

# **VARIOMETER**

**PUBLISHED TO RECORD  
THE UPS AND DOWNS  
OF THE  
KANSAS SOARING ASSOCIATION**

Editor: Tony Condon

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Number 3

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**DON JONES (2016-2017)**

**TIM DOUBLE (2016-2017)**



**Brian Bird** ready for takeoff in his Libelle, Feb. 26<sup>th</sup>

# KSA CALENDAR

March 12<sup>th</sup> - KSA Meeting - Soaring Technique Roundtable - Cabela's - 6:30 PM  
March 22<sup>nd</sup> - 31<sup>st</sup> - Sequatchie Valley Badge & Record Camp - Jasper, TN  
April 9<sup>th</sup> - KSA Meeting - Spring Safety Meeting - Cabela's - 6:30 PM  
April 16<sup>th</sup> - Opening Day at Sunflower  
May 11<sup>th</sup> - 20<sup>th</sup> - 18 Meter Nationals - Lancaster, SC  
May 14<sup>th</sup> - KSA Meeting - Cookout at Sunflower  
May 15<sup>th</sup> - 21<sup>st</sup> - Region 7 Contest - Albert Lea, MN  
June 11<sup>th</sup> - KSA Meeting - Cookout at Sunflower  
June 11<sup>th</sup> - 19<sup>th</sup> - Club Class Nationals - Wurtsboro, NY  
June 21<sup>st</sup> - 30<sup>th</sup> - 15 Meter, Open, Standard Nationals - Nephi, UT  
June 25<sup>th</sup> - Kansas Kowbell Klassic  
July 9<sup>th</sup> - KSA Meeting - Cookout at Sunflower  
July 9<sup>th</sup> - 16<sup>th</sup> - International Vintage Sailplane Meet - Elmira, NY  
August 7<sup>th</sup>-15<sup>th</sup> - Sports Class Nationals - Uvalde, TX  
August 13<sup>th</sup> - KSA Meeting - Cookout at Sunflower  
September 10<sup>th</sup> - KSA Meeting - Cookout at Sunflower  
September 22<sup>nd</sup> - 25<sup>th</sup> - Wichita Vintage Rally  
October 30<sup>th</sup> - Closing Day at Sunflower

## Notes from the President

The season has started! We've done a good job of taking advantage of the warm winter so far in 2016, with several auto tow outings at Sunflower in the last few months, a good day of training via aerotow, and one really good soaring day!

Many KSA members were in attendance at the SSA Convention in Greenville. The presentations were enjoyable and the gliders on the convention floor drool-worthy. Almost all of them had some sort of engine. Concoridia was the main attraction with her 28 meter wingspan. Stunning!

**Don Jones** is busy putting together the line duty and instructor schedule for the year, so be sure to talk to him at the upcoming KSA meeting or contact him to get your dates scheduled before they fill up. On that note, if you haven't paid your dues yet, please see the note on the next page and get them sent in. Renewal letters will be going out soon.

I also expect to very soon be distributing our 2015 financial report to all 2015 members. Also in work is a member directory. You will have an opportunity at the March meeting to update your contact info as well as add emergency contact info. **Tim Double** is working hard on developing our emergency response plan and it will be in place and distributed to members by the opening of our official season on April 16<sup>th</sup>.

Fly safe, and watch for Cold Fronts!

**Tony**

## Sunflower Seeds

February 19<sup>th</sup>: **Mike Orindgreff** had a short flight in F8

February 22<sup>nd</sup>: **Mike Orindgreff** had a flight of just over an hour in F8

February 25<sup>th</sup>: **KC Alexander** towed. **John Wells** ran the wing. **Tony Condon** flew Kate the Std. Cirrus to Mena, AR. **KC** and **John** chased.

February 26<sup>th</sup>: **Bob Park** renewed his CFI in the morning with **Charles Pate** in the 2-22, via auto tow. **Brian Silcott**, **Alex Hunt**, **Paul Sodamann**, **Don Jones**, and **Jerry Martin** assisted. In the afternoon, **Steve Leonard** was at the field, helping **Brian Bird** get acquainted with his new Libelle. **Brian** flew the 2-22 with **Alex** while **Tony** flew the towplane with **Paul**. Then **Tony** instructed **Brian** and **Jerry**, enjoying a nearly 30 minutes soaring flight with **Brian**, thanks to the neighbor farmers burning some trees. For the last flight of the day, **Brian** enjoyed a flight in the Libelle.

### Secretary/Treasurer Special Election Notice

**Brian Silcott** has volunteered to fill the remaining Secretary/Treasurer term for 2016. Special Election to fill this position will be held at the March KSA meeting.

### 2016 Dues are Due!

KSA & SSA Regular Membership - \$100

KSA & SSA Family Membership - \$70

KSA & SSA Youth Membership - \$70

KSA Membership Only - \$50

Makes checks out to KSA

Send your renewal payments to:

Tony Condon

911 N Gilman

Wichita KS 67203

# Distance in the Winter

By **Tony Condon**

“Are you Serious?” was my greeting from **John Wells**.

“I’ll go if you’ll go” was my response.

On Monday, on my way home from the SSA Convention, my friend Pete VonTresckow alerted me that Thursday was looking like a potential day for a downwind dash. So I had sent **John** and **KC Alexander** a fishing email, to see if they might be available for a reprise as crew. We decided it might be fun to try for a downwind dash in February. As far as we knew no one had done that. Plus, it seemed like a good way to warm up for longer downwind flights later in the spring

The forecast held. Wednesday was a busy day getting a few odds and ends taken care of on the trailer and making sure that I knew where all the parts of the glider were. The main pin was where it belonged but it took a little scrambling to remember where the total energy tube might be. **Rafael** was quick to the rescue that evening and everything was in place.

Early arrival at Sunflower was in order since the day was forecast to begin early. Launch was planned at 11:00 AM. The glider was rigged in record time and everything prepared. The towplane required some time on the battery charger for its first outing of the year but it was ready at the determined time.

Cumulus clouds had begun to form at 10:00 AM. This resulted in a slight change to plan. Instead of declaring Fort Smith, AR I switched to Talihina, OK, directly downwind from Sunflower and a familiar airport and area.

At 11:03, we rolled. The sky was starting to become quite overcast at Sunflower. I took a higher than usual tow and released in a weak thermal. **KC** and **John** stored the towplane and started driving as I drifted downwind. By the third thermal I was south of Cheney Lake and back into good sunshine and under fantastic cumulus. The wind was steady around 20 mph, cloudbase started at 6000 feet and rose as I headed south. I was able to stay above 5000 feet, usually working strong lift and able to bump along nicely under lines of clouds.

I was quickly past Wichita, Wellington, Ponca City and Kaw Lake, and waving at Tulsa. The average speed rose steadily until settling at 70 mph. Not bad! Things were ticking along smoothly and I nearly reached 7000 feet at my highest point. It was starting to become apparent that unless something really went wrong I would arrive at Talihina well before the soaring day ended.



Passing Tulsa

As usual, once I became comfortable I soon was faced with a challenge. The only part of the flight that I felt was a struggle was as I passed Lake Eufala. I was pondering why on earth the wind line seemed to line up with every lake in Kansas and Oklahoma. I was also only one decent climb from having glide to Wilburton Airport, which was a very comforting idea since after Tulsa the landscape changes from farm fields to forests. Wilburton would be my stepping stone into Talihina. I was starting to see the hills and ridges of southeast Oklahoma which also led to a slight uptick in the anxiety level in the cockpit. Mix all of this together with the fact that my max altitude had been trending downward since the high point of 7000 and it had been a while since I had gotten to cloudbase. The clouds were starting to thin out as well.

Now I found myself down to nearly 4000 feet as I diverted towards the airport at Arrowhead State Park, the last airport before Wilburton. Thankfully a thermal was encountered, and it wasn’t a bad one at that. I settled in, looking forward to getting back up high, promising to never do that again, and enjoying the wind that was drifting me towards my goal as I climbed. Wilburton was in glide and I was able to angle back east towards better clouds and without too much trouble soon had glide to Talihina with an arrival just after 3:00 PM.



Along the way I pondered my next move. Options downwind included Broken Bow, OK or my old friend De Queen, AR. However I was not too keen to continue south of the Kiamichi ridge. Cloudbase was back down to just over 6000 feet, the wind had turned a bit more westerly, and I was having trouble seeing any landing options out amongst the trees. So I set Mena, AR into the Oudie. Hark! Mena was Diamond Distance from Sunflower, 501.8 km to be exact. The idea of a February Diamond flight was pretty attractive. I also was sure that there was a nice warm FBO at Mena and couldn't help but think about my frozen toes.

So off I set, flying high above the Kiamichi Ridge, still staying up above 5000 feet and having a fairly leisurely flight over to Mena. The route took me back into thicker cumulus clouds and generally better lift. I soon had glide to Mena. As I passed Rich Mountain I could see snow on the top of it! Soon Mena was in sight and after a few minutes of loitering to extend the flight over 5 hours I made a nice landing there.

**John** and **KC** were about 3 hours behind. I had kept them updated during the flight by text message. Several people had been following the flight online with the SSA's Sailplane Tracker so I had plenty of messages and Facebook notifications when I landed. The FBO was friendly and helpful. Soon the hero crew arrived and the glider was quickly in the trailer. A gourmet dinner at McDonald's was procured and the long drive home commenced. The mission was complete when I pulled into the house at 3:00 AM.

This flight was intended to be a warm up lap for the spring go south season. What a warm up lap it was! We got some more experience with putting together these kinds of flights. My glider and trailer are now ready for the rest of the spring, and we got some valuable practice in all of the aspects involved. Hopefully we can keep working towards the long time goal of flying to the Gulf of Mexico!



Greetings from Mena, Arkansas!

NWS Soaring Forecast is Active!

<http://weather.gov/ict/soaring>

# Wireless Aerotow

by Vladimir Fedorov, <http://gliding-stories.blogspot.dk/2016/01/wireless-aerotow.html?m=1>

Imagine you are making an outstanding distance record! You have done lots of preparations, the weather is right, you have turned all the points along the route and now facing a long final glide in smooth evening air. And unfortunately you got not enough altitude to make it to the goal.. Oops! The air is completely calm, not a single bump, you are flying at maximum LD speed and the only thing left is a hope that somehow you will get there and will not land out on a field.

Imagine now that it is possible to improve your gliding ratio without any modification to your glider. How? Pretty much the same way it is done in nature. But before we go into details let's first look what happens with the airflow around a wing.

A long story short: High air pressure under the wing and low air pressure above it create nice vortices around the wing tips. These tip vortices reduce the wing efficiency by tilting the lift vector backwards and generating extra drag-due-to-lift, a so-called induced drag. Intuitively, heavier is the plane, larger the lift and stronger the tip vortex strength. And a bit less intuitively, lower the airspeed, more air is involved in the tip vortex flow and again stronger the tip vortices.



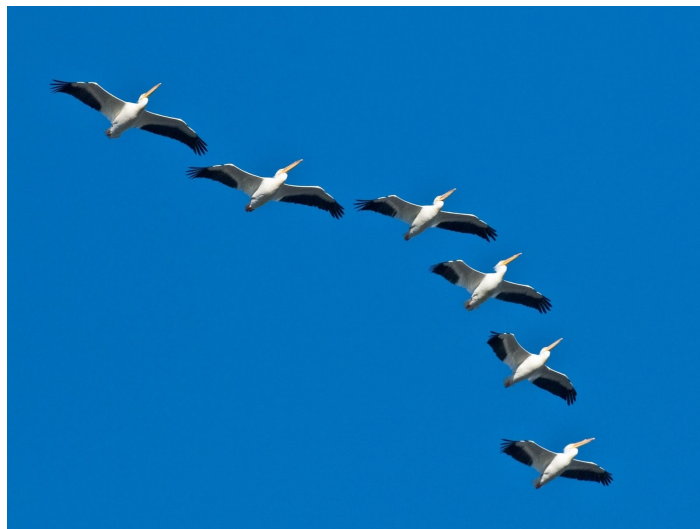
Visualization of wing tip vortex with colored smoke behind small airplane (NASA LaRC)

Generally, glider wing is very efficient and therefore produces little tip vortices, but it still makes them like any other wing does. The nature of the tip vortices is such that they trail behind the wing and generate downdraft right behind the span of the wing and an updraft just outside on the wingspan. There are plenty of stunning photos in the internet showing these tip vortices and air movement behind huge jets.

Now remember birds that migrate every year in huge flocks. They fly in formation by placing themselves behind the leading bird. In fact it has been shown that they do it right in the area of the updraft from the tip vortex of the leader. By doing so, birds are sort of constantly riding the extra updraft generated by the leader, who apparently has to work harder. That's it! What if we can make use of a wake from other aircraft to improve glider performance, especially in a long marginal final glide?

Having this idea in my mind and not much time to make a model to check if it is feasible at all, I am lucky enough to work as a researcher at Technical University of Denmark with plenty of talented and enthusiastic students around. It happened that one day two BSc students Mads Ellinger and Morten Jakobsen came to my office asking for an interesting problem for their thesis. Both glider pilots they were interested in something closely related to gliders. And this is how it started.

Mads and Morten developed a model where they implemented lifting-line theory (details: [https://en.wikipedia.org/wiki/Lifting-line\\_theory](https://en.wikipedia.org/wiki/Lifting-line_theory)) to calculate and visualize what happens with the airflow around a glider wing and what happens if there is another aircraft in front which generates the so-desired updraft from tip vortices. The lifting-line method they used simplifies the problem quite a lot and does not account for many complex phenomena that take place around the wing but it can give a pretty good idea if it is at all possible for a glider to use wake from other aircraft. And most importantly, the method gives quantitative estimations for the idea. The guys obtained a lot of interesting results while researching the problem and here we present the results which are most interesting and promising from the point of view of a practical glider pilot.



Birds flying formation is an example from nature for how to use wake from a leading wing.  
 Photo (cropped) courtesy Josh Hallet <https://flic.kr/p/4spb99>

So, first imagine a situation where two similar gliders fly in formation and they both would like to benefit from it. The rear glider should be reasonably behind the leader for the safety reasons, while its wing should be just outside the leading wing in the span-wise sense. In reality however, the tip vortices are not straight and not steady so the best span-wise position is to be found and maintained during the flight. Anyways, this kind of configuration with two gliders of similar characteristics is not very practical for neither of them because only the trailing wing can use the wake effect. So, initially the trailing glider would climb a little with respect to the leader until it finds its equilibrium position at which both gliders would sink with the normal sink rate of the leading glider. Therefore this flight configuration is not very interesting.

To fully exploit the formation flight the leading glider should have higher performance characteristics than the trailing one and calculations show that if e.g. an Astir CS is trailing behind a Nimbus 4 at 100 km/h, then it can keep up with it, boosting its performance to the level of Nimbus. The Nimbus in this case would hardly feel any deterioration of its performance.

Let's now go back to our hypothetical long marginal final glide in the end of the distance record flight. Imagine that once on final glide, you dial your friend, a tug pilot, who fills up a Piper PA-25 Pawnee plane full, takes off at nearly MTOW and reaches you during your final glide. What happens now if you place yourself in the optimal position behind the tug at 100 km/h? Excited? Assuming that the propeller of the Pawnee has zero total lift/sink effect on you (i.e. producing only turbulence) the calculations show that if you are flying an empty Astir and the Pawnee is near its MTOW, you will be able to climb in the updraft from the tug wake together with the tug! And this is without a rope! The world goes wireless!

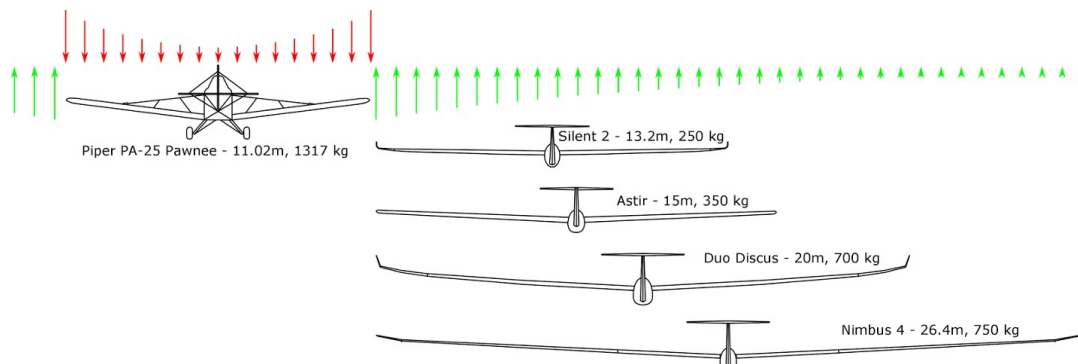
What about other types of gliders? Mads and Morten checked different configurations and gathered the most interesting results in a table below. There is one glider for each wing span class showing potential increase in performance. The boost is expected to be quite similar for gliders of the same class, so this table covers most of the configurations.

Glider	Span, m.	Aspect ratio	Mass, kg	Netto lift gain, m/sec	Total climb, m/sec
Silent	13.2	20.0	250	+1.80	+1.14
Astir	15.0	18.2	350	+1.50	+0.85
Duo Discus	20.0	24.4	700	+0.90	+0.32
Nimbus 4	26.4	38.8	750	+0.66	+0.21

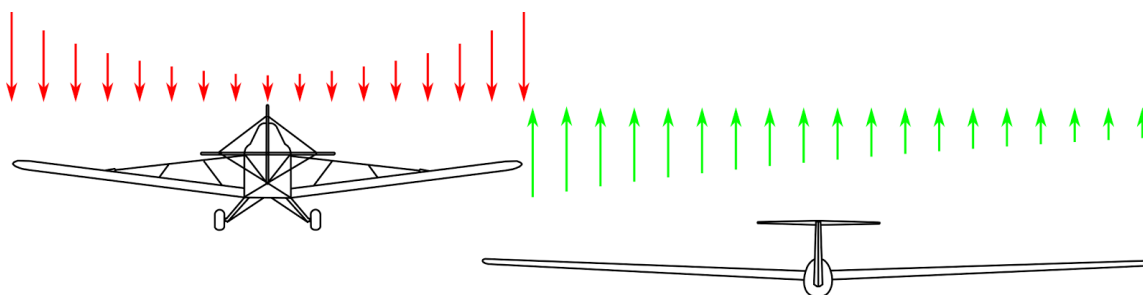
Boost in glider performances flying in formation with Piper PA-25 Pawnee at MTOW at 100 km/h.



Look at the last column in the table. You can see that smaller the glider span, better it can use the energy of the wake. The 13.2 meter class gliders can get as much as +1.8 m/sec boost, so that they can climb in the wake at a rate of +1.14 m/sec. In contrast, the heavy and large open-class ships are so large that they cannot place themselves in the best part of the wake and therefore can get only +0.66 m/sec boost having to deal with poor +0.21 m/sec climb.



One can notice that when a glider is in the airplane wake, only the wing closest to the tug gets most of the extra lift. This leads to asymmetric lift along the wing span and roll moment induced by the wake. Basically the glider will tend to roll away from the leading wing. Calculations show that it is possible to minimize the roll from the wake by placing the glider wing behind the leader with a small overlap, see figure below. By doing so the lift gain will slightly decrease but it will allow for more comfortable flight with no need for large aileron input from the pilot. In fact, the table presented above shows the results where the theoretical zero wake roll situation is already considered.



At this point one starts to wonder and think of more exotic flight configurations. For example, how much lift would a glider gain if there are two Pawnees in front, one at each side? This configuration would be more beneficial for sure, but more difficult to realize and therefore much less practical. Instead let's assume that these theoretical results are not very far from reality, for instance if the gain is much smaller than calculated here but one could still get at least zero sink. What if someone would use this approach in practice on his very long final glide during a record distance flight? He would use the last thermal of the day, call his tug-pilot friend and would follow in his wake for the extra two or three hundred kilometers with zero sink. Any perfectly certified IGC logger with engine noise sensor would indicate no engine noise at all. Of course! The engine is flying a dozen of meters in front of you outside the cockpit! How the record approving committee would be ever able to figure out the trick if your friend can keep secrets? They will see in the flight track only a long straight final glide nearly in horizon (like one can see for flights in wave conditions or under long cloud streets) but that would be it, no engine noise, just zero sink for hundreds of kilometers. I wonder if tracks of this kind already exist...

In spite of simplicity of the lifting-line model used to simulate the wireless aerotow configuration, it seems that the amount of energy in the tip vortices of Piper Pawnee at MTOW should be enough to sustain altitude of the glider trailing behind it with no need for extensive aileron input from the pilot. However, by the time of publication of this article the method of using airplane wake has not been practiced by the author in real life and it has neither been heard of someone experiencing this flight conditions. This can of course be an indication that the idea is not practical and/or it is very difficult to implement it. Anyway, the author will be very grateful if you had this kind of experience or heard of someone who might had it and would share your observations by leaving a comment or emailing to the author: vlfe@dtu.dk.



# SUNFLOWER GLIDERPORT

Est. 1976

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## The Bill Seed Soaring Scholarship

The Sunflower Soaring Foundation provides scholarships to support soaring as part of its actions as a non-profit activity. This scholarship provides training at Sunflower Gliderport and Aerodrome so that qualified youth are given the opportunity to obtain glider pilot licenses that permit participation toward growth and development in all phases of soaring flight.

Bill Seed is the original owner and operator of the Sunflower Gliderport and Aerodrome. Bill has supported soaring at the local, regional, and national level since the creation of the Sunflower Gliderport. This scholarship is created in the spirit of selflessness demonstrated over the many years by Bill.

The scholarship is awarded yearly to a 14-22 year old non-pilot full time student with a minimum 2.5 GPA. The application requires an essay, which must present a convincing argument that the applicant desires to participate in soaring and has an appreciation for the nature of the sport and the effort required to obtain proficiency. The essay must be of a high quality that demonstrates communication skills. Applications must be received not later than April 1<sup>st</sup> 2015. The award will be announced by April 30<sup>th</sup>. The recipient may not reach their 23<sup>rd</sup> birthday prior to September 30<sup>th</sup> 2016.

The award will consist of one year membership in SSA & Club Dues, Tow fees, Glider rental, and Instruction fees. The scholarship will be extended one year if the student has demonstrated consistent progress toward the glider pilot license goal.

The winner must participate in the SSA ABC badge program as they progress.

Applications may be obtained from and returned to the Sunflower Soaring Foundation Secretary:

Tony Condon  
911 N Gilman  
Wichita, Kansas 67203  
abcondon@gmail.com

Sunflower Soaring Foundation  
Bill Seed Soaring Scholarship Application

Date \_\_\_\_\_  
Name \_\_\_\_\_ Age \_\_\_\_\_  
Address \_\_\_\_\_ Street \_\_\_\_\_ DOB \_\_\_\_\_  
\_\_\_\_\_ City \_\_\_\_\_ Gender \_\_\_\_\_  
\_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ E-Mail \_\_\_\_\_  
School of enrollment \_\_\_\_\_ Grade \_\_\_\_\_ GPA \_\_\_\_\_

Expand answers onto separate pages if necessary. Attach Essay to this application.

Flying Experience

Experience associated with soaring

Soaring Goals

Other related Aviation Activities

Other activities, honors, and awards

Financial Need

Recommended by \_\_\_\_\_ SSA#(not req'd) \_\_\_\_\_ Date \_\_\_\_\_

## 2016 Texas XC Soaring Series Information & Schedule Update 25Feb16

### Series Information

The purpose of the Texas XC Soaring Series is to encourage XC task flying and XC skills development. The format is similar to a Regional contest, using the SSA FAI and Sports class regional rules for tasking and scoring (*exception is that only 3 pilots are required per class to have a valid day*).

There will be 3 classes available (FAI, Club, and Sports), suitable for a wide range of glider performance and experience levels. Winscore will be used to score each class and there will be several levels of recognition and awards presented. Cumulative scoring will only count the pilots best daily scores based on the number of valid series days/2, rounded up to the next integer value. So for example in 2016 if all scheduled days (16) are valid then the cumulative score would be the pilot's best 8 scores (16 days/2 = 8 scoring days).

The series registration fee is \$20 which is used to cover the costs for the cumulative rewards for each class. For those pilots who do not wish to be scored cumulative there is no requirement to pay the \$20 fee, only the event weekend fee.

The weekend entry fee for 2016 is \$50 and includes a Saturday evening dinner hosted by the club for all pilots and weekend officials. The fee also covers any daily membership requirements of the club, daily prizes, and use of the club facilities. Tows will be at current club tow rates and are to be paid by each pilot to the club official designated prior to the end of the weekend.

The unofficial practice day for a weekend event will be on the Friday preceding the weekend. There will be 3 day weekend events held on the Memorial and Labor Day weekends.

### 2016 Schedule

Dates	Location
April 1 (practice), April 2, 3	Soaring Club of Houston
May 13 (practice), May 14, 15	To Be Confirmed (Texas Soaring Association)
May 27 (practice), May 28, 29,30	Soaring Club of Houston
June 10 (practice), June 11, 12	Greater Houston Soaring Association
July 8 (practice), July 9, 10	Texas Soaring Association
September 2 (practice), September 3, 4, 5	Greater Houston Soaring Association
September 16 (practice), September 17, 18	Soaring Club of Houston

### Registration

Go to: <https://drive.google.com/open?id=1PkAoDzX9XZXq7VyUxhQC-T64r-VaCYgjeZIN6HUUB0M>





# 39<sup>th</sup> WSPA Seminar Women Soaring Pilots Association

Aero Club Adele Orsi • Varese • Italy  
**27<sup>th</sup> June - 1<sup>st</sup> July 2016**

*Every day you will be able to fly over the Alps!  
Double seaters with experienced pilots are available on site.  
Glider rental is possible for those with mountain flight experience.*

**Come to Varese!  
Don't miss the 39<sup>th</sup> WSPA Seminar  
in Italy!**

*During the week  
interesting conferences.  
In case of bad weather,  
organized trips and visits  
to wonderful sites*

Register for the seminar at:  
[www.womensoaring.org](http://www.womensoaring.org) (Deadline May 30, 2016)



Aero Club Adele Orsi • Lungolago di Calcinate, 45 • Varese • Italy  
Tel. +39 0332 310073 • [segreteriaeventi@acao.it](mailto:segreteriaeventi@acao.it) • [www.acao.it](http://www.acao.it)



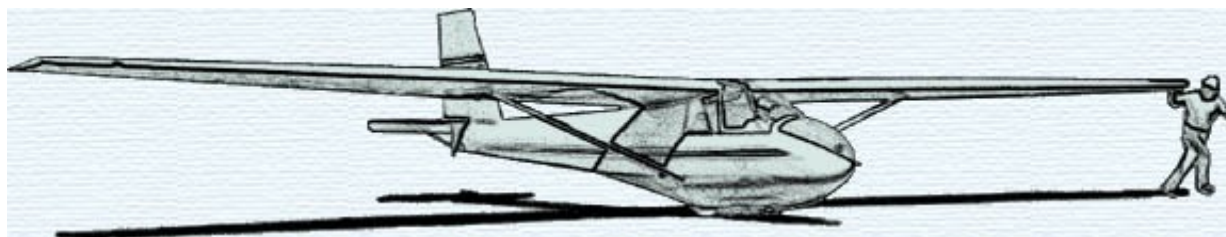


KSA VARIOMETER

911 N Gilman

Wichita, KS 67203

abcondon@gmail.com



## **KSA Meeting**

**Soaring Technique Discussion**

**Special Election - Secretary/Treasurer**

**Cabela's Wichita**

**March 12<sup>th</sup>, 2016 6:30 PM**

**Pay your 2016 Dues!**