SOARING COMPETITIONS

MEDIA BACKGROUND

Media Guide to
Soaring Contests
By
United States
Soaring Teams

Last Update
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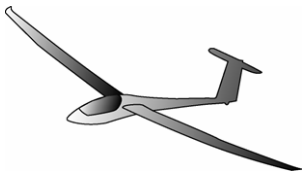
Competitive Soaring – Media Background

How do you win a soaring competition? Do you go higher or farther than anyone else? Or do you just try to stay up in the air as long as you can?



Sailplanes or gliders as they are often referred toi are sleek, strong and fast.

Actually, a soaring competition is a race, and the winner is the one who goes the fastest. Racing without an engine? Be serious! Soaring competitions ARE serious, with competitors pitting their knowledge of the sport against other pilots and the elements to determine a champion. There is beauty as sleek gliders go flat out for the finish line, drama as pilots fly courses of hundreds of miles each day, and the thrill of victory for the champion--often attained by the slimmest of margins. Competitive soaring is dramatic and heady stuff, understood by only a few but fascinating to many.

This is your guide to understanding competitive soaring. Whether you are seeking a local club angle, dramatic contest coverage, a technology story, human interest, the history angle or international championship coverage, soaring has something for you. The sport is diverse, colorful and pulls together many potential story ideas for print editors and video professionals alike. This information is brought to you by U.S. Soaring teams without copyright for use by the media in coverage of the sport or U.S. soaring teams. See the U.S. Team Press Room for more background on the exciting sport of soaring. www.ssa.org\usteam\ust_press.htm

A Little About Soaring

The idea of soaring fires the human imagination, and has for centuries. There is no more challenging or rewarding aviation activity. Soaring pilots routinely climb to high altitudes, soar hundreds of miles, and stay up for hours using only knowledge, skill, and intuition—and some of this day's most sophisticated aircraft.

Another pin-point landing. A two place sailplane comes into land. Image by Bill Hoadley.

Modern soaring is the perfect nexus of technology, art, nature and drama. High performance sailplanes are made of advanced composite materials and use highly refined aerodynamics for maximum performance. Today's complex instrumentation makes even more efficient use of nature's forces. And instruments track pilots' progress around the racecourse. The champion glider pilot is master of aerodynamics, metrology, electronics, and, occasionally, bird-watching.

While the sport is little known in the United States there are an estimated 150,000 sailplane pilots around the world. In the U.S. there are approximately 180 active soaring clubs providing the approximately 38,000 licensed glider pilots a relaxed way to enjoy the sport of soaring.

Each spring and summer soaring pilots from around the nation compete for the title of Regional and National Champion of their respective classes in one or more of the approximately 35 scheduled competitions. These events have all the drama, intrigue and competitive challenge of more widely recognized sporting events.

Soaring Contests

The sports national organization, the Soaring Society of America, sanctions both regional and national soaring competitions in the United States. A sailplane competition typically lasts five to ten days, with tasks set each day the weather is suitable.

Each contest features flights from the home airport, around turnpoints, and back to the home field. In poor weather, the course might be as little as 60 miles; in excellent weather it could be 350 miles or more.

Competitive soaring is all about speed, with the fastest pilot around the course receiving the most points for the day. The contest winner is the pilot with the most points at the end of the event. Seconds count and on some days may make the difference between winning and losing.

Competition soaring is all about speed around a course.

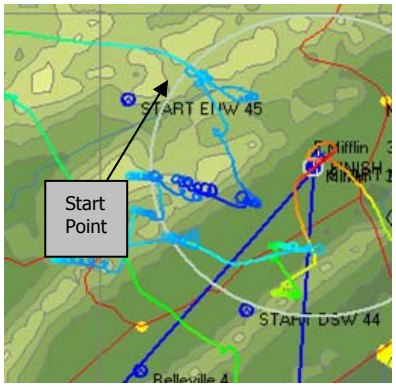
Regional competitions are held all across the country, typically lasting 5 to 7 days and involving 25 to 50 gliders in several competition classes. National Championships run for 10 days and usually include 50 to 65 competitors. A handful of pilots from the national level are selected to compete internationally at World Soaring Championships on United States teams.

Competition pilots and crews come from all walks of life and are unpaid participants who compete for the love of the sport. Even at the top levels of the sport there is neither prize money nor fame. Competitors who go for the gold are there for the pure enjoyment of the sport and the respect of their peers.

The national organization, the Soaring Society of America, maintains the rules by which competitions are conducted.

Starting

Every race needs a start, and soaring competitions are no different. The race begins when competitors fly through an imaginary ring or cylinder around the starting point using global positioning technology and flight recorders... The start cylinder (also known as the beer can) is five miles in radius (edge to center) with a top normally 5,000 feet above the ground. The image at right is from an actual flight trace looking down from above. The gray circle is the start cylinder and the blue/green lines show a competitors flight trace and start.



Flying on Course: How to Go Fast—and Far

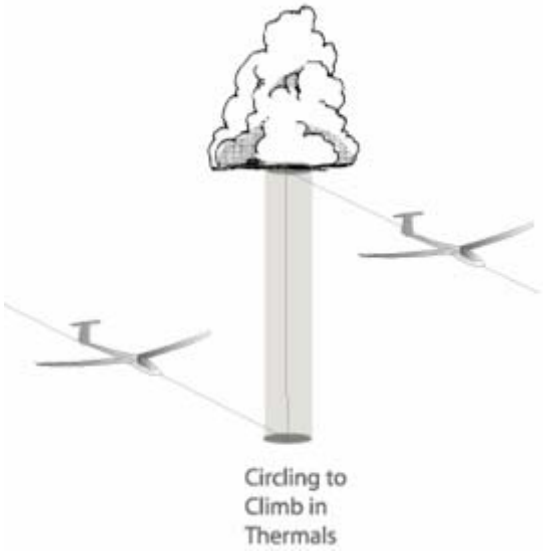
Once a competition pilot starts the task, the race is on. While the difference between winning and losing can be only seconds, there is much more to a successful flight than just speed. Competition pilots must find the best rising air--called thermals-- to gain the altitude needed to complete the course. Remember: the higher you go, the farther you can go.

Thermals are invisible columns of rising air that allow a sailplane to gain altitude. The rates of climb produced by thermals can be from 100 to 1000 feet per minute with typical rates of climb in the 300 to 500 feet per minute range. Thermals are often caped by a fluffy cumulus cloud making the lift, so pilots look for clouds to mark the rising air.

Competitors will use between fifteen and twenty thermals complete a task. The skill of finding and using these invisible columns of rising air is what makes competitive soaring challenging. Competitors find thermals using their experience and then keep the sailplane in the narrow column of raising air by circling tightly and monitoring their senses and instruments.

To be successful, competitors must balance competing forces. Go too fast, and you might land out. Fly too slow and fellow competitors will go faster around the course. Climb too high in thermals, and you might be wasting time. But leave the thermal early, and you might spend an hour trying to climb after getting low-- or even worse, need to make an off field landing. Competitors are constantly making many critical decisions on course that will affect their overall performance.

The competitive drama of balancing risk and reward is played out thousands of feet above the ground, invisible to all but a pilot's fellow competitors.



Competition pilots must find and use lift to stay aloft and in the race. By circling in these rising columns of air called thermals pilots can cover great distances at high speed.

Finishing

Just as every race needs a start, it needs a finish as well. Finishes in competitive soaring are the most visually dramatic part of the day. If you're interested in taking photographs of gliders in flight the finish line is the place to be.

As competitors near the home airfield they start what is called final glide when they think they have enough altitude to arrive at the field with just enough energy to fly across the finish line and land. Final glides can be started far as 50 or more miles from the home field. Landing sailplanes are going fast and very low (under 100 feet) as they cross the finish. Often many gliders arrive at the same time at the finish. While it looks chaotic, the expert pilots sort themselves out and land easily.

Landing Out

Although it would be nice to complete every task, it doesn't always happen. Occasionally competitors will encounter poor soaring conditions, and they will be forced to land away from the home airport. Frequently these landings will be at another airport, although occasionally pilots will land in a farmer's or other smooth field.

While seemingly unorthodox, landing out is a perfectly normal part of cross country and competitive soaring. Sailplanes are designed to land on unimproved surfaces and the pilots have special training to insure these landings are done safely. Competitors always fly with the possibility of an outlanding in mind, and with a general idea of the terrain below.

With cell phones and global positioning systems the pilot calls the contest organizers and his crew for retrieval by trailer. The sailplane is disassembled and loaded into its trailer for the trip back to the contest site and the next day's flying.

Technology & Keeping Score

Few sports have been transformed as radically over the last several years as competitive soaring. Global Positioning System (GPS) technology makes it possible to track and record the flight path of the sailplane allowing new starting and tasking options not possible only a few years ago. Today's competitive sailplanes are equipped with GPS flight recorders that take a sample of position, altitude and speed every few seconds and record this information in a secure manner. These records or flight traces are used by the contest scorer to verify that each competitor started properly, reached the turnpoints as required by the day's task and finished the course. These flight traces are essentially electronic files that can be sent across the Internet and analyzed using sophisticated flight analysis software.

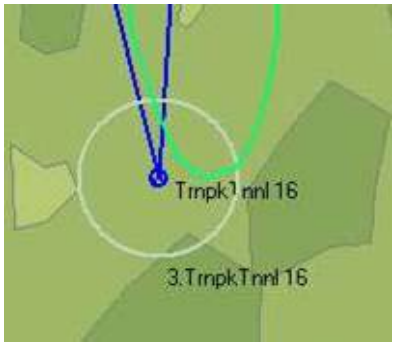
Secure flight GPS flight recorders are carried by every competitor and track the flight creating a digital file called a flight trace which is used for scoring. Image from Cambridge Aero Instruments.

In addition to tracking competitor's flights, GPS information is used by sophisticated flight computers that show navigation and glide information to the pilot.

Flight Recordings Come To Life

By using the flight traces from each competitor and sophisticated flight analysis software, it is possible to show a competitors flight electronically in second-by-second detail. The image to the left is an overhead or "god's eye" view of a competitor (green line) making a turnpoint and heading back to the home field. The grey circle is the turnpoint, and the blue line is the course line.

The creation and analysis of electronic flight traces has been a tremendous learning tool as competitor's flight traces are available on the Internet after the competition.



Flight trace shows a turnpoint and the sailplane (green) rounding the turn for home.

How to Read the Score Sheet

You can't tell the cast without a program, and at soaring competitions the score sheet is as close to a program as it gets.

There are several things to notice on a typical score sheet for a sailplane competition. Fist is the contest name, place and date of the score sheet. In following example the contest was the 15-Meter Nationals held in May 2000 in Mifflin Pennsylvania.

The second item to note is the task. This is the course the competitors were expected to fly on this particular contest day. Then comes the good part showing the overall cumulative points for each competitor, their contest identification or number, their name, the model of glider they fly, the day's placing, the days score their speed around the course and the distance they achieved.

All contestants have a tail or contest number which is used to refer to the contestants. The aviation standard phonetic alphabet is used with KS referred to as Kilo Sierra.

Sample of Soaring Contest Score Sheet

15 Meter 2000, Mifflin, Thursday, May 25, 2000
Official, 15 Meter Class Day 4

Task: Assigned

ID	Name	Distance (Miles)
41	START "A" 41	0.00 (- 5.0 Gate Radius)
29	Cumberland29	90.12
7	Keystone GP7	188.77
16	TpkTunnels16	241.64
5	Mifflintown5	276.24
51	FINISH LN 51	288.89

Cumulative Rank	Points	ID	Name	Glider	Day Rank	Points	Speed	Distance
1	3526	UH	Nixon, Hank M	ASW-27	13	890	76.66	288.89
2	3504	DJ	Jacobs, Doug	LS-6b	5	956	82.32	288.89
3	3402	KS	Striedieck, Karl	ASW-27	2	984	84.77	288.89
4	3356	A8	Seaborn, John W	Ventus 2b	16	880	75.79	288.89
5	3325	GH	Schwenkler, Liz	ASW-20c	23	844	72.71	288.89

There are 50 to 65 competitions in a US National Soaring Contest.

Radio Usage

Today, a high-quality 720-channel aviation band radio can be found in the cockpit of most competition gliders. Yet in most cases all that is required is a radio that can receive and transmit on two frequencies (123.3 and 123.5). All contest business (starts, finishes, etc.) is normally done on 123.3 with 123.5 is for pilot-to-crew communication.

Water Ballast

Even though gliders appear to be feather-light, some weigh almost a ton, and the heavier plane has an advantage in high-speed racing. You are likely to see gliders being filled with water. As much as 55 gallons can be carried in some sailplanes. This practice adds weight to the glider and improves the performance of the sailplane. Water ballast is normally dumped when the conditions get weak and for landing. A sailplane dumping water ballast looks like it has smoke trailing its wings.

Contest Personnel

The **Competition Director** is the head honcho - the one who calls tasks and is responsible for ensuring that the contest is a safe, fair soaring competition. The CD (as he, and occasionally she, is always known) must have considerable competition experience and command the respect of all pilots. CDs take competition seriously - they tend to want to call a task on any day when safe and fair flying is possible.

Seek out the Competition Director or the Contest Manager at the contest you're covering and explain that you are from the media and will be covering the event. The CD will typically help you make the most productive use of your time.

The **Contest Manager** is responsible for administration of the contest. It is he or she who organizes all the volunteers, ensures that there are enough towpilots, towplanes, towropes, water faucets, porta-potties, etc. This job tends to be more difficult and less glamorous than that of the CD.

The **Weatherman** is responsible for monitoring weather observations and forecasts, and presenting this information to pilots each day. As we all know, meteorology is an inexact science, and it often pays to be a bit skeptical of the day's forecast. In discussions with local pilots you may get some idea of how much trust the weatherman deserves.

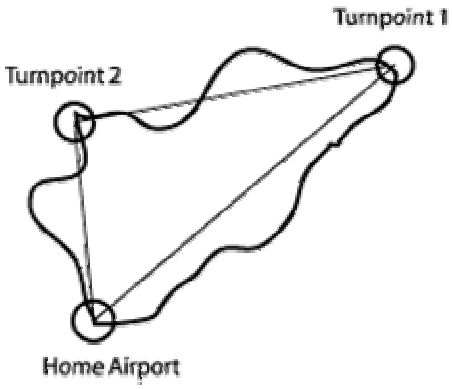
The **Scorer** is responsible for keeping track of the distances and times flown by all pilots every day, entering these into a computer, and producing score sheets.

The **Retrieve Office** is the collective name for the group of volunteers who take phone calls from pilots that has landed out.

Tasks, Courses and Competition

Each day the Contest Director evaluates the day's weather and decides on the day's course or task. Tasks can be as sort as 60 miles to over 400 with typical task lengths being 180 to 270 miles.

While the Contest Director has many task options to choose from, all involve turnpoints, which are points that competitors must navigate. These turnpoints are normally physical features on the ground, such as airports or towns.



Looking from above on a typical competition flight with two turn points. Note the deviations from the course line made by this pilot.

Contestants are judged by the average speed around the day's task. Average speeds have been known to exceed 100 miles per hour, but speeds are usually in the 60 to 80 mph range. The fastest competitor receives 1000 points for the day, while slower pilots receive a percentage of this maximum score depending on their speed. The competitor with the most cumulative points at the end of the contest is the winner. As can be seen in the illustration above competitors rarely fly a straight line between turnpoints. Instead, they make many course deviations to follow the best lift.

A pilot may fly over 40 total hours during a national competition, with the combined mileage flown by all pilots exceeding 100,000 miles.

Sailplanes & Design Classes

Racing sailplanes are constructed from advanced composites including carbon fiber to be extremely strong and light. The empty weight of these craft is approximately 550 lbs with maximum weights reaching over 1100 lbs. Wingspan is to sailplanes what horsepower is to an Indy car – the more the better. With Open Class sailplanes anything goes, so wingspans can be up to 90 feet in length allowing these marvels to travel 60 feet forward to one foot down for a glide ratio of 60:1. The 18-Meter Class is similar to the Open Class except with a wing span restriction to 18-meters or 59 feet.

Classes of Competition Sailplanes	
• Open	No restrictions, anything goes
• 18-Meter	18-Meter (59 feet) wingspan only
• 15-Meter	15-Meter (49 feet) wingspan only
• Standard	15-Meter (49 feet) wingspan, no flaps
• World	One design, all the same design
• Sports	Performance handicapped class
• Junior	Pilots under age 26
• Feminine	All female pilots

The 15-Meter Class restricts wingspans to 15 meters or 49.2 feet. These sailplanes use flaps and interconnecting control surfaces, water ballast, retractable landing gear and any other means to increase performance. The Standard Class are similar to the 15-Meter sailplanes except without interconnecting control surfaces or flaps. The World Class is the one design class in which all gliders are restricted to a single design. The Sports Class was developed to give older, lower performance sailplanes and fair competition using handicapping. There are several other classes including the Junior class restricted to pilots under the age of 26 and the Feminine Class.

Typical Contest Day Time Line & What to Expect

To help you plan your coverage and make the best use of your time at the contest here is how a typical soaring competition day works. You will be very welcome on the airport and by the contest personnel, but understand that the competitors will be focused on the competition and the safety of the proceedings.

It is unlikely that there will be a media contact at the contest site. It is recommended that you contact the U.S. Team Media Contact in advance of the event so that the contest personnel can expect you.

Typical Contest Day Time Line

Time	Activity (All times are approximate – Check with the organizers)
8:00 AM	**ASSEMBLY** - A soaring contest day starts with most competitors assembling their sailplanes. It is interesting to watch how the sailplanes are assembled and checked for flight.
9:30/10:00	**PILOTS MEETING** - The first "event" of the contest day is the pilots' meeting (often held in a hangar or meeting room on the airport at around 9:30 but this time set for each specific contest). Here, the previous day's winners get a chance to describe their flights, and perhaps receive a small prize.

The weatherman explains why the forecast for the previous day was less than perfect, and offers a guess about today's conditions. Various administrative notes and comments are presented.

Each pilot receives a bunch of paperwork, typically consisting of a score sheet, a weather summary sheet, and a task sheet. This last item is the most important. Typically, it lists two or three tasks that might be called, depending on how the weather actually develops. Sometimes the task sheet is passed out on the grid.

10:30/11:30 **GRIDDING** - Next all gliders are moved to the runway in a prearranged pattern in preparation for the launch. (The CD will have announced the grid time at the pilots' meeting.) The grid is relatively tightly packed and pilots must cooperate to get planes gridded smoothly. Grid time is subject to change due to weather.

After gridding but before the launch is an ideal time to take photographs and do pilot interviews.

11:30/1:00 **LAUNCHING** - Normally a "sniffer" is launched soon after grid time as conditions warrant. The sniffer's job is to sample the lift and help the Contest Director determine when it is safe to start the launch (conditions that will allow a few ships to stay up may not be safe for the entire fleet).

Once the launch commences, things move quickly. The object is to get all gliders safely into the air in the shortest possible time. Competitors are towed aloft by a powered aircraft called a towplane. Towplanes will land behind the grid and taxi for hook up to the next glider in line. Sixty sailplanes can be launched in an hour. Towplanes will follow a prearranged route until the glider releases. The standard release height is 2000' above the airport.

Please stay back from the **front** of the launch area and get permission and pointers of were to take photographs. It is bad timing to interview pilots when they are in the glider ready to launch.

12:30/2:30 **START** - Once the contestants have been launched they will climb in preparation for the start. You may see many sailplanes in the same thermal called a “gaggle”. This is perfectly normal. The opening of the task is announced on the radio and takes place 15 minutes after the last sailplane is launched.

4:00/6:00 **FINISH** - With luck, at the end of the task comes the finish. As pilots near home they call on the radio with their call sign and arrival. The finish gate normally responds with the wind direction and preferred landing pattern. Prepare yourself for some of the busiest periods of the contest.

High speed finish is typically hot and low. Image by Chris Woods.

Finishes are normally dramatic with many gliders arriving together at low altitude (under 200 feet) and at high speed. This is an idea time to take photographs of gliders in the air. The “smoke” that appears to be trailing finishing gliders is water used to enhance the performance of the glider.

After the high-speed finishes pilots do a smooth pull-up to reduce airspeed for landing and then enter the landing pattern. Landings are an excellent time for photographs, but be very careful to stay out of the way of landing gliders and when crossing runways and taxiways. Talk to the organizers before driving on the airport runways and taxiways.

5:30/7:00 **POST FLIGHT** – After the bulk of finishers arrive the contest day is over and people relax putting their sailplanes away. The day winners are the ones smiling and telling the stories. This is a great time for people pictures and to do interview*s*.

Set Up a Glider Ride

Very often (but not always) it is possible to take a ride in a two place sailplane while the competitors are out on course. This is an excellent way to get some hands on experience with sailplanes and soaring. Ask the organizers if this would be possible when you arrive at the contest site.

Other Things to Know

Soaring is a weather dependent sport. Very high winds, poor thermal conditions, overcast and rain will normally result in delaying the launch and may result in the cancellation of the contest day. Safety is the primary concern, and at no time will the competitors be launched into hazardous conditions.

After the sailplanes are launched the action moves skywards, and little can be seen from the ground. The crews return to the tie-down area and monitor the radio for their pilot to start the task. This is a good time to interview crews. Once the pilots start crews may remain at the airport or head into town. The airport tends to be rather quite while the pilots are out on course.

High performance Ventus 2b Sailplane after a days flying. Image by Bill Hoadley

While the pilots are out on course, they are in contact with their crew via radio. If the day has poor weather, pilots will start landing out, which is normally signaled by crews departing the airport towing sailplane trailers. If day is very poor, only a few or even none of the competitors will return to the airport for a finish. While this does not happen often, it does happen. If the day is strong and predictable, nearly all the pilots will return to the airport and finish. Crews tend to be very busy as their pilots finish with moving the glider form the landing area to the tie down and congratulating or consoling their pilots depending on the day's performance.

Acknowledgements

While this document was pulled together from many sources, the hard work and dedication of Gena Caponi Tabery has made this document possible.

Soaring Related Background Web Sites

www.ssa.org
Soaring Society of America (SSA) home page. The SSA is the national organization responsible for soaring in the United States. Lots of good information on the sport and the organization here.

www.ssa.org/UsTeam/
US Soaring Teams. Organized and funded as part of the SSA the US Soaring Teams Web site features team members, pilot's biographies and much more about the US Soaring Teams.

www.ssa.org/usteam/press
The one stop media press room on soaring brought to you by U.S. soaring teams.

http://acro.harvard.edu./ssa/
This site has a host of soaring related information including the turnpoint exchange, flight recordings from contests and all the details of US team selection.

http://www.soarmn.com/soaring_links/index.htm
The excellent soaring link page by Paul Remde who has collected a huge variety of soaring related links. A must visit and four stars.

http://www.miskin.demon.co.uk/index.htm
This site gives a very good step by step idea and many references about learning to fly sailplanes.

http://www.webring.org/hub?ring=soaring&id=64&next5
This is a soaring web ring that allows you to randomly browse many of the best soaring related web sites

http://www.glidingmagazine.com
This site is an online magazine sponsored by the Soaring Society of America.

http://www.fai.org/
Fédération Aéronautique Internationale (FAI), the world's air sports federation, was founded in 1905. It is a non-governmental and non-profit making international organization with the basic aim of furthering aeronautical and astronautical activities worldwide. Ever growing, FAI is now an organization of some 90 member countries.

http://www.fai.org/Gliding/
The International Gliding Commission (IGC) of the FAI is the Air Sports Commission which is responsible for all air sports activities involving gliders and motor gliders with the exception of glider aerobatics.

http://www.soaringmuseum.org/
National Soaring Museum in the USA

http://www.soaringmuseum.org/hallfame.htm
US Soaring Hall of Fame - Persons who achieve in a noteworthy manner in soaring or who have made significant contributions to the sport of soaring, as determined by the SSA Directors, are eligible for inclusion in this Hall of Fame.

http://soaringmuseum.org/landmark.htm
National Landmarks of Soaring - Sponsored by the National Soaring Museum, an affiliate of the Soaring Society of America. The purpose of the program is to identify and memorialize sites, individuals, or historic events related to the national history of motorless flight.

Other Soaring and U.S. Team Media Background Available

These resources are available for your use on the United States Soaring Team Press Room which includes press releases, media clippings, background, fact sheets, press images, web links and a championship calendar. See www.ssa.org/usteam/ust_press

United States Soaring Team Press Room

This is your one stop online media resource developed to help you craft a factual and newsworthy story on the exciting sport of soaring and United States Soaring Teams. This media resource is brought to you by the Soaring Society of America and United States Soaring Teams. Some of the resources available in the U.S. Soaring Team Press Room are:

- Soaring Society of America
- Sport of Soaring
- Sailplanes & Gliders
- Competitive Soaring
- Press Releases
- U.S. Soaring Teams
- History of the Sport
- Clipping Archive
- Glossary of Terminology
- Calendar of Events

Soaring Contest Terminology

Class	A category of competitive glider established based on wing span or performance.
Contest Director	The head honcho at soaring competitions - the one who calls tasks and is responsible for ensuring that the contest is a safe, fair soaring competition.
Crews	Support personnel who assist the pilot on take off and landing and retrieve the pilot if they land off field. Typically a friend or family member.
Finish Line	An imaginary line that all competitors must fly through to finish the day's competition.
Flight Computer	Sophisticated computer that takes measurements of distance and performance to show the pilot the distance and speed they can glide to reach a point.
Flight Recording	An electronic file that is a recording of the altitude and position of competitors while in flight. Normally generated by a secure recording GPS. Also called a Flight Trace.
Gaggle	A group of sailplanes circling tightly and sharing a thermal to climb in.
GPS	Global Positioning System. Used by competitors in conjunction with a flight computer and a secure recorder to navigate and make a record of the day's flight.
Land Out	Landing someplace other than the contest airport sometimes in a farmers field.
Nationals	An event sanctioned by the Soaring Society of America for a single class of glider. Establishes the US national champion for that class and is used to select the U.S. Soaring Team.
Radio	Aviation band 720 radio. Contestants use 123.3 and 123.5 for competitions.
Rain Day	A day that no contest is held normally due to weather
Regional	A Soaring Society of America sanctioned a relatively local competition in one of the twelve regions in the U.S. with several classes.
Sailplane	A motor less craft that can climb using atmospheric forces alone.
Score Sheet	The daily tally of the competitors ranked by points and standing
SSA	Soaring Society of America – The national organization responsible for soaring in the United States.
Start	An imaginary cylinder or "beer can" from which competitors must exit to begin the race on any contest day. Also called the Start Cylinder
Task	The day's competition course, normally including several turnpoints, around which competitors must fly on any given contest day. There is a different task chosen by the Contest Director each day and is weather dependent.
Thermals	Raising columns of warm air that allow sailplanes to gain altitude
Thermaling	Turning in tight circles to keep the sailplane inside the column of raising air.
Turnpoint	A point that is designated by contest organizers that contestants must navigate to complete a task.
Variometer	Sensitive rate of climb indicator that allows competitors to climb efficiently in thermals.
Water Ballast	Water put in the wings of the sailplanes to improve high speed performance.