

Newsletter of Newsletter of the Skyline Soaring Club for April, 2020 Soaring



Photo by Dick Otis

Editorial

Well, since the club has suspended operations, and the terminal building is closed, so we can't fly for a while, maybe we can learn something by sharing! What follows is another article by our very own SSA Director that should come in handy when we DO get back in the air!

Flying Efficiently – A Tale of Three Thermals

Jim Garrison

Introduction -- When you find a thermal on a nice summer afternoon, are you the kind of pilot that works every bit of lift until you reach cloud base - savoring each wonderful surge that makes the ground drop slowly away below you? Spending 15-30 minutes climbing in a thermal is a great way to experience the joy of soaring on a warm afternoon, but it is not the best way to fly your machine efficiently.

As your skills increase and you wish to fly for FAI badges and/or OLC points (or even just fly cross country for fun), you will need to begin using the available lift over a longer period of time to reach a goal. While you may never have thought about it in these terms, longer flights are a race against the sun tracing its arc across the sky. There are only so many hours of useable lift on a typical soaring day, and if you are going to get to a goal and back home, you will need to use the existing lift efficiently. If you aspire to racing, this simple truth will be made very obvious to you by your friendly competitors.

An Example Flight -- To illustrate these points from my own experience, this article describes a flight made on the practice day for the Seniors Soaring championship at Seminole Lake Gliderport in Florida on March 13, 2020. An analysis of the flight shows very clearly the how simple choices about thermalling strategy can affect the efficiency of one's flying. The flight was made in Tango, the Duo Discus owned by Ben Johnson and myself. This flight may be our last for a while, as - considering all the health concerns - we withdrew from the contest the next day and came home. Fortunately, both of us are still fine.

The day was a good one, and by the time it got warmed up, there was 5-8 knot lift to 5-6000 feet MSL marked by honest cumulus clouds. The task called was a turn area task to the South of Seminole Lake. There were 5 turn areas in the task, Winter Haven (a nice big airport in the middle of some lakes), Streamsong (a golf course about 50 miles South of Seminole Lake), Wines (an airport to the East of Streamsong and right up against a restricted area), Gore (a private airport well North of Wines and right on the edge of the Orlando Class B airspace), and the CFI plant (a big fertilizer plant on the edge of the Tampa Class B airspace to the West of Gore) and back home to Seminole Lake across the Green Swamp. Plenty of little problems to keep pilots' minds occupied while we tried to keep our sailplanes in the air. A screenshot from SeeYou with the IGC trace of our flight is shown below. The colors in the IGC trace represent altitudes as defined on the right of the figure. Note that most of the flight was made between 2500 – 4500 feet MSL. The ground in the area is about 150 feet MSL. Each thermal used is marked with a circle and three of them are marked with Orange circles and numbered. These are the examples discussed in detail.

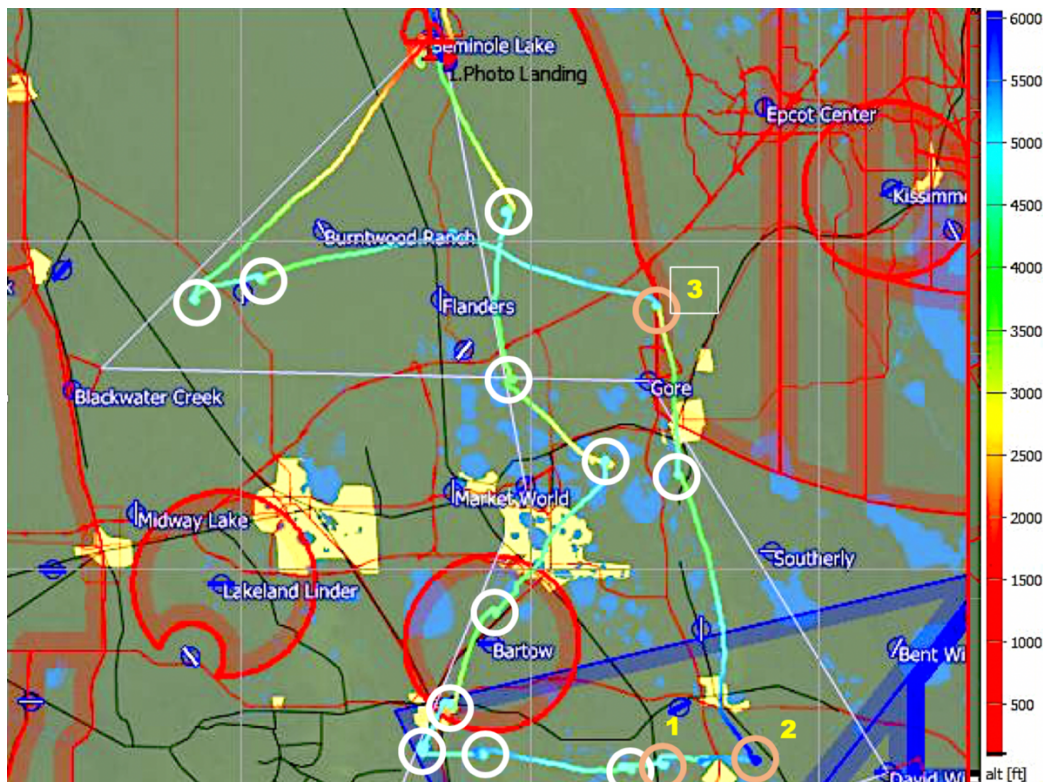


Figure 1. IGC Trace of Tango's flight as depicted by See You. Thin white lines connect the centers of the 5 turn areas (Winter Haven, Streamsong, Wines, Gore, CFI Plant and Seminole Lake). White circles denote thermals used. Orange circles numbered 1, 2 & 3 highlight thermals discussed in text. Colors in flight trace show altitude as depicted in the scale on the right. The heavy red lines show Orlando and Tampa Class B airspace and the red circles show Bartow and Lakeland D airspace.

The flight was fairly trouble free; we flew the first leg from the Start to Winterhaven at a modest average speed of 55 mph, the second leg from Winterhaven Southwest to Steamsong at 56 mph and the third leg East to Wines at 47 mph. The area around Steamsong is pockmarked by many phosphate mines and is not very landable, so I did not want to get low there. Then we got a bit more serious and flew the fourth leg North to Gore at 86 mph, the fifth leg West to the CFI plant at 77 mph and the final glide North East to home at 87 mph. This was our first real cross country flight of the year, so we were not pushing very hard and were enjoying the day. The scoring program said we flew 126 miles in 2 hours, giving an average speed of 63 mph for the entire flight. I was sort of satisfied with that result until I saw that the guys at the very top of the score sheet had averaged 6-7 mph faster. The days winner was the current 18 Meter champion, John Seaborn, in his new JS3 with a speed just over 70 mph.

Obviously, Some Analysis of Our Flying Was In Order. What could we have done better? Well, lots actually, but clearly, the third leg from the Steamsong circle to Wines is the place to start; it was about 1/2 the speed of the next leg and well below our overall average speed. For starters, looking at **Figure 1** above, if you include the thermals at the beginning and end of the leg, we used 5 thermals for a 15 mile leg and yet we did not gain much altitude. For reasons that are not overly clear, we spent lots of time circling on a short leg – a sure way to bring down your average speed. As one example, the trace from one of the thermals we tried to work, marked as **Thermal 1** in **Figure 1** above, is shown in **Figure 2** below. Closer examination of our flight in this segment shows quantitatively how easy it is to lose time with aimless flying.

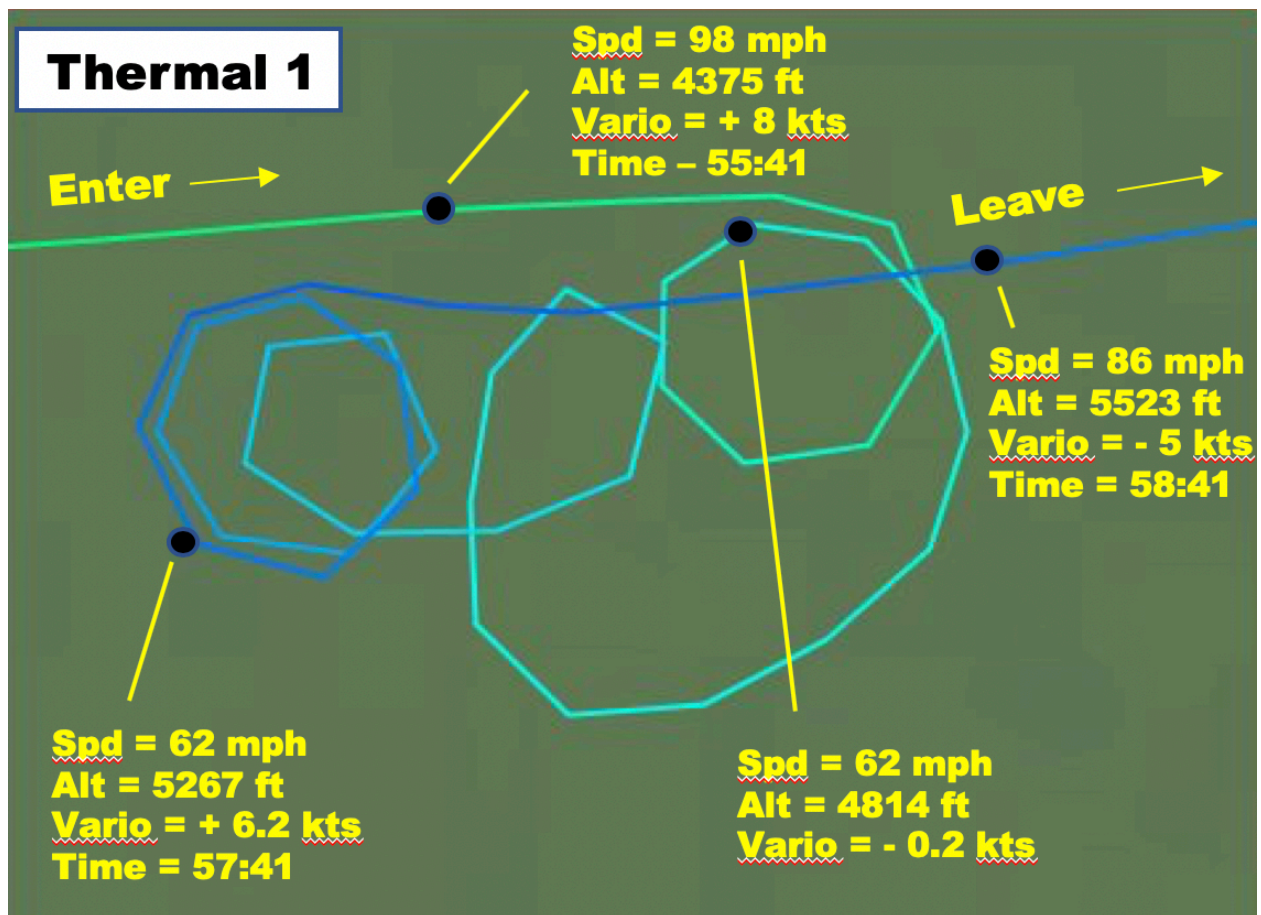


Figure 2. Detail of flight in Thermal 1. Data reported from the flight log as depicted by See You. Dark blue dots represent points of data discussed in the text. Log recording time was every 4 seconds (as shown by corners in the trace). Colors of flight trace represent altitude as depicted in Figure 1.

About 2/3 of the way down the leg, we were moving along well (98 mph ground speed) when I sensed a thermal off to the right and the vario suggested it was strong (8 kts). Even though we did not need to climb (we were at about 4400 feet MSL), I took the bait and tried to center the thermal. But, because we were moving fast, note that the first circle ended with us to the East of the real thermal in weak sink (vario at -0.2 kts). I did not take the hint that I should not have turned and compounded the error by taking another couple of turns to move far enough back to the West to find the real thermal. By the time we left the area, we had wasted 3 minutes and continued on with only a bit of extra altitude that we did not really need. Three minutes is 0.05 hour; adding 0.05 hour to a 2 hour flight takes 1.6 mph off your average speed. This difference does not seem big, but 1.6 mph is about 23 % of the difference between our speed and the winners speed. Thermal 1 is a very good example of how to lose time on course. In looking at some other thermals in our trace with this mindset, it is easy to see where we lost a number of minutes during our flight by inefficient flying. Painful, but if we wish to improve, very necessary.

Thermal 2 – The Streamsong – Wines Leg Was Not All Bad. One can do it better. Fortunately, we did not completely embarrass ourselves on this leg and made some better decisions near Wines which positioned us well for the next leg. **Figure 3**, below, shows our flying in **Thermal 2**, and provides an example of much more efficient flying and making choices with a purpose.

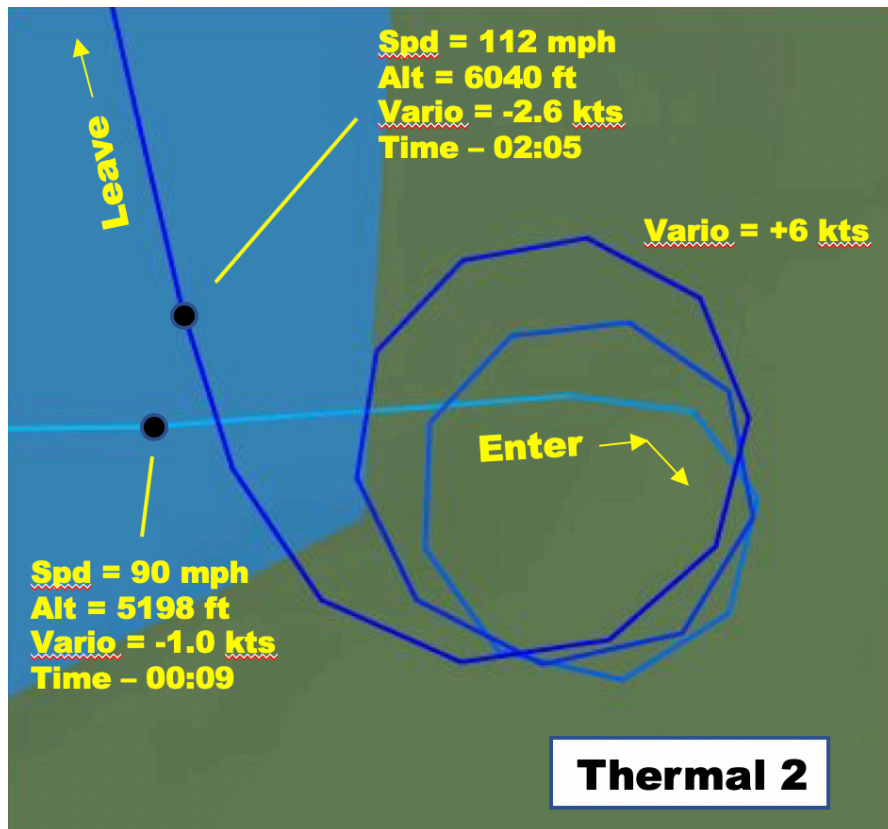


Figure 3. Details of flight in Thermal 2. Light blue in upper left is a lake. Dark blue dots represent points of data discussed in the text. Colors of flight trace represent altitude as depicted in Figure 1.

This thermal was large and strong (~ 6 kts) and quickly took us to over 6000 feet, our highest point in the flight. It was also on an energy line we wished to use to fly North for the 25 mile leg up past the Gore turnpoint (and help us forget the leg from Streamsong). Note that we entered with good speed, centered the thermal quickly and took less than 2 minutes to gain about 1000 feet. This maneuver put us at cloud base and headed North at over 100 mph. All was good at this point. The energy line worked, we maintained the 100 mph ground speed for most of the 25 mile leg to Gore and reached our next decision point in about 16 minutes.

Thermal 3 – Finally, A Good Example of Better Flying -- Because we were flying about 100 mph on the leg to Gore, we could not stay at cloud base and slowly lost altitude. We were near 3300 ft MSL when we arrived at the next energy line where we wanted to turn West to the last turnpoint at the CFI plant near Tampa. No worries, we knew there were good thermals in the area.

Figure 4, below, shows our flight in **Thermal 3** -- a good example of picking up a strong thermal, centering it quickly and using it efficiently.

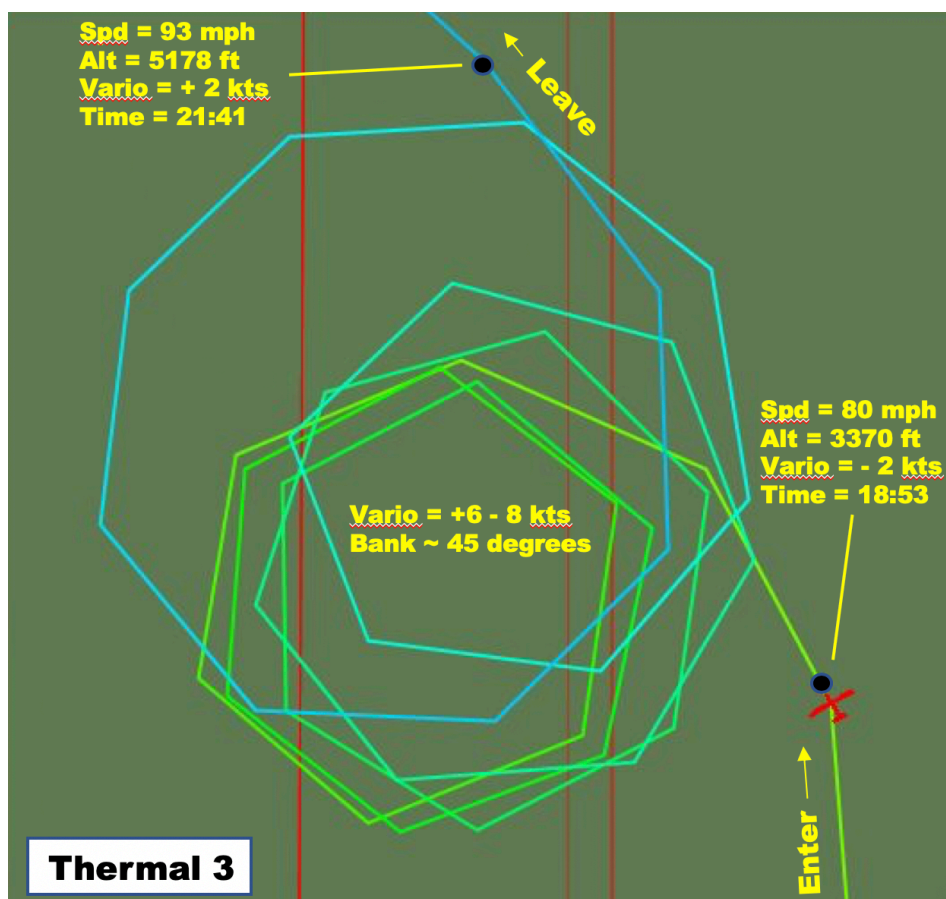


Figure 4. Details of flight in Thermal 3. Dark blue dots represent points of data discussed in the text. Colors of flight trace represent altitude as depicted in Figure 1

Note the following: (a) we entered with good speed; (b) we centered the thermal quickly, banked at roughly 45 degrees and completed our circles in about 20 seconds; (c) we climbed about 2000 feet in 2.8 minutes; (d) we left the thermal at about 90 kts, headed for the 21 mile leg West over toward Tampa; (e) note – this thermal could have taken us well above the 5200 feet where we left it, but we had to curtail our climb to avoid climbing into the Orlando Class B airspace (which begins at 6000 MSL right over the thermal).

Summary – It is easy to find one’s inefficient flying by looking at the cold, hard truth of your flight traces. You might argue that it takes some of the fun out of soaring. However, if you want to improve, it is really necessary. Also, it is surprising how costly almost unnoticed mistakes in your flying can be to your progress over the ground. As you get more efficient at finding and using lift, your confidence improves and this helps open doors to even better and more amazing flights in the future.



SKYLINE CYCLING CLUB

Here’s Joel Hough, trying to decide which way to ride! Motorless (cycling sailing, soaring and more) transport enthusiast out riding around Prince William County. Motorless activities on land, sea and air is the One Way to have a great time.



Dick Garrity noted that we donated \$300.00 to the Front Royal Fire Department for the use of the Fire House for both the Annual membership meeting and Annual Safety meeting.

Ken Ring reported the SSEF has received applications from two potential scholarship candidates for the 2020 soaring season.

The spin syllabus publication and supporting cockpit cards, training materials, and written test are on hold pending response from Schleicher on officially-generated spin weight table page replacement for the POH.

There are a handful of members that cannot physically fulfill ADO duty but do not want to, or cannot be, Duty Officers. These individuals will be asked how they feel they can contribute to the Club in a less physical way.

The Duty Officer skill set begins with familiarization of SSC operations as learned through Assistant Duty Officer training and duty. Instructors can volunteer for training and become a qualified Duty Officer. That would allow them to fill in during *ad hoc* days if a Duty Officer is unavailable.

Three parties, including Treasure Coast Soaring, are interested in purchasing the Grob. Dick Garrity and Bill Burner took the action to meet with one of the possible purchasers on March 11th.

BOARD MEETING HIGHLIGHTS

Keith Hilton

The Skyline Soaring Club Board of Directors met on February 29, 2020. All Board members were present except Evan Dosik. Carlos Troncoso attended as a guest.

It was noted that there was no immediate need to fill the vacant position until all Board members could be present. Dick Garrity served as interim chairman for this meeting.

It was noted that the Sprite needs a good scrub down. If someone has the time, or gets the urge, a bath for the Sprite would be welcome!

The annual has been completed on the Husky.

Hangar door #4 has been repaired. Preventive maintenance has been performed on all hangar doors. The County now has a contract with former Skyline Soaring Club member, Tommy Childress, for the preventive maintenance and repair of the airport's hangar doors.

Mary Brown-Hutchins, another tenant at the airport, is establishing, with other tenants, a "Friends of Front Royal Airport" to represent the residents and users of KFRR and to assist in making improvements. Matt Vosika has agreed to be the Skyline Soaring Club "Community Liaison Officer" to represent the Club on this committee and to cover the Airport Commission meetings as an observer as well.

Mike Ash has become a Service member so he can continue as the Duty Roster Meister.

The Club is still interested in acquiring an additional hangar for one of our tow planes which could allow storing the Discus, assembled. The Board voted unanimously in favor of the acquisition of another hangar if one becomes available.

With regard to the qualifications for towpilots, the consensus of the Board was that Club members and

Service members should pay for qualifications in Club tow planes except when actually towing a glider.

The gear-up damage to the Discus occurred as the glider slid to rest on the hard runway surface and when the glider was dragged off the runway before any attempt was made to lower the landing gear. The glider has been delivered to Gehrlein Products in Pennsylvania for repairs. John Noss was tasked to review the incident and provide recommendations, if required, on member training prior to flying the Discus. Training will be developed in the near future on procedures for moving damaged aircraft off the runway.

The Safety Officer (Eric von Weezendonk) asked to consider changes to paragraph 2.9(d) of the Skyline Soaring Operations Manual - Operations in Windy Conditions. Keith Hilton took the Action to draft an update for approval before publication. Although the Board believes a change can be made, as of this writing, the Board has yet to make a decision on the wording of the paragraph.



Skyline Soaring Club, Inc.
is a private, 501(c7) non-profit organization, dedicated to the enjoyment and promotion of the sport of soaring. SSC is based at the Front Royal-Warren County, Va. Airport and is an affiliate club of the Soaring Society of America.
For information about the club go to
www.skylinesoaring.org

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Guido Kramp / Rob Jacobson - *Discus Meister*
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