NEXT CLUB MEETING: FEB 26th

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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Chuck Wehofer 480-777-9733
chuck@wehofer.com

A.M.A. CHARTER #2133
FOUNDED IN 1985

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Muncie, IN 47302-1028

JAN ‘02 EDITION
CENTRAL ARIZONA SOARING LEAGUE
MONTHLY CONTESTS

FEB 17, 2002
RODEO PARK
RAY & VAL VISTA RD’s in GILBERT
SUNDAY
ADD-EM-UP
OPEN & 2METER
TASK: 3 RNDS 28 MIN-TOTAL 10 MIN MAX
LANDING: TAPE
START TIME 10:00a.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

MAR 10, 2002
RODEO PARK
RAY & VAL VISTA RD’s in GILBERT
SUNDAY
PRECISION/DURATION
OPEN & 2METER
TASK: BILL’S CHOICE
LANDING: TAPE
START TIME 9:00a.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.: BILL ROSEBERRY
PHONE: 623-939-3909
Well here it is the first month of the year and our first contest of the calendar and we are off to a great start. The weather was a bit on the funny side, starting off cold and getting a lot better as the day progressed, just the kind of day that you want to fly Triathlon. Of course, in a Triathlon you have to think about where you want to be two minutes from now. Steve Willcox did a excellent job of that for the OPEN class with three perfect 10-minute rounds and he made landings on all three of them. Dale Kitchens, from Tucson, did very well with three rounds all in the very high 9-minute arena. On the 2METER side Craig Trout beat everybody out with near perfect 10-minute rounds. Unfortunately for the 2METER flyers the landings were just about nonexistent. Oh well, no one went home with a busted plane. Thanks to all the guys that came out and flew and thanks to all the guys that helped break down the equipment.

**OPEN**

1. WILLCOX, S  2598   10. RENAUD, P  1900
2. KITCHENS, D  2400   11. LAIRD, J  1803
3. BOTHELL, R  2360   12. TROUT, C  1704
4. PLUMMER, S  2196   13. SCEGIEL, D  1612
5. HANSON, G  2169   14. BRISTER, P  1488
6. RUSSELL, M  2137   15. HOFFER, G  1230
7. CLARK, J  2103   16. ROBERTS, B  1140
8. STIDHAM, J  2060   17. PISZ, R  765
9. CLARK, D  1942   18. FAIRALL, D  632

**2METER**

1. TROUT, C  2370   5. HOFFER, G  759
2. STIDHAM, J  1602   6. PISZ, R  636
3. BRISTER, P  1388   7. FAIRALL, D  431
4. SCEGIEL, D  1350

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**CENTRAL ARIZONA SOARING LEAGUE**

**CLUB CONTEST PLACEMENT**

**2002 CALENDAR YEAR**

**OPEN CLASS**

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**2-METER CLASS**

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HOW TO IMPROVE YOUR LANDING SCORES PART 1
By Frank Deis

It is time to begin preparations for the Colorado Challenge Cup events this summer. A full day will be devoted to the duration event as it was last year. Because the duration target time is only 6 minutes, most planes are easily capable of this, and it is flown as man-on-man to cancel out the weather factor, landing scores are will probably determine the winners.

The following discussion of precision landing techniques is provided as a part of PPSS's overall program to improve club member's skills (and in the hope that members will go to work and take the Cup away from RMSA!).

Landing when and where you want is a fundamental piloting skill and its complexity is seriously under estimated. Fortunately, anyone who wants the skill can acquire it if someone will divulge the secrets to them and if they will practice a little.

The first trick is to know if you have the skill or not. It is kind of like AA- Hi, My name is Frank and I can't land! I started out as a hot shot pilot who had that thermaling stuff down pat and was ready for competition. Soon I realized I didn't know squat about how to fly. I would start my landing patterns at random points all over the field. The airplane would hurtle through the down wind leg and go bonkers during the turn onto the base leg. I would fight to regain control during the base leg and to get the timing right for the turn onto the final approach. The airplane would dive then balloon into a stall then dive again. The wind would get under one wing and toss me off my heading. I frequently ended up 5 ft short of the spot with the nose up in a stall, bank angle at 60 degrees and thinking about how to save the airplane instead of how to land. Not a pretty sight!

It is quite reasonable to expect to land within one second of the target time and within one foot of the spot most of the time. (John Reed does it routinely!) We are talking about 98% of perfect on a two minute precision flight using the AMA measurement tape (one point loss for every three inches away from the spot). The following techniques encompass the lessons I learned while trying to increase my contest scores. The hope is that they might help someone else. I will be glad to help anyone who wants to practice and I promise you will emerge an improved and more confident pilot. For those who want to go for the Cup, hopefully this will help.

The reasons precision landings are so difficult are basically two fold. First, lots of things have to happen exactly right in a very short period of time - there is no time to be innovative while in the landing pattern. Second, the results of a mistake are not immediate apparent. They show up much later in the flight. Hence, it is difficult to connect the problem with the cause. The key is to think it through ahead of time and practice until all of the adjustments are instinctive.

There are many different precision landing techniques and almost all will work. Although there are differences between them, they all share some important features. 1) They are highly disciplined. It makes little difference what you do as long as you do it exactly the same every time. 2) They include specific points where changes in wind speed and direction and errors can be corrected for. 3) They allow the pilot to divide the landing into two separate problems: a) getting down on time and b) hitting the spot such that they can be addressed at different points in the flight.

I will describe the technique I prefer - the classic full size airplane landing pattern consisting of a down wind leg, a base or cross wind leg and a final approach. I will try to provide enough discussion so that you can use this approach or tune up your own to improve your scores. The landing pattern (shown in the figure) consists of three apparently simple legs, but there is a lot to know about each one.
**HITTING THE LANDING PATTERN ENTRY CONDITIONS**

First, let's discuss preparations prior to entering the landing pattern. A common landing mistake occurs here, before the pilot even enters the landing pattern. Landing requires retrimming the airplane. Most of the flight is performed while trimmed for minimum sink or maximum lift to drag. Most of the landing pattern, however, requires increased speed to improve control response and to make sure the nose stays down. Therefore, prior to entering the landing pattern (10 - 15 seconds), I put in a click or two of down trim and increase the speed 10 - 15% (i.e. noticeably) above the 'normal' glide speed. This eliminates lots of problems later on as we will see.

The first event in the landing process is arrival at the 'entry point'. It marks the end of the thermal or distance portion of the flight and the beginning of the landing phase. If done correctly, you can make the following statements to yourself or, better yet, to your copilot:

- Entering the landing pattern now
- Cross wind distance - good
- Altitude - good
- Airspeed - up and stable
- Down trim - in
- Time to go - good

Missing any one of these entry point check list items spells potential disaster for the landing although it is not usually apparent until later. It is harder to achieve the entry conditions than you might think.

As will become clear as we progress, the objective is to fly the landing pattern exactly the same way every time so that the flight time in the pattern is exactly the same, to the second, on every flight. The landing pattern is 25 - 30 seconds long for most people. You are off to a pretty good start if you can break the entry point plane on every flight with exactly (say) 30 seconds to go. Hence, the first thing to master is parsing through the entry point plane at exactly the right time. You may choose to wander on back to the landing area at the end of the flight, float around the entry point and then make a quick dash to the entry point to start the landing pattern. I prefer to stay in the thermal as long as possible, then come screaming out of the sky in a near vertical dive and race for the entry point at full speed. (I like to avoid the problem of leaving the thermal too early and getting caught in a downer on the way home.) Your technique will depend on your personality, airplane, skill level, weather conditions, the event you are flying, and how much guts you have.

When you can arrive on time reliably, you are ready to address the finer points of entering the pattern. Try penetrating the entry point plane at the same altitude every time - typically about 30 ft. Missing the correct altitude at the entry point immediately complicates the landing problem. The airplane's sink rate is about 2 ft per second. Hence arriving 20 ft too high will tend to stretch the landing pattern from 30 to 40 seconds! If you are going to land within 1 second of the right time you need to control the entry altitude within a foot or two! (make sense?) Most pilots don't realize this and try to compensate for such altitude variations during the landing pattern. As you can see, it is almost too late by then unless you have really big spoilers.

The next thing to concentrate on is getting the cross wind distance to the entry point right. It is surprising how important this distance is and how much easier the whole landing process is if it is properly controlled. The distance is important because it 'reserves' space for the base (cross wind) leg. The base leg consists of two high speed 90 degree turns with a straight cross wind leg in between. This uses up a reasonable amount of sky - typically 30 to 40 meters. If I penetrate the entry plane at too short a distance - say right over head, I cannot execute a clean, fast, repeatable base leg and I am headed for trouble. Leave yourself some room to maneuver. The most common mistake I see pilots make on their landings is cutting the pattern too tight at this point. Keep the airplane away from you and the landing spot until you are ready to set ft down.
If the airplane is in the correct trim and the altitude, crosswind distance and time to go are correct at the entry point, the only thing left to go wrong is airspeed. The natural tendency is to control ground speed which is not the same as airspeed. Airspeed is what counts here. Plan to accelerate or decelerate to the correct air speed in the 5 to 10 seconds before arriving at the entry point. If the airspeed is too low, you will notice a sluggishness in the airplane's control response during the downwind leg which you will feel is odd but which you will ignore. The problem doesn't become clear until you attempt to turn onto the base leg and the airplane fades and dies in the turn. If you are lucky, you will land short. If you are not, you enter a downwind stall and crash. Downwind stalls due to improper control of airspeed are the leading cause of damage to our sailplanes. If the airspeed is too high, the airplane will zoom back into the sky when you attempt the turn onto the base leg. The zoom forces you to break out of the pattern and you lose control over the landing process.

Controlling the airspeed at the entry point in spite of the wind conditions is the most difficult skill associated with the entry into the landing pattern. The good news is that there are a couple of things you can do to get a handle on it. First, you can know and trust your airplane. If your control system and linkages are solid and repeatable (i.e. no NRODS that change length with humidity and temperature) you can put in the down trim, get off the elevator, grit your teeth and let the airplane pick its own speed! If everything is perfect, In the sense that the elevator goes to the same angle every time, then the airplane will seek the same airspeed every time. The other option is to get lots of experience under lots of different conditions until you learn how to estimate airspeed. Once you can estimate airspeed, controlling it is a matter of diving, stalling, using flaps or spoilers, or using some other energy wasting maneuver. Almost anything will work.

ENOUGH ALREADY! on entering the landing pattern. - I told you it was complicated. - You can now start practicing. Remember that you are forced to practice one landing on every flight. You have the choice of practicing a good one or a bad one. The kind you practice is the kind you will get good at. If you set specific goals for each landing you will learn something and steadily improve - Why Not? If you are serious about rapidly developing these skills you can set up a short high start and shoot many landings in a short period of time. What ever you do, keep a clip board or note book handy and write down what your entry conditions were. i.e. You need to know if you did what you planned to do?. This is a powerful secret to improving your skills. Human nature being what it is, your memory will play tricks on you after a few flights and you won't remember what you did or how well it worked, The bottom line is that what gets measured gets fixed and what does not does not.

You are now ready to go practice the entry into the landing pattern. Pick a point about 30 ft. high and about 30 meters cross wind as the entry point and a time to go of 30 seconds for starters. (I will show you how to determine the right numbers for you later.) Launch, fly, have a good time. When you are ready to come down, ask someone to give you a 1 or 2 minute count down (or count up if you prefer) for landing. I used to fly by myself when practicing so I used a cheap tape recorder with a 2 minute count down for landings-- it works pretty good. After landing, write down how well you did on altitude, cross wind distance and time to go at the entry point. You are on your way to the Challenge Cup! If you have any trouble hitting the entry conditions, ask a club member for help. That's why we have a club. Next month we will get into the landing pattern itself.
**BASE LEG**
- ~10 seconds long
- Lose 1/3 to 1/2 altitude
- Nose down
- Correct for wind
- Crab to compensate for cross wind

**DOWN WIND LEG**
- Fast, flat glide
- 5-10 seconds long
- Straight down wind
- 40-60 meters long

**ENTRY POINT CONDITIONS**
- ~30 seconds to go
- ~30 ft altitude
- 45-60 meters cross wind
- Down trim in
- Airspeed up -10%
- Dual rates off

**FINAL APPROACH LEG**
- ~10 seconds to go
- Keep nose down
- Keep speed up
- Forget about time
- Pick spot to start slide
- Watchout for the boundary layer

**TYPICAL Glide PATH**

**LANDING CIRCLE**

**TOUCHDOWN**
- Gently force down with elevator
- Use spoilers and elevator to kill speed
- Stay on controls until stopped
- Correct for cross winds