



THE OLDEST CHARTERED
SOARING CLUB
IN THE
A.M.A.



CHARTER # 128

DECEMBER MEETING

THE DECEMBER MEETING
WILL BE HELD ON WEDNESDAY
DECEMBER 4, 1991 AT 7:30
P.M.

LOCATION: CLUBHOUSE AT
LAKES AT SEABRIDGE CON-
DOS. SEE MAP AND INSTRU-
CTIONS INSIDE.

CLUB RAFFLE WILL BE HELD



P.O. Box 1673
Costa Mesa, CA 92628

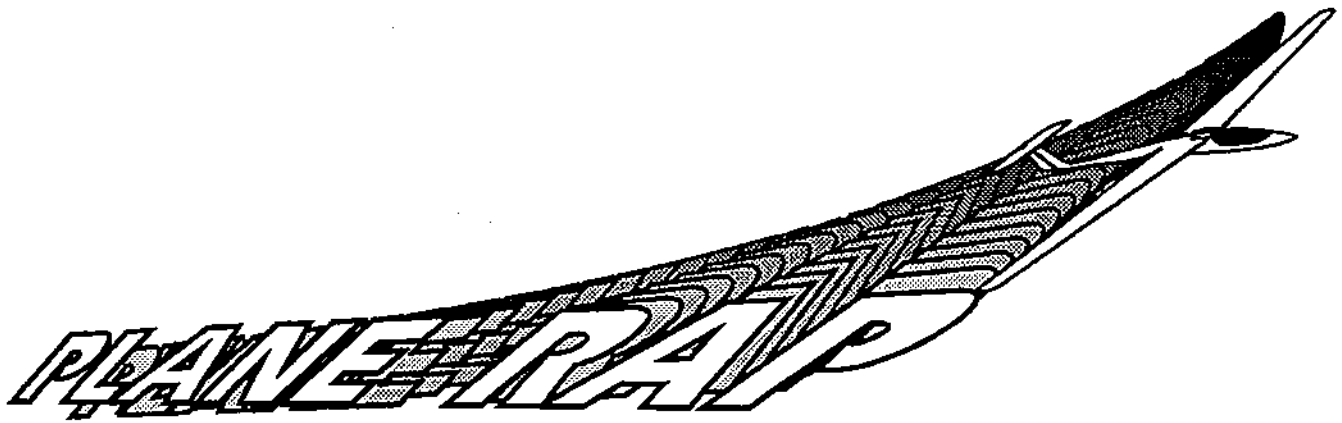


FIRST CLASS MAIL

WILL CONRAD
9359 SHRIKE AVE
FOUNTAIN VALLEY, CA 92708

1992 MEMBERSHIP RENEWAL INCLUDED

DEC 1991



December, 1991

The Harbor Soaring Society Newsletter

Vol. 28 No. 12

MEN OF THE HOUR



The winds have been kind lately to two H.S.S. members working on their League of Silent Flight Level IV requirements. Gordon Ritschke and Ross Thomas have both managed to accomplish their one-hour thermal duration flights. Interestingly, while both men have recently joined the growing brigade of Legend fliers, the sailplanes used in the hour flights were traditional polyhedral ships. Gordon achieved his flight with his big yellow Aquila XL while Ross chose his mainstay 3-meter Gnome. Congratulations to both pilots! By the way, there is no truth to the rumor that both pilots are having their right thumbs bronzed, soaked in Epsom salts for a while, maybe.

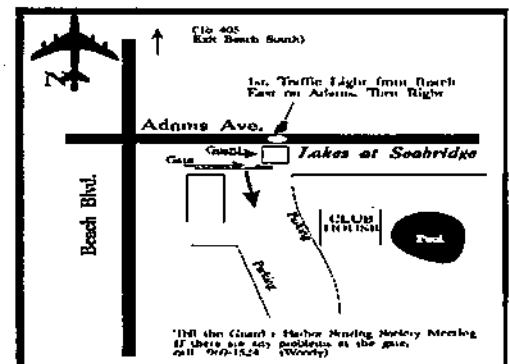
H.S.S. BOARD MEMBERS

President: Norm Kutch	(714) 662-0182
Vice Pres.: Jim Parsons	(714) 636-9867
Secretary: Brian Germaine	(714) 241-3878
Treasurer: Frank Chasteler	(714) 545-2185
Contest Coord: Ben Clerx	(714) 721-8848
General Dir: Bob Sliff	(714) 895-1203
Newsletter Ed: John Ostrowski	(714) 847-4871
Assoc. Ed.: Pete Young	(714) 892-3473

The Harbor Soaring Society newsletter is published monthly. Editorial comments and articles are welcomed. Please provide all material for consideration by the 15th. of the month prior to publication. Wordprocessed material is appreciated (any major IBM compatible disk format and program). Handwritten material must be clear and legible. The editor reserves the right to edit all material. Submissions should be made to John Ostrowski in person or by mail to: 8902 Lawrence Ave., Westminster, CA 92683.

MEETING LOCATION

You will need to check in at the gate. Tell the guard you are there for the HSS meeting. If there are any problems, call 969-1524



CLUB MINUTES

The meeting was called to order at 7:33 p.m.. The minutes were accepted as published. The treasurer's report was accepted as read. New faces included: Myron Roberts and Frank.

OLD BUSINESS

A big congratulations goes to our newsletter editor, John Ostrowski, for his nice work on the new newsletter. Morrey Smith discussed what is needed from a person, in the way of participation, who wishes to win a prize at the Lee Renaud Memorial.

NEW BUSINESS

Anybody that needs a new turnaround, should submit a request to the board. Morrey was allotted money for the purchasing of a new generator. Bob Sliff discussed the format for the November contest.

The meeting closed at 9:37 p.m..
Brian Germane, Secretary

CLUB OFFICERS - 1992

Elections were held at the November meeting. Officers for 1992 are listed below:

President: Ben Clerx

Vice President: Dick Johnson

Secretary: Woody Grosvenor

Treasurer: Frank Chasteler

Contest Coordinator: Ross Thomas

General Director: Pete Richardson

Newsletter Editor: John Ostrowski

In addition, Pete Young will serve as Associate Newsletter Editor and Keith McClellan will serve as Assistant Competition Coordinator. Thanks to all those who volunteered to run for office and those who attended the meeting and voted. The new officers will take office at the January, 1992 meeting.

PILOT OF THE MONTH

Our pilot of the month for December is the retiring H.S.S. president:



Norm Kutch

Occupation: Retired police officer, City of Costa Mesa. Self-employed furniture finishing and repair.

Started flying sailplanes: 1960. Rekindled interest in 1980.

Reason for interest: Had a friend who built a full-size flying wing (Jim Marske) and he got me interested in the RC's.

First R/C Sailplane: An Aquila, and I'm still flying them even in contests.

Favorite part of the hobby: Spending hours in the fresh air and being with friends.

Goal for 1992: Help as many people enjoy the pleasure of flight as I can.

Greatest flying strength: To allow the plane to have control of the sky.

Advice for beginning flyers: Fly for fun -- the victory is in the flight -- or should I say, in the landings.

A WEIGHTY IDEA

A cheap source of lead weights for your airplane may be as close as the local tire shop. Most keep a box of discarded wheel-balance weights that you may be able to raid for free. (Thanks to George Siposs)

BASIC TECH TALK PART IV

CONSERVING ENERGY

by George Siposs

Energy has many forms. Chemical energy in the battery is converted into electrical energy in the winch motor which produces mechanical energy to high-start your model.

There are two kinds of mechanical energy: potential and kinetic. Potential energy (PE) is stored-up energy, ready to do work when released (e.g. a clockwork spring, or rubber band in a model plane). The energy due to physical location is also potential energy. A railroad car poised at the top of a hill has potential energy to run down on an inclined track. Similarly, the moment the winch line falls off your model's hook, the plane has PE because of its height. The energy is expressed in foot-pounds. For example, a model of 3 lbs. at a height of 300 ft. has a PE of $3 \times 300 = 900$ ft.-lbs.

Kinetic energy (KE) is due to the mass moving. The formula is more complex ($KE = 1/2W/gV^2$) but what you really need to know is that PE and KE are mutually interchangeable. When a bicycle rolls down a hill it gathers energy which helps it to go up the next hill ... minus losses due to air friction, mechanical friction, etc. There are always losses due to air drag, etc. otherwise we would have perpetual motion. When your plane swoops down at increasing speeds, it is converting PE to KE. As it climbs upward it is reconverts KE to PE ... minus some losses due to air drag. A parachute maximizes drag. A poorly finished model has high drag, so re-read Part III of this series!

The gravity force acting on the model is always constant because the weight of the flying model does not change. as the airfoil generates lift, the forward motion is opposed by drag. The relationship, the ratio between Lift and Drag is expressed L/D. This ratio determines how well your model will fly. Lift can be increased by choosing a good airfoil and by increasing airspeed. This is the numerator in the L/D fraction. Drag can be minimized by making the model smooth and trimming it to fly straight. A poorly aligned model will fly *katty wampus* and thus bores a larger-than-necessary hole in the air, creating lots of drag. Because drag is the denominator in the L/D fraction, reducing drag increases the model's flight efficiency.

Basically, L/D determines the glide ratio of the model, i. e. how far it will fly for every foot of altitude lost. The higher the ratio the better. Obviously a 25:1 glide ratio is better than a 10:1.

Here we must differentiate between sinking speed and glide ratio. Sinking speed is expressed as feet of altitude lost per second. Now, you can have a glider that barely moves forward

yet sinks slowly or, your glider can be a real *bomb* which flies fast but still loses the same altitude per second as the first example. The difference is that the first one has a poor glide ratio whereas the bomb has a great glide ratio. what is the advantage of each? The slow model will thermal best, the fast model covers a lot of sky to find thermals. The best model is the one you can control to fly fast (when nose down) or slow (pull up elevator) at will!

SWAP SHOP

Two Airtronics Vanguard 6 channel FM transmitters (1991 gold) with dual-rate settings. Includes matching receiver crystals. No receivers or servos. \$65 each O.B.O. Call John (714) 847-4871.

For Sale: foam and glass Legend wings, built to order \$200 and up. Call Phil, 589-9136

Synergy III, includes 4 servos in the wings, wire harness for Airtronics receiver. \$475. Legionair 100, polyhedral \$30. Call Pete at 557-4782, evenings.

Magic by Weston Aerodesign. 138" span with FX 60-100 airfoil. All glass, kevlar and grey foam construction. Flap servos installed. 72 oz. flying weight. \$450 o.b.o. Merlin by Roland Summer. 3.3 meter span FX 60-126 airfoil, molded glass wings and full flying V-tail stabs, glass fuse with slip-on nose cone. All 4 servos installed. Rare German glider, \$475 o.b.o. Contact Manny at (714) 778-5254.

Airtronics servos - 5141s plus 2 standards. Mounted in a slope racer (the Air Shark). You pay for the servos and get the airplane free. \$250 firm. With 7 channel RCD Rx and servo extensions - \$350. 75% finished slope racer. Very similar to Ed Resetar's and Dan Lair's *Generators*, 90" bagged wing (one piece). Ailerons are cut out and 2 Airtronics 501 servos with extensions are in place. Fuse has 2 std. servos installed with pushrod and linkage for t-tail elevator installed and cable for rudder \$200 firm. Ed Resetar designed *Airtick* - \$200 as is. some damage but basically just needs to be recovered. Includes 1 micro servo in the fuse and 2 in the wing. E-Z extra 230 - .25 sized with K&B .40 installed and Airtronics Vanguard 6 radio. Flies extremely well. Everything new. \$250 firm. Falcon 880 with all servos installed - \$325, with Vision radio - \$725. Call Keith at (714) 832-1099.

Place your ad in Swap Shop for the low, low price of FREE to H.S.S. members. Send your written ad to the editor at 8902 Lawrence Ave. Westminster, CA 92683 by the 15th. of the month. Ads must be renewed on a monthly basis.

NOVEMBER HSS MONTHLY

Pete Young

CD Bob Sliff welcomed an excellent turnout of 43 fliers in Open and 19 2-M fliers to the November HSS Monthly. The tasking was 3 rounds with the standard 3/5/7 flight time goals and precision landings into a graduated circle, but with a twist. Landing points, rather than being worth 300/200/100 points depending on the flight time, were scored at 1/10th the usual value on the landing tape; end result, after some algebraic manipulations, was that landings were worth 30/20/10 points per 1000 point round. With less emphasis on the landings, pre-contest predictions were that final scores would be high and tightly grouped - *land on-field on-time* seemed like the rational strategy to score lots of points. One of the most interesting sights of the season occurred early in the morning. A huge thermal blossomed over the field and detached, carrying thermalling seagulls to high altitude. For over five minutes, seagulls entered the thermal from all directions until well over 50 birds were thermalling away to the east. Bryan Joy released several multi-colored helium balloons which got sucked into the thermal core. Birds and balloons marking a giant thermal - what a visual image! Of course, this all occurred before the contest flying began - sob!

The first round saw good thermal activity with light drift from the west. The predicted adverse Santa Ana winds failed to materialize, but a steady westerly breeze starting in the second round made good air spotty and hard to find. Probably due to the wind, this monthly contest was plagued by an unusual number of line breaks - kudos to the winch crews for patiently working the problems. As the fliers found out, starting with this month's contest the school's bathrooms will no longer be available as in the past. Instead, the portable toilets down by the kite-flying area should be used.

In 2 meter, Ross Thomas (the birthday guy) and George Joy placed first and second with Gnomes; Norm Kutch placed third with a Sagitta 600. In Sportsman, Curt Nehring won first with his LJMP Pantera, and Jim Boese came in second with a new flat-winged Legend - welcome back, Jim. Brian Germane took Advanced with his Gemini, and Duane Gibbs placed second with a Falcon. In Expert, Tony Martin took first with his trusty Snipe, George Joy placed second with his Falcon, and NCCer Ken Meienberg took third place. Ably assisting Bob Sliff with the scoring and recordkeeping were Dave Nemecek and Dale Lemons. And, as previously mentioned, the numerous line breaks required lots of help to keep the winches operating - many thanks to the volunteer splicers and untanglers.

Following the contest, the fliers were treated to a terrific buffet luncheon, courtesy of Maxine Thomas, to celebrate hubby Ross's 500th (or is it 50th?) birthday. The club also took the occasion to bid farewell to George and Bryan Joy,

presenting the Joys with a new battery charger. Overall, it was a nice finish to a well-attended monthly contest.

LEE RENAUD MEMORIAL SC² CONTEST

Pete Young

On a clear and comfortable Sunday morning, CDs Ben Clerx and Frank Chasteler welcomed 132 contestants to the Lee Renaud Memorial SC² for November. The forecast of high winds did not materialize, and the flying conditions remained good for the entire day. The 132 entrants represented, it was reported, a new record for SC² contests. The flight tasking was 3 rounds of 4 and 7 minute maxes, flier's choice, with runway centerline landings scored at 1 point per inch off centerline. In addition to Sportsman and Expert classes, a separate Youth division was established for AMA Juniors and Seniors - a nice touch - it protected many of the adults from those hot flying Juniors and Seniors!

With a great deal of support from the HSS club members, the contest ran fairly smoothly all day. Line breakages and winch malfunctions were not as much of a hindrance as the previous weekend, and all flying was complete by 2:15 PM. The enthusiastic volunteer efforts of the club members kept the flying moving along - all involved deserve a huge thanks!!

In the Youth division, Tom Akers from TOSS (a very impressive Junior Expert) took first with a Paragon, Ryan George flying for PSS took second, and HSSer Bryan Joy took third with a 3M Gnome. In Sportsman, HSS' Larry White took first with an Oly II, Pat Conway took second for TPG, and third was a tie between HSS' Duane Gibbs and ISS' Mike Petten. Expert was won by Joe Wurts flying for PSS, while Legends took second and third for Chris George and Tim Renaud.

At the end of the official flying, George Joy flew a Super Grand Esprit as a tribute to the memory of Lee Renaud. Once in the air, the Esprit flew as if it would fly forever, soaring majestically in the late afternoon sunshine. After a long and impressive flight, the V-tailer was deftly caught by George before it touched the ground - a fitting end to a well-flown flight. Barbara and Tim Renaud sponsored extremely generous merchandise awards on behalf of Airtronics. In the contestants' raffle, Al Cron won a Sagitta 900 kit, NCC's Ken Meienberg took home a Whisper prototype kit, and Steve Fink won a Legend kit. In the year end SC² raffle, Blair Atwell (new father, season points champ, and all around good guy) won a Vision radio, and Don Zink won a Legend kit. Spectacular November weather, good flying, terrific prizes, and excellent competition - this is as good as it gets!

ARE AILERONS EASY?

by Bob McGowan

Reprinted from the 9/91 issue of TOSS-UP, newsletter of the Thousand Oaks Soaring Society

Not long ago I overheard two beginners discussing this complex question. One reasoned that aileron control must be easier because of the precise and instant response you would have compared to a slow responding, wishywashy, polyhedral ship. The other felt that aileron sailplanes are only for the expert of flyers and that beginners would surely crash. The answer must lie somewhere in between.

Rudder controlled polyhedral type models (multiple dihedral breaks in the wing) must be the easiest to fly, after all, a polyhedral model can free flight without radio or pilot. That's not to say that a gifted beginner could not learn to fly on an aileron ship, it's generally accepted that he'd be better off starting off with a polyhedral design.

So when is the best time to transition from polyhedral to a new high performance aileron ship? That's a tough question. I'll try to pass on some of the observations I've made as they pertain to thermal flying. I'm no expert at slope soaring but I think that most of the general ideas should hold true. First let me point out that when you switch, you will temporarily take a big step backwards in your ability to catch and ride thermals, land accurately, and just generally being able to handle your plane with confidence. It took me about one full season before I felt that I was back to the performance level that I had flying my Paragon. For some, it may take less time, for others it will take much longer. The new breed of aileron sailplanes have the potential for performance well beyond polyhedral designs, but it takes an experienced pilot and practice to capitalize on this potential.

Hoping to place high in contests isn't the goal of everyone wanting to give ailerons a try. Maybe it's a personal challenge, aerobatics, or just something new to spice up the sport flying sessions. I warned that a performance increase may prove to be elusive but the last thing that I want to do is scare anyone out of trying ailerons. It is not overly hard to fly an aileron ship safely (although sometimes I don't). What I mean is that if you can get your polyhedral ship up and down in a calm, relaxed, under control manner, then you should be able to fly your new aileron ship without crashing. You just won't be able to relax quite as much.

What to expect: speed is one thing that has to be mastered to fly your new aileron ship. You see, all these high performance planes come complete with a high wing loading and low drag airfoil which means fast. The fact that they turn with aileron control really does not play much of a factor in determining how fast the ship will fly. In addition to the faster flying

speeds, you'll need to learn to keep the wings level. It's not like your old polyhedral tricycle that would correct itself when trimmed out well. An aileron ship, no matter how well it is trimmed, will start a turn if you try to fly hands off. This turn will steepen into a spiral dive to its death if not corrected. It's sometimes hard to tell what direction you are flying without those big polyhedral tips sticking up for you to see. You have to use your head and remember which way you were going the last time that you could recognize the plane's orientation. Launching is not hard but you need to throw the plane somewhat more level to avoid tip stalling and to get air moving across the ailerons where they will respond; it's not like a poly ship you can just loft straight up. Landing has not surprises other than the plane just seems to keep going forever...leave lots of room. Nice slow thermal turns will require practice and some different techniques from turning with rudder only.

There are two paths you can take on the way to aileron control. You can jump directly from your Gentle Lady or Oly II and have two new things to master at once, speed and ailerons. The other way which makes the transition a little easier is to master speed first by flying a faster polyhedral design like a Cumic or Southwind for a while. Both ways will work but if you are still a little shaky on your basic soaring skills then you'd probably be better off with the second way.

When selecting your first aileron ship, I'd recommend staying away from the all out F3B designs, they are not just fast, they are very, very, fast. I would also stay away from 2 meter designs because they are super responsive with ailerons, so much that they are squirrely and hard to fly. For thermal soaring, you'd do best with the larger ships like the Falcon 880 or Legend. They respond better to control commands and their performance will be much better than a small 2 meter size ship.



EDITOR'S NOTES

I find it hard to believe that another year has almost past. This has been my first full year of flying with H.S.S. and it has certainly been a learning experience! I began the year flying a recently completed Paragon, which later suffered two serious, and one fatal wing-folding crashes. Lesson #1: BUILD STRONG WINGS!

I took over the club newsletter in February and found an opportunity to use all that fancy software I've collected. Most newsletter editors will tell you that the task is a thankless one. You couldn't prove that by me. It has been very gratifying to hear the constant words of support and appreciation for what we try to do. Putting out this rag is far from a one-man job and I would like to acknowledge the people who really make it possible to put out a quality newsletter each month: Roger Lackey, without whom there would be no photos or even newsletter. Roger reproduces our photos each month and provides the printing service for the entire newsletter, an invaluable service to the club! Frank Chasteler labels, stamps and mails the newsletter each month. This is a tedious and lengthy task. Pete Young writes our stellar monthly contest reports and scours other newsletters for all the good stuff. A first-class reporter. Ben Clerx and George Siposs have both contributed extended series of flying technique articles that have become the most reproduced articles in Southern California sailplane newsletters. Too bad we don't qualify for Pulitzer Prizes. Throughout the year other club members have contributed both articles and photos (as well as Curt Nehring's great cartoons) and all deserve a great thank you. Lesson two: Sometimes, a good effort is appreciated.

I'd like to think my flying improved during the year. I've moved from flying a classic polyhedral floater to a (semi) state-of-the-art aileron Alcyon (by the way, it is pronounced al-C-yon) which has opened up a whole new vista of techniques that I now need to learn. But then, that's why I'm in this hobby anyway. A number of our expert pilots have given me invaluable help in learning to set up and fly my new bird. Thanks to all of you for your help. Lesson three: listen to the

experts for they know what you do not!

Finally, to all the readers of **PlaneRap** and all your friends and families, the best of the Season. I hope Santa is kind and you all get that new plane, radio, or whatever. **Happy Holidays!**



1991 CONTEST SCHEDULE - Ben Clerx Contest Coordinator

DATE	CONTEST
December 8	HSS Club Contest

DECEMBER CONTEST

C.D.: George Siposs

Date: December 8, 1991

Format: Standard 3-5-7. Landing circle/tape will be used.

Schedule: Pilot's meeting at 8:45 A.M.
First round at 9:00 A.M.

Launch order: Open will fly first.



HSS VIDEO LIBRARY

NAME	COMMENT	RATING (0-5)
RC Video Magazine (Vol. 7 - 86)		
Striking Back		4
Foam, Fiberglass, Flight		4
Tournament of Champions (88)		
Monokote 1 & 2	Interesting	3
MIG Killers		3
Hook down, Wheels Down	Navy Aviation Hist	4
F3E - Bridgeman's Plane		
Electric Flight		none
Dawn Patrol	WWI Movie	4
Thunderbolt, Flight for the Skys	WWI Air Combat	5
F3E USA Finals 6 -22-88		

More tapes are being added all the time. All tapes are VHS format. For information about borrowing a tape, ask at the next meeting.

HSS NOVEMBER CONTEST -- OPEN DIVISION

PLACE	NAME	CLASS	SCORE	NORMALIZED	TROPHY
1	MARTIN TONY	EXPERT	2990.1	1000.0	1ST. EXP.
2	JOY GEORGE	EXPERT	2988.4	999.4	2ND. EXP.
3	MEIENBERG KEN	QUEST	2982.7	997.5	3RD. EXP.
4	LACKEY ROGER	EXPERT	2981.2	997.0	
5	KUTCH NORM	EXPERT	2976.9	995.8	
6	FINK STEVE	EXPERT	2975.9	995.3	
7	RITSCHKE GORDON	EXPERT	2974.0	994.6	
8	THOMAS ROSS	EXPERT	2973.9	994.6	
9	CHASTELER FRANK	EXPERT	2972.7	994.2	
10	CRON AL	EXPERT	2969.1	993.0	
11	GERMANE BRIAN	ADVANCED	2966.8	992.2	1ST. ADV.
12	HARRIS PHIL	EXPERT	2964.9	991.6	
13	GIBBS DUANE	ADVANCED	2964.6	991.5	2ND. ADV.
14	SMITH MORRY	ADVANCED	2959.4	989.7	
15	ZINK DON	EXPERT	2958.9	989.8	
16	RICHARDSON PETE	EXPERT	2957.4	989.1	
17	SLIFF BOB	EXPERT	2955.8	988.5	
18	NEHRING CURT	SPORTSMAN	2954.1	988.0	1ST. SPTS.
19	JOY BRYAN	ADVANCED	2948.8	986.2	
20	BOESE JIM	SPORTSMAN	2945.5	985.1	2ND. SPTS.
21	DUNCAN BILL	SPORTSMAN	2934.6	981.4	
22	PANTZAR DICK	EXPERT	2928.7	979.5	
23	CLERX BEN	EXPERT	2918.8	976.2	
24	POULSEN GORDON	EXPERT	2915.3	975.0	
25	WHITE LARRY	EXPERT	2908.5	972.7	
26	GARNER RICH	EXPERT	2901.4	970.3	
27	MILLS ARCHIE	SPORTSMAN	2896.0	968.5	
28	BONANNO TONY	ADVANCED	2885.6	965.1	
29	RESEAR EDWARD	SPORTSMAN	2884.0	964.5	
30	LONG DICK	ADVANCE	2877.5	962.3	
31	FINK DAN	QUEST	2870.6	960.0	
32	BUZOLICH NICK	SPORTSMAN	2796.0	935.1	
33	NEMECEK DAVID	EXPERT	2779.1	929.4	
34	PUCHALSKI MARK	QUEST	2734.6	914.6	
35	RAMSAY DON	SPORTSMAN	2682.4	897.1	
36	PARSONS JIM	ADVANCED	2682.0	897.0	
37	KIELTYKA MAC	SPORTSMAN	2671.4	893.4	
38	LAIR DAN	SPORTSMAN	2637.4	882.0	
39	YOUNG BRETT	SPORTSMAN	2534.0	847.5	
40	GROSVENOR WOODY	SPORTSMAN	2479.0	829.1	
41	HENDRY STEVE	EXPERT	1974.1	660.2	
42	DANRICH DAN	ADVANCE	997.6	333.6	
43	McLELLAN KEITH	SPORTSMAN	986.0	330.4	

HSS NOVEMBER CONTEST -- TWO METER DIVISION

PLACE	NAME	SCORE	NORMALIZED	TROPHY
1	THOMAS ROSS	2990.4	1000.0	1ST.
2	JOY GEORGE	2981.0	996.9	2ND.
3	KUTCH NORM	2960.2	989.9	3RD.
4	SLIFF BOB	2957.9	989.1	
5	MARTIN TONY	2957.4	989.0	
6	JOY BRYAN	2935.5	981.6	
7	FINK STEVE	2908.4	972.6	
8	DUNCAN BILL	2902.0	970.4	
9	WHITE LARRY	2898.1	969.1	
10	RICHARDSON PETE	2889.8	966.4	
11	LACKEY ROGER	2884.4	964.6	
12	CONRAD WILL	2879.9	963.0	
13	LAIR DANIEL	2831.2	948.6	
14	BUZOLICH NICK	2798.0	935.7	
15	PARSONS JIM	2752.3	920.4	
16	NEHRING CURT	2694.0	900.9	
17	YOUNG PETER	2689.3	899.3	
18	FINK DAN	2682.6	897.1	
19	LONG DICK	2507.6	836.6	

HSS OPEN CLASS STANDINGS YEAR-TO-DATE
BEST 7 OF 11

PLACE	NAME	CLASS	SCORE	CONTESTS
1	MARTIN TONY	EXPERT	6996.2	7
2	CHASTELER FRANK	EXPERT	6910.3	7
3	JOY GEORGE	EXPERT	6818.9	7
4	SLIFF BOB	EXPERT	6812.0	7
5	ZINK DON	EXPERT	6753.4	7
6	GARNER RICH	EXPERT	6744.6	7
7	LACKEY ROGER	EXPERT	6723.5	7
8	KUTCH NORM	EXPERT	6666.2	7
9	JOY BRYAN	ADVANCED	6662.2	7
10	RICHARDSON PETE	EXPERT	6651.8	7
11	POULSEN GORDON	EXPERT	6647.5	7
12	THOMAS ROSS	EXPERT	6558.2	7
13	FINK STEVE	EXPERT	6531.4	7
14	GERMANE BRIAN	ADVANCED	6481.4	7
15	PANTZAR DICK	EXPERT	6364.0	7
16	WHITE LARRY	EXPERT	6286.8	7
17	NEMECEK DAVID	EXPERT	6256.4	7
18	CRON AL	EXPERT	6242.5	7
19	SMITH MORRY	ADVANCED	6209.0	7
20	RITSCHKE GORDON	EXPERT	6187.4	7
21	RESEAR EDWARD	SPORTSMAN	6120.7	7
22	NEHRING CURT	SPORTSMAN	6052.5	7
23	DANRICH DAN	ADVANCED	5915.7	7
24	HENDRY STEVE	EXPERT	5901.9	7
25	LAIR DAN	SPORTSMAN	5892.3	7
26	YOUNG BRETT	SPORTSMAN	5888.6	7
27	PARSONS JIM	ADVANCED	5749.4	7
28	BUZOLICH NICK	SPORTSMAN	5689.6	7
29	CLERX BEN	EXPERT	4907.9	5
30	MILLS ARCHIE	SPORTSMAN	4882.6	6
31	COLLETT MATT	SPORTSMAN	4821.4	7
32	LONG DICK	ADVANCED	4803.0	7
33	SANDRONI HUGO	ADVANCED	4470.8	5
34	BOESE JIM	SPORTSMAN	4159.5	5
35	GERBIN ROBERT JR	EXPERT	3800.0	4
36	GERBIN BOB	EXPERT	3741.5	4
37	GATES MATTHEW	ADVANCED	3600.6	4
38	DUNCAN BILL	SPORTSMAN	3596.5	4
39	HARRIS PHIL	EXPERT	3337.1	4
40	BONANNO TONY	ADVANCED	3209.3	4
41	RAMSAY DON	SPORTSMAN	3076.7	4
42	EDBERG DON	EXPERT	2978.5	3
43	RENAUD TIM	EXPERT	2892.4	3
44	LUPPERGER JOHN	EXPERT	2778.7	3
45	STOKER PAT	EXPERT	2688.9	3
46	McLELLAN KEITH	SPORTSMAN	2645.2	4
47	GIBBS DUANE	ADVANCE	2554.8	3
48	AZVEDO GEORGE	SPORTSMAN	2473.9	3
49	GROSVENOR WOODY	SPORTSMAN	2290.1	3
50	CHAMBERLIN RALPH	SPORTSMAN	2256.2	3
51	STALLS JARED	EXPERT	1848.2	2
52	SCHOFRO STEVE	SPORTSMAN	1753.5	2
53	YOUNG PETE	SPORTSMAN	1506.3	2
54	OSTROWSKI JOHN	SPORTSMAN	1399.1	2
55	HAWLEY ED	SPORTSMAN	1382.5	2
56	IVON GROTE BRAD	SPORTSMAN	1317.9	2
57	ROWELL WAYNE	SPORTSMAN	1095.2	2
58	HARVEY TIM	SPORTSMAN	961.0	2
59	STOVALL LEE	SPORTSMAN	915.5	1
60	KIELTYKA MAC	SPORTSMAN	893.4	1
61	BYRNE JIM	SPORTSMAN	855.7	1
62	CONRAD WILL	ADVANCED	789.6	1
63	STOVALL WILL	SPORTSMAN	705.5	1
64	GREENE DENNIS	SPORTSMAN	514.8	1

TWO METER YEAR-TO-DATE
BEST 7 OF 11

PLACE	NAME	SCORE	CONTESTS
1	MARTIN TONY	6886.6	7
2	RICHARDSON PETE	6818.2	7
3	JOY GEORGE	6744.6	7
4	SLIFF BOB	6700.5	7
5	KUTCH NORM	6664.5	7
6	WHITE LARRY	6632.9	7
7	THOMAS ROSS	6620.4	7
8	JOY BRYAN	6502.5	7
9	FINK STEVE	6455.6	7
10	LACKEY ROGER	6171.3	7
11	NEHRING CURT	6036.4	7
12	LONG DICK	4579.0	7
13	PARSONS JIM	4289.7	5
14	BUZOLICH NICK	4171.4	7
15	DUNCAN BILL	2829.1	3
16	CONRAD WILL	2476.8	3
17	CHAMBERLIN RALPH	2464.4	3
18	YOUNG PETER	2286.2	3
19	EDBERG DON	1958.5	2
20	LAIR DANIEL	1869.6	2
21	ZINK DON	1850.4	2
22	McLELLAN KEITH	1699.3	2
23	HENDRY STEVE	1606.1	2
24	STOKER PAT	1540.6	2
25	ANKENBAUER STEVE	1294.1	2
26	MILLS ARCHIE	1086.3	2
27	HALL HERMAN	942.1	1
28	BONANNO TONY	863.5	1
29	DONAT KURT	855.9	1
30	YOUNG BRETT	836.8	1
31	OSTROWSKI JOHN	683.9	2

