NEXT CLUB MEETING: June 18th

Club meetings are held at 7:30pm on the third Monday of the month, except for legal Monday holidays, at the Pyle Adult Community Center, at the southwest corner of Rural & Southern in Tempe. Contests are held on the second Sunday of every month at Rodeo Park at the southeast corner of Ray & Val Vista Roads in Gilbert.

WingTips is CASL’s monthly newsletter and as such always encourages members to submit articles for publication. All material must be given to the editor no later than the monthly contest. The editor also encourages other clubs to use any material from this newsletter, provided proper credit is given.

CHANNELS #16 & #17 have experienced problems at Rodeo Park. Use at your own risk.

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FOUNDED IN 1985

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MAY ’01 EDITION
Well our CASL Contest Schedule Part I is now over, we will resume in September and continue with Part II.

Just a note to the new members in the club who may not be aware of how our contest day works for general flying. We have a regularly scheduled contest every Second Sunday of the month, and for May, the Saturday before Mother’s Day. If you are not going to participate in the contest you can fly before the contest starts. Once the Pilot’s Meeting begins you are to come down and give up your frequency spot. Even if your frequency is not be used during the contest you can’t fly. After the contest is over then anyone can go back up and hunt for air or use their electric. There has been some confusion in the past about who can and cannot fly at the field during contest days so I hope this explanation takes care of any misconceptions. If you feel that you should be able to fly when ever you want, irrespective to contests, just remember that contests only occur once a month and they are usually only for 2 to 3 hours. I think our club does a very good job about making sure we are giving everyone plenty of opportunities to use Rodeo Park.

Just another reminder that when you are flying to use your latest club card on the Freq. Control Board. This lets everyone know what frequency you are using and it shows that you are a current member of CASL. Remember, to invite new folks to join the club. There still should be applications in the tube next to the board plus there are extras in the shed in the CD bag. If there are not any there please direct the person to our web site and they can get an application for membership there. Anyone who flies there on as regular basis needs to be a member of CASL and a member of AMA.

Speaking of membership cards, I am getting all the new cards ready and I will be mailing them out this week, for those of you that have updated your 2001/2002 memberships. There will be two different size cards this year, the normal ones from the past plus business card size. So one can stay in your flight box and one in your wallet. Remember you will get the new cards as soon as I have an updated membership form and the $20 for dues. Again, let’s not drag out sending in membership forms this year. I hate having to bug you guys all the time. We have made it very easy. You can send in a hard copy with your check to the P.O.Box or you can go to the club website and send in an electronic version and send in the Dues via the PayPal option. Again, if you are using the electronic version send in your money. I do not consider your application complete until I have the $20.

If you are wondering what we do with all the money we collect well some of it goes for field upgrades. We just recently purchased four shade canopies and they are at the far east end of the field. We hope that these canopies will last for a few years barring any vandalism or accidents. The canopies are for people to be under not for your vehicles, please refrain from driving under them. That will be an accident waiting to happen. So just park yourselves under the shade and not your cars and enjoy the needed shade. From what I understand someone has already hit one of the canopies with their glider. So we can safely say that the canopies have been properly dedicated to the glider gods.

Until next month stay cool and stay safe!
Central Arizona Soaring League

Membership Form for 2001 / 2002

Please fill out the following form, even if you are a Life Member, any changes in your status need to be updated. Frequency usage should be filled out in the order that they are used. Comments can have anything to do with the running of the club, from contests to meetings to the way the club spends its money. If you have any special requests for tech topics, types of contests please include those. Dues must be post-marked no later than June 30, 2001 to keep your records current. This will be the only Dues notification that you will receive. Dues are $20 per year for all current AMA members. Family memberships are $30 per year and for members, 16 years or less, dues are $10 per year. Life memberships are $250, which can be paid over a five-year period. If you have paid the full amount after November 30th your dues are at half the normal rate.

Name: _____________________________________________________      AMA#:_____________   LSF #:__________

Address: ___________________________________________________________________________________________

City: _____________________________________      ST: ______   ZIP:____________  H Phone:___________________

W Phone: _______________________________    E-Mail:___________________________________________________

Frequency: ________________________________________________________________________________________

Comments: ________________________________________________________________________________________
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SEND TO: CASL    P.O. BOX 2472  CHANDLER, AZ.   85244-2472

Please fill out this form when you send in your dues, do not just send in your dues. I need to have a copy for my files as I refer to it during the year for periodic reference. Just a reminder the club year is from June 1st – May 31st. Your Dues may now be paid at www.Paypal.com just go to the link and use my email address as the reference point: chuck@wehofer.com
May 2001 Contest Report
Iain Glithero

The format for the May contest was a 21 minute Add-Up, three flights, the two WORST landings to score and an added twist that the flight times were in a Tic-Tac-Toe format so that all flight times needed to be in whole minutes. The matrix was like this:

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\begin{array}{ccc}
6 & 11 & 4 \\
5 & 7 & 9 \\
10 & 3 & 8
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The first flight could be any time on the matrix, and the second could be on any line that would permit a Tic Tac Toe. The final twist was that if anyone made the three flights to within –5 to +1 second, then an extra 100 points were awarded. No one managed to do that!

The weather did not co-operate, the wind was too strong and unpredictable, several pilots decided to take home a whole model and not risk flights, but some did continue to fly and damaged their models, and some continued to fly and still took home undamaged models. Without the wind this would have been a great day!

Kudos to Sean for a magnificent 9:59 flight with some impressive aerobatics on the way down and a 94 landing.

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Thanks to all who helped with set up and take down. It is too much for one person to do, and a few willing hands really makes the job easier. The turnout was not bad for a Saturday. The Electric Group kindly shut down their operation by the time we were ready to start the contest, and as far as I could tell, everyone retrieved their card from the frequency board at the end of the day!!

Contest Proposal

I hereby submit a proposal. I am willing to spearhead an effort to have our own annual slope racing event. I had such a good time at the MWSC in Kansas last weekend that I realized that they didn't do anything we couldn't do (perhaps better!). I am proposing we have an annual fall or early spring one-design event and an unlimited event slope racing event. These events take a minimum of equipment and setup. We could use the participants as flaggers as needed. The one-design race is a race where each pilot flies a model that conforms to a one-design specification. At the Kansas event, the kit that just happens to meet the design requirements is the CR Fun-1. The kit costs $89 and comes with a fiberglass fuse and pre-sheeted wings. It is a kit that builds easily and quickly. Some participants choose to scratch build their own to the same design specifications. That is the beauty of one-design! The one-design races are flown by 4 planes at a time back and forth between two pylons placed 100M apart. A typical race is 5 laps. The winner earns 4 points, the second place finisher earns 3, and so on. Several heats are run (4 in Kansas). The top finishers then fly a five lap final for the win. Tight races can be exciting to watch! The “unlimited class” is conducted by racers flying man-on-man; only 2 planes on the course at a time. The winner continues in the winner’s bracket; the loser goes to the losers’ bracket. It is a double elimination competition. We could also run the “unlimited class” using F3F rules where only a single plane is on the course at a time and flies a certain number of laps against the clock. In this competition, midairs are not an issue. Whoever has the lowest time wins. There are fabulous camping opportunities around the Greene's Peak area. Lodging at Springerville, Hondah Casino, and others are in the area also. Anyway, to further diversify our Club activities this would make for an inexpensive, cool event! Slope racing is a LOT of fun! Do we want to give it a try?

Please respond to the CASL List Server for your comments.
Thanks! Garland Hanson
Don’t forget that during the summer months we do not have any regularly schedule contests. This would be a great time to run a “Fun-Fi” event of some sort. Be it Electric or Gliders. Garland H. suggested that some sort of Indoor event would be nice and he has access to a good size gym. What ever it is, if you want me to advertise it please give me the specifics and I would be very happy to send it out to the club members via the web or the newsletter.

Thanks!

Chuck W.
HOW TO TRIM YOUR SAILPLANE
by Herb Stokely
SBSS Silent Flyer
Rewritten by Ron Kucera

I had a letter from a reader who questioned a statement that I made in a recent column. The note that he referred to mentioned that a nose heavy model will tend to porpoise and stall. I brought it up because it’s not intuitive that it would work that way and newer fliers are likely to try to correct that condition by adding weight to the nose rather than removing it.

Longitudinal Stability
A plane uses dihedral in the wings to get lateral (or turning) stability. There is a dihedral effect for the longitudinal (diving/climbing) stability as well. This "longitudinal dihedral" comes from the relationship between the wing incidence, the horizontal stabilizer incidence, and the location of the center of gravity. Very simply, if the wing is set with its leading edge raised slightly, and the planes trims out in flight with the stab leading edge slightly lowered, you can visualize a kind of dihedral between the two surfaces that will stabilize the plane by making the nose come back up if the plane is tipped into a dive, thus longitudinal dihedral. It’s not a correct technical term, but it does give the idea.

When the plane is too nose heavy, it takes a big, inefficient, down load on the tail to balance out the nose heaviness in trimmed flight. That equates to too much longitudinal dihedral, and the plane is too stable in pitch. All of that down load comes from a downward lift on the stablizer that produces unnecessary drag, and subtracts from the lift of the wing so that it has to lift more to hold up the weight of the model and counter the down load on the tail. That’s why most sailplanes fliers like to get the plane on the verge of tail-heaviness at thermalling speeds. If the plane is balanced perfectly, there’s sometimes almost no down load on the tail at all during slow speed flight. That means that the drag of the tail is at an absolute minimum, and the plane’s aerodynamic efficiency benefits.

Balancing Isn’t Always Easy
The problem of finding the best starting balance point for a new model is not always simple. Even kit planes or models built from plans don’t always work well when balanced according to the directions. I’ve seen magazine plans that don’t even show the balance point. Probably the construction article told in detail how to locate the C.G., so the author didn’t bother to show it on the plans. Of course, when you later order the plans, the article probably doesn’t come with them so you’re on your own to find the right C.G. to start flying with. Likewise, if you’re designing your own model, obviously you have to decide where to set up the initial balance point.

You can use one of the excellent computer programs available that propose a starting point, or you can use one of the textbook or graphic methods available, or you can even just use your own experience to estimate it intuitively. However you find that starting C.G. position, you will find that it has to be further refined in flight if you want to get it just right for your specific plane, your flying conditions, and for your flying style. Those first few hand launches can be scary, though, if you’re not confident that the balance point is in a safe place. Try the free flight method. Make those first couple of hand launches over deep grass or weeds. Find something to cushion the landing enough to be safe.

Fine Tuning - In Flight
Once the plane is safe to fly, here is how to get the C.G. in the right place for you. With smooth air conditions, get the airplane trimmed for slow minimum sink flight. Fly it around a bit and tweak the elevator trim needed to hold up the excess nose weight becomes more powerful as speed builds up in a dive and lifts the nose further than it should for a smooth recovery, and the nose pitches up into a stall or porpoising maneuver. If the plane continues to dive without pulling up, perhaps even steepening the dive - even though the stick has been brought back to what was neutral - the plane is tail heavy. In this case, the elevator trim needed for stable slow speed flight was too much down (elevator trailing edge down). The excess lift on the tail is needed to hold up or balance the tail heaviness. When the speed builds up in a dive, the lift on the tail becomes much stronger, and it causes the dive to continue steepening.

There are lots of other things happening besides just the speed build-up that affects what happens when you’re dive-trimming a model. First, there is dowawash on the tail caused by the lift on the wing. The wing makes lift by accelerating the air in a downward direction. The tail has to fly in this downflow behind the wing, and when the plane is flying at high lift (slow speed), the downwash is at its strongest and it helps hold the tail down (or the nose up, depending on how you think about it). When you put the plane into the dive, the downwash decreases, and some of the nose-up effect goes away. Also, the effective aerodynamic center (or neutral point) of the plane moves toward the rear, changing the stability characteristics of the plane.
Flying Speed' is the Biggest Factor

All in all, though, the speed increase is the big effect. The lift on the tail (in an up or down direction) increases with the square of the speed, so a relatively small speed increase makes for a big change in the forces being produced by the tail. That means that trim on any reasonably normal plane will be dominated by the "longitudinal dihedral", or the slow speed trim position of the elevator.

Suppose that the planes porpoises when you try the dive trim maneuver. Since I said that means the plane is nose heavy, you should take some weight out of the nose, and retrim the elevator with a couple of hand tosses. When it seems to be trimmed right, launch again, fly around a bit to get the best thermalling trim, and try the dive maneuver again. This time it should pull out more gradually. The ideal balance is set when the pull out is smooth and gradual, and no stall occurs when the plane recovers; though all stable planes will go through some continuing oscillations.

Don't Push To Far

Try to be reasonable about this. Pushing the C.G. back is good - to a point! It unloads the horizontal tail during thermalling, and makes the plane more efficient aerodynamically. It also makes the model more responsive, or even touchy on the elevator control, and generally gives a feeling of lightness and better handling to the pilot. If however, you go a bit too far, bad things can happen when you retrim the plane for higher speed flying. Perhaps you are trying to penetrate on a windy day, or maybe you're working a cross country task where higher cruising speed is needed. Now your plane that pulled slowly out of the test dive on your earlier trim testing, becomes very touchy on the elevator, and may even want to tuck under or dive uncontrollably when you get it moving fairly fast.

What that means is that the "longitudinal dihedral" has become very small, and those other factors are taking over. Both of them tend to make the plane dive. The loss of downwash on the tail is the same as putting in just a bit of down elevator trim, and the aft movement of the neutral point makes the plane seem to be more nose heavy than it was. The result is that a plane that has its C.G. too far to the rear is very unpleasant to fly. So, test this too. After you get the plane balanced and flying just the way you like it at thermalling speed, feed in just enough down trim to pick up the speed to the point of good efficient penetration or cross country flight. Fly it around a bit to make sure you have it trimmed the way you want it and then do the dive trim maneuver again. It should still pull out smoothly, though perhaps a bit more slowly than before. If it want.9 za keep diving, or tries to tuck under, put back some of the weight in the nose. It's not worth it to have a plane that flies on the ragged edge of instability all of the time, even if there is a tiny theoretical performance advantage. To me, good handling is half of the enjoyment of the model, and bad flying planes are no fun!

Obviously, none of this will work if you have limp control rods, loose linkages, or poor servos that don't come to the same neutral every time. You can fly and enjoy models like this, but Fine Tuning is out of the question. For really precision flying, you need excellent equipment and a very precise, careful installation.

C.G. Effects on Tow are Surprising Too

While I'm talking about locating the C.G. of a model, I might as well go on and mention that changing the C.G. location has an unexpected effect on the way a model behaves during a winch type launch. I've seen people try to improve the way a plane acts on the winch by changing the C.G., and the effect here is intuitively backwards too.

What happens on tow during a winch launch is that as line is taken in, it accelerates the plane towards the turn around pulley on the other end of the field. The plane meanwhile is trying to climb on a circular path with the turnaround pulley near its center, so there is a big angle between the fuselage and the tow line during most of the launch. As the towline pulls the plane toward the turnaround, the heavier parts of the plane tend to stay on the path that they are following and the lighter parts tend more to be pulled in the direction of the line. If you can visualize that action, on an extremely nose heavy model, you can see that the nose will tend to stay on its upward path, while the lighter tail will be pulled toward the turnaround. That gives a strong nose-up movement, as far as the flight path is concerned, and the plane will tend to stall. A tail heavy plane obviously will behave just the opposite, tending to drop its nose as the winch line pulls in.

Move The Tow Hook

Trim the plane for flight first, and then fix the launch problems by moving the hook. It's the only way. Start with the hook a bit forward, and slowly move it to the rear on successive launches, until you get maximum height and a good straight tow with no elevator input. Hauling back on the elevator during the launch should cause a properly set-up model to stall. If it doesn't, move the towhook back until it does, and then leave the elevator alone during launch. Actually, maximum launch height comes from having the hook so far back that you need down elevator trim on tow, but if you get distracted, and forget to retrim before launch, the plane will stall and you might not catch it in time.
Thermal Entry, Escape, and Recognition.

The following was posted on the internet by rogerh@cris.com (Pete) who wrote:

As we now know, a thermal is basically rising or sinking air. For us to take advantage of this, we need first to have a plane that will fly reasonably well "hands off." Good thermal recognition requires us to be able to detect the slightest rise or fall in our sailplane. Many a thermal has been missed by pilots who are too heavy handed on the stick in search of a thermal. Also, a plane that has tendencies to fly in a shallow left or right bank makes the job of recognition more difficult. I am not talking about the ability to find a "boomer" thermal, but the ability to find the hint of one. Anybody can find the boomers, but the sailplane bloodhound can catch the slightest wiff. This often can spell the difference between 3rd place and 1st. The edges of thermals are not well-defined. If you can find the edge, you can find max lift.

Don't search constantly. Don't panic if you're in some sink air. Better pilots resist the temptation to turn the plane every 4 or 5 seconds. When you come off the line, allow the plane to fly straight for at least 15 seconds unless you launch right into one. This also allows the plane time to cover ground away from you. You launch into the wind anyway. After 4 or 5 circles, you don't want the plane so far downwind that it takes a lot of work to get it back. Thermals are easier to work if you work 'em upwind. I have seen planes do several things when they encounter a thermal, but will only mention a few of the important ones. A high thermal needs no explanation. Even if you're anew pilot, believe me, you'll know when you're in one.

1) Watch the horizontal stab. It rises when encountering a thermal, more so than the wing, especially in weak or edge thermals.

2) Watch the wing tips. They often will "bobble." The plane is seen to go through a series of rapid but small left and right roll gyrations.

3) Watch for an unexplained turn. Often thermals will pull an aircraft toward it. This is further evidence of the rotating nature of a thermal.

When do I launch? I never launch when the wind picks up a little. You probably just missed a thermal. Wait till the wind subsides a little, and let 'er go. 13e observant to subtle changes in air temp. Sometimes you will notice a puff of cool air. This is thermal wind. When or if you feel this cool puff, let 'er go. Be patient! I know I have a tendency to release my plane as soon as possible, especially when using a hi start key, the arm gets tired holding on after a few seconds. If you can, wait a minute or so. It can really pay off. Look down field. If you're lucky like I am, my field has trees at the far western end. A thermal optimally will generate upwind of you. Those downwind at the time of launch are useless. Straight-line wind is one thing, but when the trees swirl or move in a rather haphazard way, they are probably in the midst of a thermal. Let 'er go.

Finally: Wind direction on the ground is not the same direction at 100 ft!!! Meteorologists call this the "Coriolus" effect. Surface friction causes the wind to deflect 20 to 25 degrees clockwise. Move about the same amount to your right when launching. I guarantee, it's good for an additional 50 feet of launch height. Steering into the wind is not the same.

When you encounter a thermal using what you just learned, you have to ask yourself one question. "Is the thermal to your left or right and do you feel lucky? Well do ya punk?" Here's what ya do. Turn left first and begin a nice large arc. If the plane does not climb, one of two things just occurred-you missed it entirely or it's on the other side. No problem. Continue your turn, straighten it out after 270 degrees and begin the right hand turn. 270 degrees is important here's why. If you complete the turn and then initiate the right turn, the thermal has probably blown past your plane and is now behind it. This basic pattern is based on a wind of about 7 mph. The maneuver looks like a figure eight. You have also just made efficient use of time and energy. Your first entry into the thermal needs to be smooth, with the wing banked no more than 30 degrees. Entering a thermal is a multi-staged event. The early stages must be smooth and controlled. Once you establish the strength of the thermal, then you begin to work it.

Recognition, entry and establishment should take about 30 seconds to one minute, depending on thermal strength. I will cover staying in the thermal at a later time. Sometimes, no matter how hard you try, you just can't stay in the thermal. Happens to the best of 'em. Don't panic and don't sweat it. Some veteran pilots feel escaping from a death thermal is more important than finding them. Here's what you do: deciding when to get out is somewhat subjective. I've seen thermal recovery from as little as 20 feet off the ground. Turn the plane into the wind and fly hands off just as though you were starting again from the launch release. I determine a thermal is dead when I cannot gain altitude and have been losing it steadily for 30 seconds. Your mileage may vary.

There is no substitute for practice. Most sailplane pilots require 2 to 4 seasons before they master these techniques. Don't get discouraged. I jokingly called this sport "The Hiking and Sailing Club." You do a lot of walking.

Sometimes the thermals just suck. I have no formula here, it all depends if you're happy with just gliding around or not. Here's when I quit and go home. If after 1 hour or about 6 launches I fail to find a thermal, I'm done. I take out the prop job. Keep the Nose Clean and Your Wings Level.

Pete

Courtesy of the newsletter of the Inland Soaring Society, Stan Sadorf, editor.