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

FIRST CLASS MAIL

WILL CONRAD
9359 SHRIKE AVE
FOUNTAIN VALLEY , CA 92708

(The Soaring) Society Column

President:	George Joy	(714) 556-6385
Vice Pres:	Rich Garner	(714) 526-6734
Secretary:	John Lasater	(714) 645-2805
Treasurer:	Frank Chasteler	(714) 545-2185
Contest Coord:	Ross Thomas	(714) 638-0705
General Dir:	Jared Stalls	(714) 772-1846
News Letter Ed:	Bob Sliff	(714) 895-1203

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

February 1990 Volume 27 Number 2

February Club Meeting:The February club meeting will be held on Wednesday, February 7, 1990, 7:30 pm at the Consolidated Water District Office, 1965 Placentia Ave., Costa Mesa, Ca. The Monthly club contest will be on the 11th of January, field conditions permitting.

In the program for February's meeting Tony Martin will domonstrate and discuss cutting foam wing cores.

March Club Meeting: The March club meeting will be held on Wednesday, March 7th, 1990 at 7:30 pm at the Water District Office.

HSS MINUTES JAN. 3, 1990

a) The meeting was called to order by Jared Stalls at 7:30.

b) A Treasurer's report was given by Frank Chasteler. The report was approved as stated.

c) New Faces: Dan Anderson joined the club.

d) George Joy and our other new officers were installed.

e) George Joy gave a year end contest report for 1989 and trophies were presented.

f) The 2-Meter year end scores were recalculated at this meeting (this was necessary due to computer failure). The results were as follows: Bob Sliff--1st; Larry White--2nd; Ross Thomas--3rd.

Old Business:

1. A proposal was made to pay Steve Hendry for retriever motors--this was seconded and approved.

2. Ross Thomas covered the contest schedule for the new year and made a call for CD's for the balance of the year.

3. Newsletter Editor Bob Sliff issued a call for articles and stories for upcoming newsletters.

4. V.P. Rich Garner issued a call for programs or guest speakers for following meetings.

5. Negotiations with the city are continuing for the placement of and enclosed storage facility for the club.

6. There was a discussion of relocating the field--there will be nothing done for a period of one year.

7. There was a motion that W. Conrad and T. Pastore continue efforts toward involving scout troops in the club. Motion was seconded and approved.

8. A question was brought up about the novice program, the Board recommends no changes.

9. A motion was made and seconded to accept contest dates for 1990 as published. This was approved by members present.

10. A motion was made and seconded to retain last year's contest format--motion carried.

11. A motion was made to maintain a $4.00 surcharge for guests flying for trophies. This motion was seconded and approved.

New Business:

1. The Board recommended the club host the SC2 Nov. 18 contest -- the club rejected this date.

2. A motion was made and seconded that the club host SC2 Sept. 30 contest. This motion was carried.

3. A motion was made and seconded that a one Sportsman F3B contest (per SC2 contest) be held in 1990 -- a discussion by Board members at the SC2 meeting carried this motion.

4. The meeting was closed at 9:10 by George Joy.

John Lasater.

Harbor Soaring Society

January 1990 Monthly Contest Results
2 Meter Division

	Name	Actual Score	Normal Score	
1	RICHARDSON,P	2,820.0	1,000.0	1
2	JOY,G	2,776.0	984.4	2
3	ALMVIG,D	2,746.0		
4	MARTIN,T	2,743:0	972.7	3
5	STALLS,J	2,687.0	952.8	
6	HENDRY,S	2,639.0	935.8	
7	HALL,H	2,617.0	928.0	
8	THOMAS,R	2,565.0	909.6	
9	ANDERSON,V	2,557.0		
10	STOVALL,L	2,522.0	894.3	
11	PARSONS,J	2,477.0	878.4	
12	SLIFF,B	2,467.0	874.8	
13	WHITE,L	2,428.0	861.0	
14	BUZOLICH,N	2,230.0	790.8	
15	KUTCH,N	1,890.0	670.2	

January 1990 Monthly Contest Results
Open Division

	Name	Actual Score	Normal Score	Class	Trophy
1	PUCHALSKI,M	2,888.0		G	E - 1
2	ZINK,D	2,873.0	1000.0	E	E - 2
3	SLIFF,B	2,854.0	993.4	E	E - 3
4	NEMECEK,D	2,823.0	982.6	A	A - 1
5	GARNER,R	2,786.0	969.7	E	
6	MEIENBERG,K	2,749.0		G	
7	GIBBS,D	2,732.0	950.9	S	A - 2
8	ALMVIG,D	2,730.0		G	
9	JOY,G	2,725.0	948.5	E	
10	MARTIN,T	2,721.0	947.1	E	
11	FINK,D	2,701.0		G	
12	PANTZAR,D	2,617.0	910.9	E	
13	RICHARDSON,P	2,605.0	906.7	E	
14	HENDRY,S	2,586.0	900.1	A	
15	CRON,A	2,586.0	900.1	A	
16	WHITE,L	2,584.0	899.4	E	
17	HENDRY,M	2,567.0	893.5	S	S - 1
18	KUTCH,N	2,490.0	866.7	A	
19	STALLS,J	2,370.0	824.9	A	
20	THOMAS,R	2,235.0	777.9	E	
21	BUZOLICH,N	2,161.0	752.2	S	S - 2
22	STOVALL,L	1,793.0	624.1	S	
23	LOWERY,R	1,564.0	544.4	A	
24	GERMANE,B	1,553.0	540.5	S	
25	PARSONS,J	1,462.0	508.9	S	
26	BRATRUD,R	1,218.0		G	

HSS 1990 CONTEST SCHEDULE

FEB 11	HSS CLUB CONTEST*
FEB 17	F3E ELECTRIC CONTEST
FEB 17	SULA MONTHLY
MAR 3	SULA 2-METER
MAR 11	HSS CLUB CONTEST*
MAR 11	SULA MONTHLY
APR 8	HSS CLUB CONTEST*
APR 22	ISS SC2 CONTEST
MAY 6	HSS CLUB CONTEST*
MAY 19-20	ASTRO FLIGHT ELEC. CHAMPS
MAY 27	SULA SC2 CONTEST
JUNE 1-3	F3E TEAM SELECTION (PROPOSED)
JUNE 10	HSS CLUB CONTEST*
JUNE 17	PSS SC2 CONTEST
JULY 1	SC2 LEE RENAUD CONTEST
JULY 8	HSS CLUB CONTEST*
JULY 29	TOSS SC2 CONTEST
AUG 5	HSS CLUB CONTEST*
AUG 26	NCC SC2 CONTEST
SEP 9	HSS CLUB CONTEST*
SEP 30	HSS SC2 CONTEST
OCT 14	HSS CLUB CONTEST*
OCT 28	SWSA SC2 CONTEST
NOV 11	HSS CLUB CONTEST*
NOV 18	TORREY PINES SC2 CONTEST
DEC 2	DUST SC2 CONTEST
DEC 9	HSS CLUB CONTEST*

*****ATTENTION!!!*****

We will need CDs for our contests--Sign up ASAP!!

Contact--Ross Thomas

*****SC2 NOTES*****

10 Contests, 2 Throw aways--

El Dorado will be team entry, but no contest.

Malibu will be team entry, but no contest.

*****SPORTSMAN F3B*****

The topic was brought up at the SC2 meeting, but discussions were deferred until the first SC2 contest at ISS in April. The only comment that was made was to the effect that there might be only a maximum model weight, namely 75 ounces, with no wing loading limit. (We shall see, *Ross*.)

COMPOSITE MOLDING TECHNIQUES FOR SAILPLANE FUSELAGES AND CONTROL SURFACE ACCESSORIES

by E.S. Popko (Woodstock, NY) & J.G. Smith (Brockton, MA)

Extracted from Soar Tech No. 5, Jan. 1986

To be done in seven installments--Part 1

INTRODUCTION

Fiberglass is an exceptionally strong and light material. Its strength comes from very fine strands of glass fiber woven into a cloth and held in place by a liquid resin that cures to a very hard plastic. In addition to its strength and light weight, its plasticity lends itself to far more delicate and graceful designs than is possible with standard built-up wood technology.

These notes explain how to use Glass Reinforced Plastic (GRP) technology to make model fuselages in far less time and cost than with traditional air-ply and balsa construction. Our 2-meter and standard-class glider fuselages weigh less than 7 ounces prior to adding hardware, radio equipment, and painting.

This guide describes the entire process: how to create a mold of your design; how to lay-up bodies in it; how to fasten hardware fixtures like wing rods, servo trays, control linkages and, finally, how to finish and paint your bodies.

Most boat and marine supply stores carry fiberglassing supplies. The following describes the main GRP materials. The topics range from covering styrofoam to painting and repairing fiberglass.

We have taken great pains to detail every step. We hope these notes are helpful and that you will let us know how your lay-ups come out.

GETTING STARTED

WHERE SHOULD YOU WORK?

Find a well ventilated, covered area. Fiberglassing resins, especially the polyesters, give off strong fumes so ventilate away from you work area. Do not work near a ventilator duct that draws its air from your work bench only to reroute it all over your home or workshop.

Resins are best handled in temperatures of 70°F to 80°F. If you must work out-of-doors, do not work in direct sunlight. The sun's ultra violet rays and radiant heat will significantly reduce the pot-life of the catalyzed resin.

WHAT DO I NEED TO GET STARTED?

You will have to buy a basic set of fiberglassing supplies. Some hardware stores, most boating supply houses, and all resin-molding companies carry them. Buy the minimum chemistry to get started. Two quarts of pre-accelerated polyester resin, one 2 ounce vial of MEK peroxide catalyst, three yards of 32" wide 6 ounce weight fiberglass cloth, and a quart of acetone solvent is enough to build a set of molds and one or two complete bodies. Your total investment should be under $30.

WHICH IS BEST - POLYESTER OR EPOXY?

GRP construction is accomplished by using liquid resin chemistry that cures to a very hard, plastic-like finish. You can use either polyester or epoxy resins on fiberglass cloth. Both cure to a strong substance but both are brittle and must be used sparingly. Most of the examples in this guide were done with polyester resin. It is cheaper than epoxy, very strong, and cures in hours. Epoxy is heavier, more expensive, and takes days to completely cure. Epoxy, on the other hand, is stronger than polyester and is less likely to develop hair-line

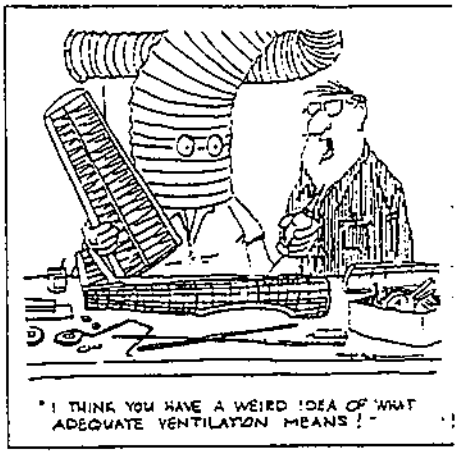
You ought to try polyester resin first. If you want to try epoxy later, you can use the same molds and procedures. Simply substitute epoxy wherever we refer to polyester. Before you buy epoxy resin, however, look at the following chart because both resins have their own requirements.

FIBERGLASS RESIN

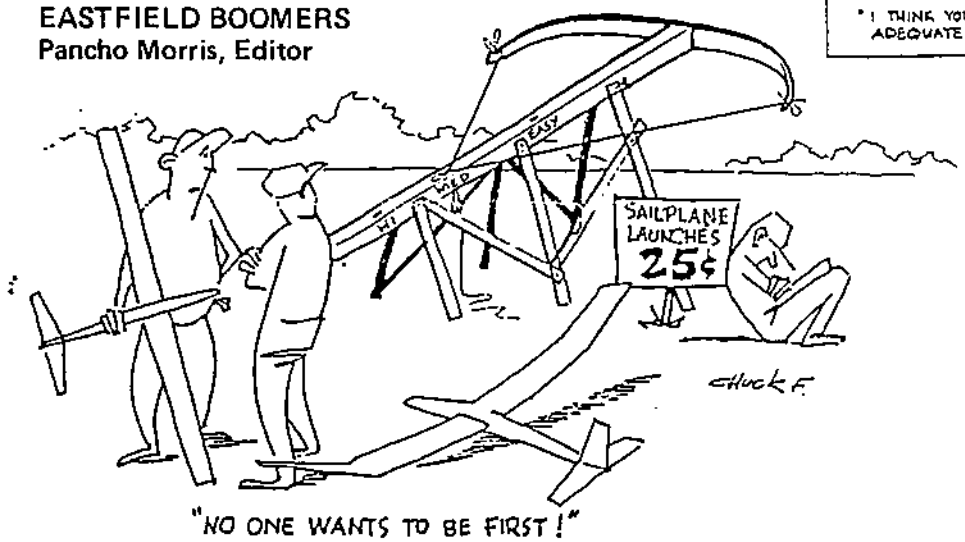
	POLYESTER	EPOXY
Can be applied to	dry wood clean metal	dry wood plastics, styrofoam clean metal
Do not apply to	wet, oily, waxy, paint, rust, epoxy, or styrofoam	wet, oily, waxy, paint, rust
Basic resin	ARCON 200	ARCON L 707
Catalyst/Hardener	(MEK)	--
Solvent/Cleaner	Acetone, Ethyl Alcohol	--
Thinner	Styrene Monomer	--
Thickeners	Cab-O-Sil, Microballoons	Cab-O-Sil, Microballoons
Curing time	10 min to 5 hrs	4-8 hrs
Cost	Low	High
Notes	Don't use with Oak, Redwood, Teak	
Strength	medium	High

(Table 1: Characteristics of Polyester and Epoxy Resins)

To be continued next month!
****(Next month--tools, mixing, cleaning up.)****



EASTFIELD BOOMERS
Pancho Morris, Editor



"NO ONE WANTS TO BE FIRST!"

WHAT TH'HECK'S HE TALKING ABOUT?

by Chuck Griswold
Extracted from TOSS Jan.'90 Newsletter

Oft times, I sit and listen to the hot shots talk about what you should do to shorten the bubble or lengthen the transition. Guess what? They're talking about model gliders!! Now don't that take all? So I got out my Martin Simons book, the one that Ed Old gave me for helping while he was President, and the new Soartech #8 that Herk Stokely sent me, and the Princeton paper that the Three Amigos sent me back in 1985. With all this information floating around, I should be able to pop bubbles with the best of them.

Reading through all that stuff once, was pretty dry. Oh, on occasion the discussion would liven up a little and the plane would stall and I could see it spinning out of the sky in my mind's eye. The excitement would build in direct proportion to the Reynolds number. But over all, after a couple of hours, I'd loose interest and so the chapters would be spaced over a few months, to say nothing of the books. (Not the best way to study and retain information.)

Now I think it's time to put all this information in a very consolidated form (something like "Go for it and rebuild later, if necessary). I think it best to start out with a list of definitions. Terms are defined in a rational order.

As the year progresses I might stick some more high tech stuff in here, iffin yall don't laugh at the way I think about stuff like this.

Reynolds number: Rn = (Density/Viscosity) x Velocity x Length. The density and viscosity of air are unchangeable for design purposes so... Rn = 6360 x Velocity (in feet/sec) x Length of chord (in feet). *88 ft/sec = 60mph 44 = 30 22 = 15mph, etc.* This will give you a Reynolds number compatible with polars you find in a tech manual. *Visualize:* Sand on the surface of the wing (air molecules). Count the grains on the wing over a period of time, more grains = better. The closer you come to flying like a real airplane. Less scale effect. You can only count more grains on the wing by increasing the speed or the chord. ?Comprendo?

Boundary layer: The area between the airfoil surface and a point above or below the wing surface where the air has not been affected by the passage of the wing.

Laminar: *Visualize.* Many sheets of thin paper stacked layer upon layer above the wing. Each layer is moving slower in relation to the wing than the one above it until the layer closest to the surface is moving at the same speed as the wing. Same for the bottom. This is a low drag condition and preferable over a turbulent layer. Except for the fact that laminar flow separates sooner and reattaches much later, if at all.

for Laminar flow: Low drag, thus higher efficiency

against Laminar flow: Very easy to detach from surface. Much harder to reattach.

Bubbles: The boundary layer becomes detached, usually at the lower pressure regions, (you know, at the thickest part of the wing, the part where the most lift is produced. Just think of the lift pulling the sheets of paper off the surface) and at the laminar flow area at the leading edge, then reattaches down stream of that point. This stagnant area is called a bubble and increases drag dramatically. Just like gluing a hunk of balsa at the top of the wing. The air molecules don't move off the wing in this area. As the angle of attack continues to increase, after a bubble has formed, the bubble breaks, then boundary layers cannot reattach, and a stall occurs.

Attached: The boundary layer stays on the surface or parallel to it.

Detached: The boundary layer becomes separated from the surface of the wing. The boundary layer may become detached at a point and then reattach itself (forming a bubble) or it may never reattach. Causing very high drag or possibly a stall.

Turbulent: *Visualize* Very fine sand tumbling grain over grain along the length of the airfoil. A rolling motion. Always thicker than laminar flow.

for Turbulent flow: Sticks to the surface longer. Harder to detach completely from the surface.

against Turbulent flow: higher drag than laminar flow.

Transition Zone: The area where the boundary layer goes from laminar to turbulent. Or where the flow detaches completely.

Ramps: Are designed into airfoils to help the boundary layer stay attached longer or help it reattach after the bubble has formed. With low Rn like ours the ramps are designed to cover most of the upper surface of the airfoil. So don't look for one, chances are you won't find it.

Hysteresis: (phys) Failure of a property changed by an external agent to return to its original value when the cause of the change is removed.

high lift Hysteresis (Princeton papers). *Visualize* an airfoil increasing its angle of attack (aoa) to a point right before a stall. Mark that point in your mind, now increase the angle of attack just a bit more and get the stall. Now recover, as you decrease the aoa the airfoil must drop below the mark (in your mind's eye) before it has recovered and is again flying. This is high lift hysteresis, or leading edge stall. The bubble breaks right on the leading edge.

moderate lift Hysteresis (Princeton papers). *Visualize* an airfoil increasing the aoa as the first one did. Before it reaches the stall it seems to slow down the drag increases and you would swear that someone had deployed your spoilers. Although if you continue to pull in more up trim it starts to look promising. The aoa increases slightly and we're flying again. A little more up trim and it's stall time. Just as in the first example the old bubble formed but this time it reattached toward the trailing edge, long bubble, causing a high drag condition. Then as you increased the aoa the trailing edge of the bubble started forward again and drag dropped off. Now since a little was good a bit more must be better. Wrong. Back to the high speed hysteresis and leading edge stall. Why would anyone fly a plane like that? How many of your have flown the E-205 "Sagitta". Anyone say, "Hey buddy, you got to fly that plane fast, on the step."? Then someone thought, maybe if you put a turbulator on it you don't have to scream around the sky. He's right! Of course the idea of Eppler's airfoils is to keep them laminar longer and cut down drag. Well the best laid plans - etc etc!

Turbulators: (trips) Turbulators trip up the laminar flow and start the sand rolling over the surface of the wing. This raises the drag a bit but keeps the boundary layer on the surface longer and keeps the dreaded bubble from forming as soon. On full sized aircraft the flow is seldom laminar The Reynolds numbers are so high that any panel line or rivet will start turbulent flow. On R/C gliders with Reynolds numbers below 1 million the air appears more viscous and, therefore, remains laminar over larger imperfections. To turbulate a piece of trim tape will usually do the trick (.010" by 1/8").

Ok, if I haven't bored you to tears, think about this for a while. It's goin' to take me a while to think up some more of this high tech stuff. I just listened to the C/O of the Top Gun squadron at Miramar try to explain "G" forces on the program "Wings". I don't feel so bad anymore. Of course, just scream and hollar if you can't take it, I promise I'll stop.

Bye

Chuck

** ELECTRIC FLIGHT **

FAI

F3E

CONTEST

FOR 7 CELL AND OPEN CLASS MODELS

FLOWN TO CURRENT 1989-90 FAI RULES

SATURDAY, FEBRUARY 17, 1990

ON THE 17TH OF FEBRUARY, THE HARBOR SOARING SOCIETY WILL HOST AN F3E CONTEST FOR 7 CELL AND OPEN CLASS MODELS. RULES FOR BOTH CLASSES WILL BE THE CURRENT FAI RULES, EXCEPT THAT A JURY WILL NOT BE APPOINTED AND THE BUILDER OF THE MODEL RULE WILL BE WAIVED. ALSO, FLYER CALL UP SEQUENCE WILL BE POSTED, AND THE FLYER WILL BE RESPONSIBLE TO BE READY WHEN HIS TURN COMES UP.

BOTH CLASSES WILL BE FLOWN, BUT FLYERS MAY ENTER ONLY ONE CLASS. (THAT IS, EITHER 7 CELL OR OPEN, BUT NOT BOTH.)

THE PURPOSE IS TO STIMULATE MORE INTEREST IN F3E AND TO OFFER INTERESTED CLUB MEMBERS AND OTHER FLYERS THE OPPORTUNITY TO COMPETE IN THE EVENT. (FOR THOSE WHO BUILT AND FLEW AT THE 7 CELL EVENT IN AUGUST, NOW YOU CAN ENGAGE IN SOME ADDED ACTIVITY.

DUE TO THE NUMBER OF OFFICIALS REQUIRED, FLYERS WILL HAVE TO HELP DURING SOME ROUNDS. (WE EXPECT TO SPLIT FLYERS UP INTO GROUPS, WHERE ON AT LEAST ONE ROUND FLYERS WILL TIME OR SIGNAL TURNS RATHER THAN FLY. BUT, ALL FLYERS WILL HAVE FLOWN THE SAME NUMBER OF ROUNDS BY THE END OF THE CONTEST.)

THE CONTEST DIRECTOR WILL BE FRANK CHASTELER.

THE CONTEST WILL BE AMA SANCTIONED

AWARDS WILL BE TROPHIES TO THIRD PLACE IN EACH CLASS

ENTRY FEES FOR THE EVENT WILL BE $5.00 PER ENTRANT. [PRE-ENTRIES SUGGESTED TO ASSURE R/C FREQUENCY AVAILABILITY.] SENT TO HSS P.O. BOX 1673, COSTA MESA, CA 92626.

PLACE: HSS (MAC FREED MEMORIAL) FIELD, FAIRVIEW CITY PARK, COSTA MESA, CA, NEAR ESTANCIA HIGH SCHOOL

DATE: SATURDAY, FEB 17 1990

TIME: PILOTS MEETING 0830, FIRST FLIGHT 0900

RULES:HSS CLUB SAFETY RULES, AMA SAFETY RULES, FAI SAFETY AND F3E RULES.

CONTACT EITHER:

FRANK CHASTLER --(714) 545-2185

OR

BOB SLIFF --(714) 895-1203

INLAND SOARING SOCIETY

7TH ANNUAL R/C HAND LAUNCHED GLIDER CONTEST

The Inland Soaring Society's 7th Annual R/C Hand Launched glider contest is coming up this June 3. There will be a raffle, and some major prizes, (glue, hand launch plans, kits, even radios), SO DON'T MISS IT!

The rules and task will be very simple. Any glider with a projected span of sixty inches or less, no matter how many functions will qualify. Anyone may throw your glider for you. Three rounds will be flown. Round One will be a ten minute slot in which each pilot may launch as many times as possible with only your longest flight counting. The pilot with the longest flight will receive 1000 points and all other scoring will be Man-On-Man. Round Two will be a ten minute slot with unlimited launches to attempt a five minute precision/duration flight. If no one makes five minutes, the pilot with the longest flight will receive 1000 points and all other scoring will be Man-On-Man. Round Three will be a ten minute slot with six launches, best five count with two minute maximum. The pilot with the highest total time will receive 1000 points and all other scoring will be Man-On-Man. All flights must end before the slot is over to count, any flight that ends after the slot will be scored as zero.

Entry fee is $6.00. Registration starts at 8:00 AM, with the pilot's meeting at 9:00 AM sharp. Mark your calendar for June 3, 1990 and make your way to Riverside, California for fun, excitement, and big prizes! For more information - call Ian Douglas (714)621-2522 after 6:00 PM

AMA Sanctioned - AMA license required
June 3, 1990
University Middle School
Riverside, Califorina

A ready-to fly **sailplane**
(with radio)
will be rafffled at the field.
Tickets will be a
donation of $2.00 each,
or 3 for $5.00.
You just might walk away
with a brand-new glider!
See you there!!!