NEXT CLUB MEETING: APR 15th

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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MAR ’02 EDITION
CENTRAL ARIZONA SOARING LEAGUE
MONTHLY CONTESTS

APR 14, 2002
RODEO PARK
RAY & VAL VISTA RD’s in GILBERT
SUNDAY
ADD-EM-UP
OPEN & 2METER
TASK: 3 RDNS 34 MINS 12 MIN MAX
LANDING: TAPE
START TIME 9:00 a.m.
ENTRY FEE:
$3 FOR ONE  $5 FOR BOTH
AMA ’02 RULES APPLY
AMA CARD REQUIRED
LAUNCH DEVICES: 12V WINCHES
WITH “BIG WHEEL” RETRIEVERS
AWARDS
1st – 3rd
C.D.: DAVE CLARK
PHONE: 928-472-8020

MAY 11, 2002
RODEO PARK
RAY & VAL VISTA RD’s in GILBERT
SATURDAY
ADD-EM-UP
OPEN & 2METER
TASK: IAIN’S MYSTERY
LANDING: TAPE
START TIME 8:00 a.m.
ENTRY FEE:
$3 FOR ONE  $5 FOR BOTH
AMA ’02 RULES APPLY
AMA CARD REQUIRED
LAUNCH DEVICES: 12V WINCHES
WITH “BIG WHEEL” RETRIEVERS
AWARDS
1st – 3rd
C.D.: IAIN GLITHERO
PHONE: 480-831-1905
# MARCH 2002 CONTEST REPORT
## BILL ROSEBERRY C.D.
### OPEN

1. ROSEBERRY, M 2095
2. CLARK, D 2079
3. HANSON, G 2049
4. TROUT, C 1841
5. RUSSELL, M 1816
6. CLARK, J 1681
7. BRISTER, P 1637
8. CURRY, B 1519
9. WATHEY, S 1453

### 2METER

1. BRISTER, P 1664
2. TROUT, C 1398
3. VAN SANFORD, E 1284
The Fledgling - Contest Timing
Tom Dean

CONTEST TIMING
Thermal contests are team efforts. The team consists of a pilot and his timer. You may be timed by anyone, and you may time for anyone. You can change timers during the contest if you wish. Sometimes during the course of a contest your favorite timer may be unable to time for you because he must fix his plane or is busy with other matters. Likewise you may be asked to time for someone for the first time. No problem, as long as you are prepared.

PREPARATION
It is a very good idea to come the contest with your own stopwatch. There are many types of stop watches available. The old standby analog (big hand, little hand) type, and a variety of digital watches with lots of features such as count up, countdown, alarms, etc. Some wristwatches feature stop watch settings, but the buttons are ready small as are the displays. It is very important that you are completely familiar with the operation of your watch and its' features. If you get confused or accidentally switch off the watch or otherwise screw up the timing, the pilot that you are timing for is authorized to kill you.

Spend some time at home practicing with the watch. If you are using the type that counts up only, (that is it starts at 0 and goes up) you will especially want to practice. If you have the type of watch that counts down you will still need to do some mental calisthenics when you have preset the watch for a seven minute flight, and your pilot decides he can only make a five minute flight. You will have to subtract the appropriate time from what the watch says.

PREFLIGHT RESPONSIBILITIES
As Timer you are responsible for making sure that you understand the task that the pilot has. What duration he is attempting, and the type of landing that must be made. You should understand how he wants the landing tape preset for a circle landing. Some pilots want the 0 end of the tape at their feet, some want it away from them, and some want it to one side or the other. Discuss with him how he warts the time called out. Most pilots prefer 1 minute updates until 3 minutes remain in the flight. Then 15 second updates until 2 minutes remain. 10 second updates until 1 minute to go, 5 second updates until 30 seconds remain, then count down every second until landing. Some pilots want you to stop talking with 10 seconds to go so that they can concentrate on their landing.

LAUNCHING RESPONSIBILITIES
Verify that the pilot has his frequency clip, and his score card. After you and the pilot have planned the flight by watching other planes or birds to determine where there may be lift, go to the next available winch. Check with the winch master to verify that the winch is ready and ask him what condition the battery is in. Will it give a killer or mushy launch. Retrieve the winch line and hook it to the plane. Ask the pilot to wiggle the ' controls to verify that all control surfaces move properly. Visually verify that the control surfaces are in the proper orientation. Make sure that no planes are in, or approaching the launch corridor, verify that the winch and retriever lines are clear. Make sure no on else is launching, give the pilot the all clear. The pilot should ask the retriever operator if he is ready, he should ask you if you are i ready, (check your watch for the proper setting) announce "timer ready." Pilot says "LAUNCHING". We're off.

Start the watch the instant that the plane comes off of the winch. Advise the pilot "you're on the clack", Assist the pilot in walking at his own pace away from the launch area and to the landing area, Don't rush him. Let him get comfortable with the control of his plane. Watch the ground for holes or rocks or wingtips, land lead him safely through them.

During the whole flight your eyes should be very busy. Watch for obvious lift, such as other planes or birds circling. Keep him advised of the time remaining. Stand behind the pilot, Don't babble or talk to other people. He needs to concentrate, and he needs your input. If

POST FLIGHT
Verify that all entries on the card are correct, and turn it in to the scoring table. Talk over the flight with the pilot, find out if any changes should be made in the timing or strategy for the next flight. Assume full credit when he receives his blue ribbon.

NEXT MONTH: CONTEST STRATEGY
The movement of air currents, whether in large air masses or in small areas around the sailplanes we fly, is completely unpredictable.

To compensate for this chaotic movement we must constantly react by adjusting the bank and pitch of our plane. The sooner we see the need for a correction, the smaller the correction can be and the more efficiently (less drag) the plane will fly. Small changes in pitch are taken care of by dynamic pitch stability the pilot adjusted with center of gravity changes during initial trim flights. Roll stability of aileron ship are to some degree provided for by swept wings, dihedral, and lateral area inherent in the design of the ship. Larger corrections in bank or the establishment of turns are made by rolling the ship to the desired angle of bank with ailerons. When we use ailerons we want the ship to roll only on its longitudinal axis. The problem is that to raise a wing the aileron increases lift on that wing with the resultant increase in drag. At the same time there usually is a decreased lift on the opposite wing with a decrease in drag. The descending wing has less drag and moves forward while the rising wing has more drag and moves backwards. This produces a tendency to yaw (turn) in the wrong direction or into the rising wing and away from the intended turn direction. This usually results in a nose high slip with the fuselage side presented to the relative wind with high drag. This is called "adverse yaw" and is fine if you need to lose altitude with lateral fuselage drag as in a landing approach, but bad for beginning a coordinated turn with the fuselage parallel to the relative wind.

A pilot in a sailplane learns to use rudder only when in the direction of the turn to compensate for adverse yaw. When the correct amount of rudder is used with aileron the turn is said to be "coordinated". To compensate for this problem and make flying easier, full sized planes are usually designed with one or a combination of a number of methods to decrease adverse yaw.

Some jet airplanes have only spoilers instead of ailerons. A more common fix for adverse yaw is to mechanically produce differential aileron movement so that there is more up travel than down. In other planes the aileron is hinged towards the top of the wing/aileron joint so that a portion of the leading edge of the aileron sticks down into the slipstream creating drag when the wing is descending to balance the resultant drag from the rising wing. Other planes couple the rudder with the aileron so the pilot does not have to use much rudder in the direction of the tom. The problem with all these "fixes" is that they can only be adjusted to work correctly within a small range of velocities, usually at cruise speed. As the velocity of the ship changes the effect may be too much or too little and the pilot must learn to use the correct amount of rudder for a given amount of aileron application at different velocities-The problem is almost nonexistent with short wings and long tail moments. This is one reason the rudder usually has a longer moment than the elevator. I have a small 2 meter ship with mechanical differential aileron but with rudder mix by a computer transmitter. The ailerons operate with one servo operating cables to both ailerons. With the aileron horn on top and the cable attachment to the horns a little forward of the hinge point there is more up movement than down on each aileron. Changes in the amount of differential movement would require new horns and cable adjustment. This arrangement works fine at normal cruise but on landing the rudder is too effective causing a bad snap roll at slow speeds. To correct this I simply switch out the rudder mix when nearing the pattern. I don't forget the switch now after being complimented for some interesting aerobatics while on final a couple of times.

How much adverse is enough?

One of the best methods of correcting adverse yaw on an R/C sailplane is to use differential aileron (more up than down) with a moderate amount of rudder mixing. But how much is the correct amount? First you must be satisfied with something less than perfect except possibly when making smooth, gentle rolls at thermal speed which is how we should be flying most of the time for efficiency. Heavy control usage always increases drag. This amount of rudder mixing for this type of flying will usually be inadequate for heavy control application. When setting up the differential aileron, no down, all up will not be a problem except for being a little slow rolling into toms. Without rudder mixing you are never increasing lift on a wing and are not increasing the possibility of stall which is the beginning of a snap roll. As mentioned before, rudder can cause snap rolls, thus it is always best to be able to switch out rudder mixing for landings so you can use heavy aileron or rudder separately.

Final trim for aileron-rudder mixed ships is always begun with aileron and rudder neutral, then when in flight trim the aileron for level flight. In level flight the rudder or aileron may need to be trimmed to other than neutral because of a warped wing. Construction problems that require other than neutral aileron or rudder for straight level flight should be corrected. If problems are impossible to correct with repairs, the ship can usually be trimmed to minimize the error. In such cases the pilot simply learns to adjust to the ship's characteristics.

I often hear pilots complain about some characteristic of their ship. Remember, all planes fly slightly differently, and we pilots must simply learn to adjust to these characteristics. In other words: know your ship! Every plane is a compromise, you sacrifice one flight characteristic for one you desire. With high aspect ratios we get better soaring efficiency but slower roll rate and a greater degree of adverse roll. By using thinner airfoils we get better penetration but higher stall speeds and larger thermaling circles. Any change to a given configuration will usually produce noticeably different flight characteristics. You can't go to the moon in a Cub, but then a rocket ship can't land at 35 mph on most of our Texas beaches.

Good luck and Fly High and Long.