



TOSSUP



November's Meeting Report

November's meeting was the last for 1997, and the club AGM. This started with the Election of Club officers for 1998. These were unchanged from 1997 with the exception of Bob Swet taking over from Chase Keightley as Treasurer.

Don McNamee will be organizing a Nostalgia contest to replace the regular Monthly competition in April. Details, rules and (cash) prize information will be available by mid-January.

Club meetings will continue to be at Catlin's Restaurant on the fourth

Wednesday of each month for the time being. This has proved a popular venue with the regular attendees (and its a lot warmer than the Cameron Center at this time of year - Ed).

Thousand Oaks Soaring Society - Officers for 1998

President	Edgar Weisman
Vice President	Charles Babcock
Secretary & Newsletter Editor	Martin Usher
Treasurer	Bob Swet
Field Officer	Edgar Weisman
Safety Officer	Don Northern

LASTLY - A REMINDER THAT ITS NOW TIME TO RENEW YOUR CLUB SUBSCRIPTIONS FOR 1998. THE FORM IN THE BACK OF THIS NEWSLETTER HAS BEEN UPDATED WITH BOB'S ADDRESS. DONT FORGET TO NOTE YOUR RADIO CHANNELS!

Competiton Report for December

The competiton was held on 12/14 and was a simple affair of three 8 minute rounds scoring 1000 points per round with landings on the tape worth 60 points. The weather was fair with high clouds which were from a storm predicted for later that day (which didn't happen as predicted) and with light winds from the south to south-east.

Lift was patchy and light, leaving those people who were unlucky enough to launch at the wrong time with either a challenging flight or a time well short of the task. The wind when it blew was effectively from behind the launch area causing downwind launches that were much lower than the fliers would like. It also occasionally blew landings off line and caused unexpected low to zero point landing scores.

The tables on the next page give the results for this competiton, the summary results for 1997 and the results tabulated for the "Best Flier Award" which is based on the best scores for the total number of contests held in the year less two (since we held twelve monthly contests in 1997 the best 10 are used to compute the standings). Mike Regan cam out on top with a score that's 0.2 point off perfect.

SC² Pilot Standings for 1997

	Name	Class	Club	Score	Contests
1	Smith, M	Master	TPG	5992.6	6
2	Joy, G	Master	TPG	5980.4	6
3	Reagan, M	Master	PSS	5965.6	6
4	Rodriguez, J	Master	HSS	5951.3	6
5	Dionisio, P	Master	TPG	5947.6	6
6	Sage, F	Master	TPG	5902.4	6
7	Skinner, J	Expert	EDSF	5881.9	6
8	Markiewicz, A	Master	TPG	5802.3	6
9	Finkenbinder, K	Z -= 60+	TPG	5749.9	6
10	Swet, B	Expert	TOSS	5703.1	6
37	McNamee, A	Expert	TOSS	3393.1	4
42	McNamee, D	Expert	TOSS	2937.5	3
74	Filice, G	Sportsman	TOSS	1269.2	2
85	Northern, D	Expert	TOSS	985.7	1
89	Stern, M	Sportsman	TOSS	971.1	1
122	Jiminez, L	Sportsman	TOSS	432.3	1

SC² Club Standings for 1997

TPG	SULA	HSS	EDSF	PSS	TOSS	ISS	SWSA	AVTS
3984.7	3823.9	3842.6	3490.6	3965.8	1884.0	1226.9	3829.5	791.9
3983.8	3184.3	3326.2	3409.5	3732.3	1708.0	1906.8	2956.0	566.8
3992.3	3852.1	3969.2	3075.8	2812.6	3959.5	1868.6	0	989.2
3989.2	1935.8	3875.7	2841.4	1938.9	1899.9	3390.6	0	924.5
3746.2	3462.8	3221.5	1932.3	3937.2	1856.8	2078.2	3499.7	856.8
3996.9	3600.0	3908.8	3691.3	916.7	1908.7	1896.5	878.9	980.9
3993.5	2967.0	1725.9	2790.9	3983.4	3966.1	3723.6	3858.2	417.2
3967.0	3790.3	2585.8	3722.7	1981.2	3492.4	1786.7	921.0	965.6
31653.5	26616.2	26455.7	24954.2	23268.1	20675.4	17877.9	15943.3	6492.9



Pictures From the Dec 97 Contest



Christmas at Redwood
(That Sign is Lit Up at
Night!)



(Martin imagining how he'd do a maximum point landing) ———]]



A Couple of Notes About Trimming

(Planes, that is, not trees. Around Christmas there was an interesting set of posts on RCSE about trimming using dive testing. This was generally regarded as not that useful, and here are a selection of posts suggesting alternatives. Comments? Ed.)

From: perfcamp@community.net (Michael McKeown)
 Date: Wed, 24 Dec 1997 11:05:48 -0800 (PST)
 Subject: [RCSE] c.g. trimming (was dive test)

Here's the advice I usually share:

I prefer loop testing, as it can be done at low speed and gives an immediate indication. Move the C.G. back until the plane snaps out of the top of the loop, then forward until it just goes around the loop. Make sure to pull smoothly and gently on the loop entry. Yanking full up elevator may stall and snap roll the plane. Don't pull too hard at the top of the loop either, and watch at the bottom during the recovery; if it's pulled too hard with the c.g. aft it will want to stall.

With the c.g. at the perfect spot as described above, the spin will be a normal nose down spin, but almost wanting to go flat every couple of turns. With the c.g. a bit further back than the 'perfect' spot, the spins will be flat, but be careful, if it's too aft, the plane may not recover. With the weight more on the nose the spin will be more nose down.

With a fixed stab with elevator if the final c.g. location indicates the need for elevator trim at the speed you want the airplane trimmed for, then reset the angle between the wings and stabs until there is no trim required. Further, if the plane had too much incidence to begin with, it may allow the c.g. to move aft another little bit more after resetting the wing/stab angle. If excess incidence is found in the trimming process, one will note the plane is much quieter after moving the c.g. aft and reducing the incidence, and often a quite noticeable difference in performance can be noted.

Remember it's the stuff we're used to that feels comfortable, so we often call it 'right'. With the models, it's easy to become accustomed to the flight characteristics of a model that may not be trimmed optimally, so when making changes make sure to let the airplane's flight performance (primarily the ability to loop or not) be the judge of correct or incorrect changes made, and not perceived 'comfort' on the stick.

I also like to urge people to get it done right away. It's so much fun, flying is, that it's easy to end up making only one or two trim changes an outing, so I encourage people to make short flights while trimming the plane: launch, loop, land, adjust. One after another until the plane is right, and then it's just done.

M.

From: perfcamp@community.net (Michael McKeown)
 Date: Thu, 25 Dec 1997 12:48:42 -0800 (PST)
 Subject: [RCSE] re: Dive test

Dive testers take note:

Remember, when we adjust the c.g. around a fixed incidence, elevator trim changes may be required at other than the trimmed for airspeed.

If a glider is accelerated to high speed in a dive test, and a pitch change is noticed, you may not want to trim it out unless it's a high speed slope racer. The winners in T.D., etc., exemplify the need for the airplane to be

perfectly trimmed at either cruise or best glide speeds. Further, for any reasonable incidence setting a c.g. can be found that allows flight performance the pilot is used to. So you see, merely adjusting the c.g. by dive testing doesn't find the optimum minimum incidence and furthest aft c.g. (Note: when I use the term 'furthest aft c.g.' I mean a little bit forward of the aft limit, not at the aft limit).

With these two caveats: the less the camber of the foil the less the pitch changes that occur with speed changes, and on a slope speedster one may want the plane trimmed for high speed, not best glide.

Smaller camber airfoils make the dive test increasingly fast and dangerous as very high speeds may have to be reached to show a pitch change. Further, it has been my experience that some airfoils, at certain incidence settings, will behave 'backward' from general expectation, so the dive test may allow initial c.g./incidence adjustments to be dangerously the wrong way. These reasons are why I believe loop testing is the safest, clearest and most directly observable way to tell if the c.g. is at the optimum furthest aft location, then moved forward just a tad. If after the c.g. is set one finds the elevator needs trim at your desired trimmed speed (most likely best glide speed, ~10% above stall), then reset the incidence until the elevator is in trail. Test the c.g. again, as if a large incidence change was required, there may be some final fine tuning of the c.g. Of course with a full flying stab one merely marks a new 'preflight' spot for the stab's trimmed position.

Inverted flight can be used to check. With the minimal incidence setting and furthest aft c.g. even rather cambered foils will fly inverted with little or no pitch change.

Spins are an excellent indicator as well, but need some experience to tell the angle of the descent. With the c.g. too aft it will be nearly flat. Too much on the nose and it'll be very steep.

In an aerobatic plane I find I juggle the c.g. around tiny amounts to accommodate the best performance in each of the maneuvers.

A servo with a weight on the end of the servo arm and mounted on the c.g. to allow inflight trimming of c.g. teaches a lot, and some truly wild maneuvers like extended tail slides are possible.

M.

Michael McKeown
Performance Composites
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From: msimons@camtech.net.au (Martin Simons)
Date: Mon, 29 Dec 1997 09:46:52 +0930
Subject: [RCSE] Re: Dive test and cg

There seem to be many misconceptions about the relationship of c.g. position to sailplane performance. Many pilots evidently believe that the best performance requires the balance point to be as far back as possible. This is not so.

I wrote a fairly full (non mathematical) analysis of the dive test in RCSD in July 1992, pages 4 - 13. This was in response to a description of the dive test by Frank Deis in March 1992 RCSD. I have reviewed these articles recently. If I wrote again now I should be even less in favour of the dive test, which is a dangerous and pointless procedure. I suggest anyone who is anxious to know a bit more, should read the RCSD article. Judy & Jerry can probably supply a copy.

Briefly, moving the c.g. aft will not improve the performance of the sailplane when soaring. If anything there will be a very slight deterioration, coupled with an increasingly 'twitchy' elevator control which will make the

model difficult to fly, especially in turbulent air. The effect on performance is very, very slight either way, undetectable in practice, but there is certainly a big change in handling and control.

It is fallacious to suppose that moving the c.g. forward (to about one third or even perhaps one quarter of the MEAN CHORD) causes the model to plough through thermals without being affected. The reverse is true. The stable model gives a definite and predictable response to a thermal. Mine do. The thermal causes the model to pitch nose down a little. That is what a stable model is supposed to do. The airspeed rises slightly and this allows smooth and prompt entry under full control into the turn. A model trimmed by doing the dive test will tend to wallow and become almost uncontrollable for a little while, wasting time getting into the centre of the lift and then requiring constant corrections to keep it circling smoothly.

However, at very high airspeeds with a cambered airfoil section, there is a download on the horizontal tail which becomes greater as the airspeed rises. (The elevator will of course be down to maintain the speed, but the load is nevertheless down on the tail. Refer to any textbook on stability and control if doubtful.) Moving the c.g. aft will reduce this tail download very slightly, and this does reduce the tail drag by a tiny fraction. At, say, twice or three times the stalling speed the performance will benefit by perhaps half a glide point. For this reason, for F3B speed runs, moving the c.g. aft a little might make a small improvement. It would make sense to move the c.g. forward for the soaring task.

A rearward c.g. model flown by a world champion pilot might theoretically gain a little in the speed tasks. But flown by almost anyone less skilful, any tiny improvement in drag will be totally negated by one twitch on the elevator.

Full scale sailplanes have been built with an expensive system of liquid mercury tanks, plumbing and pumps for moving the c.g. aft for high speed flight between thermals, when the airspeed may be anything from 80 to 110 knots. CG FORWARD FOR SOARING, AFT FOR PENETRATING SINK. There is an obvious danger in having a very twitchy elevator at airspeeds approaching the maximum permitted for the aircraft. A clumsy movement by the pilot when, perhaps entering a thermal and feeling the usual bump, can damage the aircraft. Such moveable c.g. arrangements have not been generally adopted for this reason - pilots prefer to keep the wings and tail on.

The other answer to the tail download problem is to reduce the wing camber, by having flaps set to a reflex position for the fast glides. This has all round benefits because it greatly reduces wing profile drag at high speeds, which is enormously more important than the few percent taken off by the tail. So the norm is to leave the c.g. where it should be for control and stability, and reduce drag by using flaps. This can't be done in the Standard Class and World Class sailplanes where flaps are not permitted, but the principle is sound.

Martin Simons.

WELL - THAT'S TOSSUP FOR 1997. I'LL BE BACK IN '98 WITH THE FEBRUARY EDITION PUBLISHED ON OR AROUND THE 11TH OF THAT MONTH. LIKE ALL NEWSLETTER EDITORS I'M CONSTANTLY ON THE LOOKOUT FOR ARTICLES OR SUGGESTIONS FOR ARTICLES. ITS NOT A LOT OF TROUBLE TO EDIT AND FORMAT STUFF (ASSUMING THAT THE SOFTWARE DOESN'T CRASH AND THE PRINTER PRINTS THE WHOLE PAGE) SO ANYTHING WILL BE GREATFULLY ACCEPTED.

MARTIN USHER - YOUR EDITOR.