds or looks. This contest format was harder to score than he or I realized. We apologize for the delay in getting the results finalized. I took every thing home and checked all the scores carefully before posting them. It took almost 2 hours to check everything, but I know that they are correct. I would like to thank Maxine Ross for her help, and apologize, from the club, for giving her a hard time on contest day. I would like to remind everyone that all the officers, C.D.'s, and helpers are all volunteers. These people are trying to help the club and the hobby. I've heard much criticism being passed around both to these individuals and about others. IF YOU THINK YOU CAN DO A BETTER JOB, THEN PLEASE JOIN THE REVOLUTION, AND HELP OUT. If you are only going to complain and not offer your services, then please keep your comments to yourself. I would like to provide some guidelines for the operation of a contest, from a C.D.'s point of view. First the C.D. should pick a task that he is familiar with. Next he should have names of members that are going to help run the contest (ie. winch operators, scorers, landing

judges, sign-ups, and winch master ect.). Next you should be sure there are scoring sheets available so you don't have to figure out how to score each round. If these things are done then the C.D. will be able to watch the operation of the contest and be available to make a decision if the need arises. Lastly the C.D. should have someone as an assistant C.D. while he is flying. Oh, one other thing, the C.D. should not be timing for another pilot during the contest. I hope this will help everyone to operate a smooth running contest. The contest for May 7th will be run by Steven Fink. It will consist of three rounds: Round 1 3 minute precision duration, scored 800/200 Round 2 7 minute precision duration, scored 900/100 Round 3 5 minute precision duration, scored 700/300 The scoring is not an error, Steven says that he has the score sheets made up. The May contest will be an A.M.A. sanctioned contest run by Herman Hall. It will consist of three rounds - standard format

Respectfully Submitted, George

The Hss Video Library R. Lowery, Librarian

The following club owned videos are available for viewing.

NAME/COMMENT/RATING (0-5)

SABER JET / F-86 History/shoot-em-ups / 4

STRIKING BACK / 4

FOAM, FIBERGLAS, FLIGHT / 4

FIRST FLIGHT / 0

MONOKOTE 1 & 2 / Interesting / 3

MIG KILLERS / 3

HOOK DOWN, WHEELS DOWN / NAVY

Avation Hist / 4

F3E USA Team Selection 1988/Elect flight

DAWN PATROL / WWI Movie / 4

THUNDERBOLT, FLIGHT FOR THE SKYS

WWI Air Combat / 5

More Tapes are being added all the time. All tapes are in VHS format. If you would like to check a tape out or return one, call me, Roger Lowery, so we can meet at the field or at the club meeting or something. My number is 756-9356

Harbor Soaring Society

April Monthly Contest Results

Open Division

Name	Actual Score	Normal Score	Class	Trophy
1 MARTIN, T	2,943.0	1,000.0	E	E - 1
2 HARRIS, P	2,888.0	981.3	E	E - 2
3 SLIFF, B	2,844.5	966.	E	E - 3
4 HENDRY, S	2,823.5	959.4	S	A - 1
5 WHITE, L	2,793.5	949.2	A	A - 2
6 CHASTELER, F	2,772.0	941.9	E	
7 RICHARDSON, P	2,768.0	940.	E	
8 CONRAD, W	2,757.0	936.8	A	
9 GARNER, R	2,740.5	931.2	E	
10 LOWERY, R	2,711.5	921.3	A	
11 STALLS, J	2,694.5	915.6	A	
12 CHASTELER, T	2,656.5	902.7	E	
13 PANTZAR, D	2,649.0	900.1	E	
14 JOY, G	2,635.5	895.	E	
15 STOVALL, W	2,626.5	892.5	S	S - 1
16 ZINK, D	2,618.5	889.7	S	S - 2
17 HURLEY, C	2,593.0	881.1	E	
18 THOMAS, R	2,411.0	819.2	E	
19 BELL, S	2,405.5	817.4	S	
20 RITSCHKE, G	2,400.5	815.7	E	
21 NEMECEK, D	2,285.0	776.4	A	
22 RANDOLPH, W	2,251.0	764.9	S	
23 CRON, A	1,484.0	504.2	A	

2 Meter Division

Name	Actual Score	Normal Score
1 STALLS, J	2,746.0	1,000.0
2 SLIFF, B	2,722.5	991.4
3 BELL, S	2,648.0	964.3
4 JOY, G	2,640.5	961.6
5 CONRAD, W	2,635.0	959.6
6 WHITE, L	2,579.5	939.4
7 THOMAS, R	2,558.0	931.5
8 HURLEY, C	2,549.0	928.3
9 HALL, H	2,206.0	803.4
10 CRON, A	1,480.5	539.1
11 COOK, D	1,064.5	387.7

Yearly Standings - Through April
Open Division

Name	Score	#	Avg
1 GARNER, R	3,872.4	4	968.1
2 CHASTELER, F	3,869.2	4	967.3
3 MARTIN, T	3,820.1	4	955.0
4 WHITE, L	3,804.8	4	951.2
5 SLIFF, B	3,625.0	4	906.3
6 HENDRY, S	3,621.6	4	905.4
7 LOWERY, R	3,599.0	4	899.8
8 HURLEY, C	3,552.7	4	888.2
9 RITSCHKE, G	3,545.0	4	886.3
10 PANTZAR, D	3,539.5	4	884.9
11 CONRAD, W	3,391.8	4	848.0
12 THOMAS, R	3,376.6	4	844.2
13 STOVALL, W	3,061.8	4	765.5
14 HARRIS, P	2,976.9	3	992.3
15 RICHARDSON, P	2,891.4	3	963.8
16 LAMPRECHT, D	2,846.4	3	948.8
17 JOY, G	2,722.7	3	907.6
18 STALLS, J	2,674.1	3	891.4
19 POULSEN, G	2,664.8	3	888.3
20 NEMECEK, D	2,603.2	3	867.7
21 RANDOLPH, W	2,526.4	3	842.1
22 CRON, A	2,347.6	3	782.5
23 LUPPERGER, J	1,900.8	2	950.4
24 DANRICH, D	1,896.6		948.3
25 FINK, S	1,852.9	2	926.5
26 BELL, S	1,665.1	2	832.6
27 CHASTELER, T	1,537.4	2	768.7
28 KUTCH, N	983.3	1	983.3
29 ENGER, L	951.2	1	951.2
30 DEE, M	943.8	1	943.8
31 HALL, H	909.5	1	909.5
32 ZINK, D	889.7	1	889.7
33 SANDRONI, H	880.8	1	880.8
34 LEE, T	818.6	1	818.6
35 QUISENBERRY	689.2	1	689.2
36 EGOLF, D	686.8	1	686.8
37 WEBSTER, D	599.2	1	599.2
38 WENTWORTH, C	552.4	1	552.4

Yearly Standings - Through April

2 Meter Division

Name	Score	#	Avg
1 HURLEY, C	3,796.5	4	949.1
2 WHITE, L	3,774.3	4	943.6
3 CONRAD, W	3,758.5	4	939.6
4 THOMAS, R	3,753.8	4	938.5
5 SLIFF, B	3,742.7	4	935.7
6 LAMPRECHT, D	2,870.7	3	956.9
7 POULSEN, G	2,813.6	3	937.9
8 JOY, G	2,548.4	3	849.5
9 LUPPERGER, J	1,809.9	2	905.0
10 BELL, S	1,800.4	2	900.2
11 HALL, H	1,716.2	2	858.1
12 LOWERY, R	1,672.3	2	836.2
13 FINK, S	1,487.1	2	743.6
14 STALLS, J	1,000.0	1	1,000.0
15 KUTCH, N	875.3	1	875.3
16 QUISENBERRY	868.7	1	868.7
17 CRON, A	539.1	1	539.1

HSS MAY89

RESULTS OF N.C.C. (SC2) CONTEST ON 23 APRIL 1989

CONTEST DIRECTOR -- KEITH FINKENBINER

	NAME	CLUB	CLASS	SCORE	NORMALIZED SCORE	TROPHY WINNERS
1	Martin, Tony	HSS	EXPERT	2982.0	1000.0	1-E
2	Smith, Mike	NCC	EXPERT	2949.8	989.2	2-E
3	Wurts, Joe	TOSS	EXPERT	2929.0	982.2	3-E
4	Moran, Miles	TOSS	EXPERT	2923.9	980.5	4-E
5	Jolly, Larry	SULA	EXPERT	2923.0	980.2	5-E
6	Raymond, Ken	NCC	EXPERT	2897.0	971.5	
7	Meienberg, Ken	SULA	EXPERT	2888.0	968.5	
8	Cron, Al	HSS	SPORTS-	2885.8	967.7	1-S
9	Oldenburg, Ed	TOSS	EXPERT	2870.0	962.4	
10	Fink, Dan	SULA	EXPERT	2864.6	960.6	
11	Lueken, Jim	NCC	EXPERT	2854.9	957.4	
12	Hendrickson, Eric	TOSS	SPORTS-	2831.6	949.6	S-2
13	White, Larry	HSS	SPORTS-	2795.1	937.3	S-3
14	Edberg, Don	PSS	EXPERT	2777.1	931.3	
15	Bonanno, Tony	SULA	SPORTS-	2773.8	930.2	
16	Billman, Todd	PSS	EXPERT	2765.1	927.3	
17	Stalls, Jared	HSS	SPORTS-	2754.5	923.7	
18	Keil, David	NCC	SPORTS-	2754.0	923.5	
19	Stafford, Irv	NCC	EXPERT	2752.0	922.9	
20	Griswold, Chuck	TOSS	EXPERT	2748.8	921.8	
21	Hodges, Fred	NCC	SPORTS-	2744.6	920.4	
22	Fink, Steven	HSS	SPORTS-	2708.0	908.1	
23	Doig, Al	NCC	EXPERT	2630.0	882.0	
24	Clark, Dean	NCC	SPORTS-	2627.1	881.0	
25	Hendry, Steve	HSS	SPORTS-	2614.7	876.8	
26	Spencer, Randy	SULA	EXPERT	2605.9	873.9	
27	Schwemmer, Keith	NCC	SPORTS-	2599.9	871.9	
28	Lowery, Rodger	HSS	SPORTS-	2585.4	867.0	
29	Stahleber, Fred	NCC	EXPERT	2580.0	865.2	
30	Conrad, Will	HSS	SPORTS-	2563.4	859.6	
31	Garner, Rich	HSS	EXPERT	2555.8	857.1	
32	Anderson, Gary	NONE	SPORTS-	2532.9	849.4	
33	Aker, Irv	SULA	EXPERT	2506.0	840.4	
34	Hunter, John	NCC	EXPERT	2502.4	839.2	
35	Stovall, Will	HSS	SPORTS-	2462.2	825.7	
36	Joy, George	HSS	EXPERT	2420.1	811.6	
37	Newlove, Jack	NCC	SPORTS-	2410.7	808.4	
38	Richardson, Pete	HSS	EXPERT	2397.2	803.9	
39	Sliff, Bob	HSS	EXPERT	2378.6	797.7	
40	Thomas, Ross	HSS	EXPERT	2354.3	789.5	
41	Vickers, Don	SULA	EXPERT	2319.9	778.0	
42	Gilman, Richard	NCC	EXPERT	226.1	746.5	
43	Chasteler, Tom	HSS	EXPERT	2181.5	731.6	
44	Olsen, Helen	SULA	SPORTS-	2174.0	729.0	
45	Butkovich, David	PSS	SPORTS-	2168.3	727.1	
46	Burnes, Richard	PSS	EXPERT	2123.6	712.1	
47	Sandroni, Hugo	SULA	SPORTS-	2074.0	695.5	
48	Goldsmith, Bob	TOSS	SPORTS-	1962.9	658.2	
49	Finkenbiner, Keith	NCC	EXPERT	1931.6	647.8	
50	Chasteler, Frank	HSS	EXPERT	1879.0	630.1	
51	McNamee, Art	TOSS	SPORTS-	1800.0	603.6	
52	Beck, Richard	NCC	SPORTS-	1766.2	592.3	
53	Stoker, Pat	SULA	EXPERT	1723.7	578.0	
54	Ford, Greg	SULA	EXPERT	1722.2	577.5	
55	Douglas, Ian	ISS	EXPERT	1698.2	569.5	
56	Zink, Don	HSS	SPORTS-	1644.2	551.4	
57	Tillman, Norm	NCC	EXPERT	1597.4	535.7	
58	Harris, Phil	HSS	EXPERT	856.0	287.1	
59	LaBarre, Richard	NCC	SPORTS-	311.0	104.3	
60	Warner, Garth	NCC	SPORTS-	0.0	0.0	
61	Jonas, Timothy	NCC	SPORTS-	0.0	0.0	

Al Cron and Eric Hendrickson have advanced to EXPERT.

TEAM SCORES

TOSS(7)	NCC(19)	SULA(11)	HSS(18)	PSS(4)	ISS(1)
982.2	989.2	980.2	1000.0	931.3	569.5
980.5	971.5	968.5	967.7	927.3	
962.4	957.4	960.6	937.6	727.1	
949.6	923.5	930.2	923.7	712.1	
3874.7	3841.6	3839.5	3828.7	3297.8	569.5--TOTALS

WHAT IT'S ALL ABOUT

by Rich Garner

Building and flying model airplanes can be one of the the most rewarding, satisfying, enjoyable hobbies as those of us know who are involved! Probably a good number of us began our modeling days as kids, having our interest in aviation sparked by attendance to a local air show or model flying field.

I remember during 1944, at the end of WWII, when I would watch navy aircraft from Los Alamitos Naval Air Station fly over our home. As a young boy I was fascinated watching Corsairs, Hellcats, and Avengers fly close wing-to-wing formation and hearing the distinctive sound of radial engines in and out of synch. I recall my first attempt at putting together a model airplane. I assembled a cardboard glider from a box of shredded wheat! Hasn't model airplane building come a long way since those days?

After you have spent numerous hours at the work bench building your latest dream, you are finally ready for the test flight of your new bird. I always feel a sense of anxiety and excitement, then accomplishment and satisfaction as my new ship takes to the skies and soars like a hawk.

Of course, there is the other side of the coin, when the model--through no fault of your own--goes out of control and inadvertently attempts a series of maneuvers never intended by its designer. You watch in helpless horror. There is a sick sensation in the pit of your stomach as the seconds pass like minutes until the ship is finally overcome by gravity and plunges earthward. Next you are subjected to the sound of impact, complete with splitting balsa and spruce and the ripping and tearing of monokote. It's over. You stand there, stunned and confused. Slowly reality hits. You have, indeed, just "augered in". As your flying buddies walk with you to the crash site, the wind begins to disburse model fragments over the field, and you have mixed feelings as you are given words of encouragement to "build and fly again".

I guess that's what our hobby is all about....being part of a club like H.S.S. After all, it wouldn't be much fun to do all this by yourself.

THE SCHUEMANN WING FOR 2-METER GLIDERS?

Steve O'Leary

Taken from the Torrey Pines Gulls News Letter, Feb 1989. It is presented for your digestion.

In the February issue of Model Aviation, Peter Carr (current president of the League of Silent Flight) wrote an article about the Schuemann wing planform. The gist of the article is that the Schuemann planform is used on full scale gliders and on F3B gliders, so why not hop on the bandwagon and use it on your glider? In the case of the Torrey Pine Gulls, your gliders is very likely a 2-meter thermal glider.

In case you are... [thinking of doing this] my answer is, "don't bother." The reason is that a small tip chord means that portion of the wing will operate at a low Reynold's number and actually cause more drag. This is not a problem on full scale gliders and not much of a problem on large F3B models with high wing loadings (i.e. flying fast). For example, and F3B model in thermal flight might have an Re of 94,000 on 6" tip chord, while a 2-meter glider might have an Re of 74,000. Very few airfoils work well at Re values this low. To make matters worse, a small tip chord increases the lift coefficient in that area, again moving the airfoil into an area of high drag.

Peter Carr also made some misstatements in the article that I will address. If you have read my airfoil windtunnel articles, you will know that fully sheeting a wing does not necessarily reduce the drag of the wing. The constant chord at the center of a wing is not used for strength, but for the same reasons that we use it on our gliders--it is an easy way to build an efficient wing platform. The stress on the wing drops off so rapidly as you move out from the center that a constant chord wing is stronger than it needs to be unless the structure is changed also as you move out from the center. That is why wings tend to break in the center. The center of gravity should always be measured on the mean aerodynamic chord, not on the root chord. The lift at the tip of all non-pointed wings is zero, but the lift coefficient of the airfoil near the wing tip goes up as the chord goes down. This theoretical (when the effect of Reynolds number is ignored) improvement is what leads to tip stalling. The Schuemann planform is much more susceptible to this problem as many F3B pilots will tell you. Finally, a model will not fly faster because it uses this wing platform. Anyway, being able to fly slower is the measure of an efficient planform for our models.

All of this might be academic anyway, because either Peter Carr or the Model Aviation people left the chord dimensions off of the wing diagram!

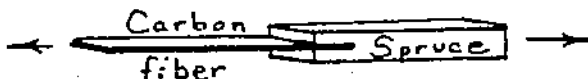
Strength of Glue Joints

Copied from the South Bay Soaring society's newsletter as it appears in The Torrey Pines Gulls newsletter, Feb 1989, S. O'Leary, Ed.

By Reinhard Lahde and Bob Bayard

In the process of continuing some work that one of us (BB) started on the strength of wing spars, we felt the need to find the best way to glue strips of carbon fiber/epoxy laminates to each other and to other material such as spruce. This note reports our findings on glue strengths for aliphatic glue, gap-filling cyanoacrylate and fast (5 min.), medium (30 min.), and slow epoxy. The slow epoxy is the kind that sets up in about three hours and is best left overnight to harden.

The strength we were interested in is shear strength, the ability of glue joints to resist sliding or breaking along the glued surface. A typical test sample is shown in the sketch. In this case a strip of carbon fiber laminate is glued on its upper and lower surface to spruce. We have tested not only CF/spruce but also CF/balsa and CF/CF joints.



Epoxy does not bond well to the epoxy surface of the carbon fiber/epoxy laminate if the laminate surface is even partially unsanded. Cyan is somewhat more tolerant of some shiny surface spots on the laminate. Best, of course, is to sand the laminate surfaces until no shiny spots remain. The results we report here are based on "no shiny spots" laminate preparation, though the reason we know about this shiny-spot-problem is that we were not too thorough in our sanding in the earlier phases of our inquiry.

The best joints are made with the least glue, by clamping the two pieces and squeezing out excess glue. When we made joints with thicker glue, the glue pulls apart in chunks rather than shearing along the whole surface. The strength is very low, no more than about one-fourth the strength of a well-made joint.

A good joint between CF and balsa fails by pulling slivers of balsa off the piece. The glue is not torn. Bonds between these two materials are the weakest of all.

Glue joints between CF and spruce are much stronger than CF/balsa and fail by a combination of pulling some splinters out of the wood and shearing some of the glue itself. Joints between CF and CF fail mostly by separating at the glue-laminate interface, even for well sanded surfaces. The strength of the CF/CF joints is close to that of CF/spruce, maybe a bit more. Some of these joints taxed our tension machine and it had to be re-engineered in order the break all of the samples.

Glue	Average Strength (psi)
Aliphatic	1220
Epoxy fast (5 min)	1530
Epoxy med. (30 min)	2190
Epoxy slow (3 hr)	3410
Cyanoacrylate	6560

Aliphatic glue makes the weakest bond of the glues we tested. Next is 5 minute epoxy. The fast epoxy is somewhat weaker than the slower epoxys. The cyanoacrylate is the strongest by quite a bit, being about twice as strong as the slowest epoxy and four times as strong as the fast epoxy. The average breaking shear stresses for our sample of CF/CF and CF/spruce are given in the table.

In summary, if you want a good joint between CF/epoxy laminate and spruce or other laminate, sand until all shiny spots disappear, clean it, put slow zap on it and squeeze the extra glue out. That's your best joint.

END

HOW TO GET A HIGH LAUNCH

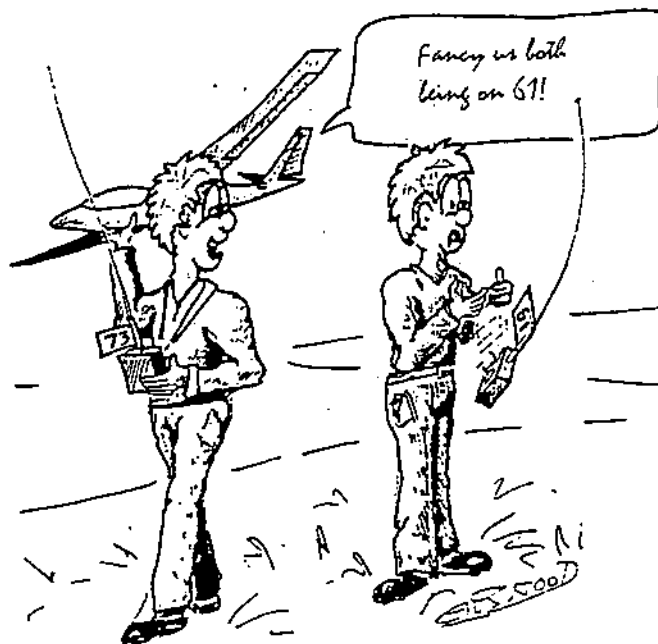
This problem is one of conflicting requirements.... after all, if you want maximum height, you shouldn't wind in the winch at all! But, lets get right to the problem. Assume calm air for the first part of this, winding in a lot of line, since it is obvious that the more line you have left at the time of release, the higher you can be. It follows that the ship should not be launched forward and allowed to zoom upward into the climb as this has the effect of taking up about 20 feet right off the top. You must launch UP, and STEEPLY! However, before we can do that, we must have our act together and the ship has to be set up correctly, The main reason has to do with the aspect ratio. Wide, low aspect ratio wings winch better than long narrow ones. Nearly as important is wing flex. Wings that flex on tow cost you altitude, They spill lift. You want the most rigid wings possible. Assuming a reasonable ship, the tow hook must be in the right position. Where is the right position? Well, if you are a competent pilot the right position is as far back as you can get it and not have to push down elevator to keep from stalling on the winch. Or, another way to look at it is, if your ship requires up elevator while on the winch, the tow

hook is too far forward. The ideal position is when the ship climbs just short of stall on the winch, when the elevator trim is set at the position you use to fly on the edge of stall when you are not on the winch. In short, elevator trim should do the same thing under tow as it does in normal flight. So where is that point? Well, there is no substitute for testing the aircraft and moving the hook back a little at a time, but in general, the location will be at or slightly behind the center of gravity.

Many flyers get confused about the effect of the CG, tow hook position, and center of pressure of the wing. If they change the CG they change the tow hook position. This is simply not necessary. A glider under tow does not care what its CG is. What is critical is where the tow hook is in relation to the center of pressure of the wing (in general, the center of pressure is about 48% of the chord, but this is dependant on the exact wing plan-form). If you're still in doubt that the CG does not matter under tow, let me point out that the CG is determined with the airplane horizontal, but we tow (initially at least) with the aircraft vertical. Horizontal CG means nothing in the vertical position.

By

Roger R Sanders
I.S.S.



2ND BI-ANNUAL SPORTSMAN/NOVICE 7 CELL F3E FAI CONTEST

****\$2,000 CASH PRIZES****

\$1,000.00

\$600.00

\$250.00

\$150.00

FIRST PLACE

SECOND PLACE

THIRD PLACE

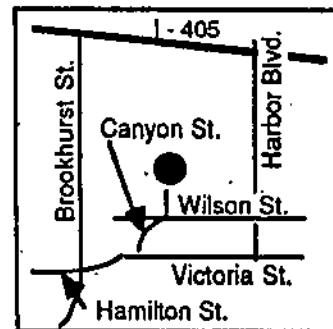
FORTH PLACE

**THIS IS A SEVEN CELL
ELECTRIC SAILPLANE CONTEST,**

HOSTED BY THE HARBOR SOARING SOCIETY.

LOCATION: THE HARBOR SOARING SOCIETY FLYING
SITE, MAC FREED MEMORIAL FIELD, FAIRVIEW REGIONAL PARK
(BEHIND ESTANCIA HIGH SCHOOL) COSTA MESA CA.

DATE: AUGUST 19 AND 20, 1989



AMA SANCTIONED, CLASS C (LIMITED ENTRY) CONTEST.

QUALIFICATIONS FOR ENTRY: IT IS OPEN TO U.S. RESIDENT AMA MEMBERS, WITH THE FOLLOWING EXCEPTIONS. IT IS NOT OPEN TO INDIVIDUALS WHO HAVE OFFICIALLY QUALIFIED FOR ANY U.S. AMA FAI F3E TEAM SELECTION OR HAVE MADE THE TEAM, OR WHO PLACED FIRST OR SECOND AT THE FIRST BI-ANNUAL 7 CELL F3E CONTEST HELD IN AUGUST, 1987. THIS IS TO STIMULATE NEWER PEOPLE TO ENTER F3E FLYING AND TO INSURE THAT ONLY BEGINNERS/NOVICES HAVE THE OPORTUNITY TO WIN THE CASH PRIZES.

ENTRY FEE: \$25.00

SPECIFICATIONS: SEVEN 1.2 AH CAPACITY OR SMALLER NI-CD CELLS FOR THE BATTERY PACK. ANY SIZE MODEL SAILPLANE POWERED BY ANY SIZE ELECTRIC MOTOR. WINNING PLANES WILL BE MEASURED AND WEIGHED TO ASSURE THEY ARE WITHIN FAI F3E RULES. IN ADDITION ALL FLYING WILL BE WITHIN GUIDLINES LAID OUR IN THE 1989 FAI SPORTING CODE AND THE AMA SAFETY CODE. (NOTE: THE COURSE TO BE FLOWN IN THE DISTANCE PORTION WILL BE THE 150 METER COURSE.)

SEND FOR ENTRY FORMS OR ADDRESS INQUIRIES TO:

FELIX VIVAS

1800 16TH STREET H-310

NEWPORT BEACH, CA 92663 // (714) 645-3263

School App #27457 - 5-30-89

Reggie Wilcox X 000

JOE
PARKER HANCOCK

ELECTRIC CONTEST

THE HARBOR SOARING SOCIETY WOULD LIKE TO INVITE YOU TO THE...

15th ANNUAL ASTRO FLIGHT ELECTRIC CHAMPS

The 15th Annual Astro Flight Electric Champs will be held on Saturday and Sunday, June the 17th and 18th at Fairview Regional Park, Costa Mesa CA. The events will be 7-cell Sallplane and Old Timer, and Unlimited Sallplane and Old Timer. Rounds one, two and three will be limited motor run with thermal duration and landings, and will be scored man-on-man. The motor run, duration, and landings will be as follows:

ROUND 1	7-Cell Sallplane	7Cell Old Timer	Unlimited Sallplane	Unlimited Old Timer
Motor run	20 seconds	35 seconds	10 seconds'	20 seconds
Duration	3 minutes	3 minutes	3 minutes	3 minutes
Landing	100 points	25 point in/out	100 points	25 point in/out
ROUND 2				
Motor run	40 seconds	55 seconds	20 seconds	30 seconds
Duration	7 minutes	7 minutes	7 minutes	7 minutes
Landing	100 points	25 point in/out	100 points	25 point in/out
ROUND 3				
Motor run	30 seconds	40 seconds	15 seconds	25 seconds
Duration	5 minutes	5 minutes	5 minutes	5 minutes
Landing	100 points	25 point in/out	100 points	25 point in/out
ROUND 4				

Round four will be a 5 minute penalty-duration with the same landings as the previous rounds. Time will start when the model becomes airborne. A second timer will keep track of the motor run which will be subtracted from the total flight time. Motor run is unlimited and at the descretion of the pilot, but is restricted to the initial run. Scoring will be straight points per second with all classes flying the same task.

ENTRY FORM

\$5.00 Registration per Class
 Make your check payable to:
 Harbor Soaring Society
 1204 Palm Ave.
 Huntington Beach, CA
 92648

Name.....
 Address.....
 City.....
 State..... Zip.....
 AMA No.....

7 Cell Sallplane
 7 Cell Old Timer
 Unlimited Sallplane
 Unlimited Old Timer

Check each class entered and enclose
 \$5.00 per class entered.

**AMA SANCTIONED
AMA LICENSE REQUIRED.
JUNE 17th and 18th, 1989
Fairview Regional Park
Registration 8:00 AM
First Round 9:00 AM**

Trophies will be awarded to third place in each class. There will be a pilots drawing for valuable merchandise prizes donated by Astro Flight and several other manufacturers

