SOARING

The wonderful, quiet world of motorless flight

Presented by

Mark Zivley

of the

Greater Houston Soaring Association, Inc.

Pictures courtesy of the following people:

Brian Lewis	David Fitch	Al Macdonald	Mark Zivley	Rich Carr
Sean Devereaux	Buddy Brown	Erik Berntsen	Roger Felton	Hugues Beslier

Created by Mark Zivley of the Greater Houston Soaring Association, October 16th, 2000

How does a glider take off ?

- A towplane pulls the glider to altitude. The glider pilot then releases the towrope

- Gliders can be pulled into the air by a winch or a car which stays on the ground. After the glider lifts off it climbs steeply, similar to a kite in a strong breeze

Photos by David Fitch, Sean Devereaux, and Rich Carr

What keeps a glider in the air?

- Glider pilots use rising air currents, called lift, to keep their glider airborn for long periods
- There are three types of lift used by glider pilots
  - **Thermals** are rising columns of warm air
  - **Ridge lift** is created by wind blowing up a slope
  - **Wave lift** is created by stable air blowing over the top of a mountain range
- What happens if there isn't enough lift?
  - Land back at the home gliderport if possible…..or
  - Land at another airport……or
  - Land in a safe open place like a plowed field

Thermal Lift

- Thermals are rising columns of warm air
- Glider pilots circle in the rising air of the thermal to gain altitude
- Cumulus clouds are frequently created by thermals
- Strong thermals can create dust devils when the ground is dry

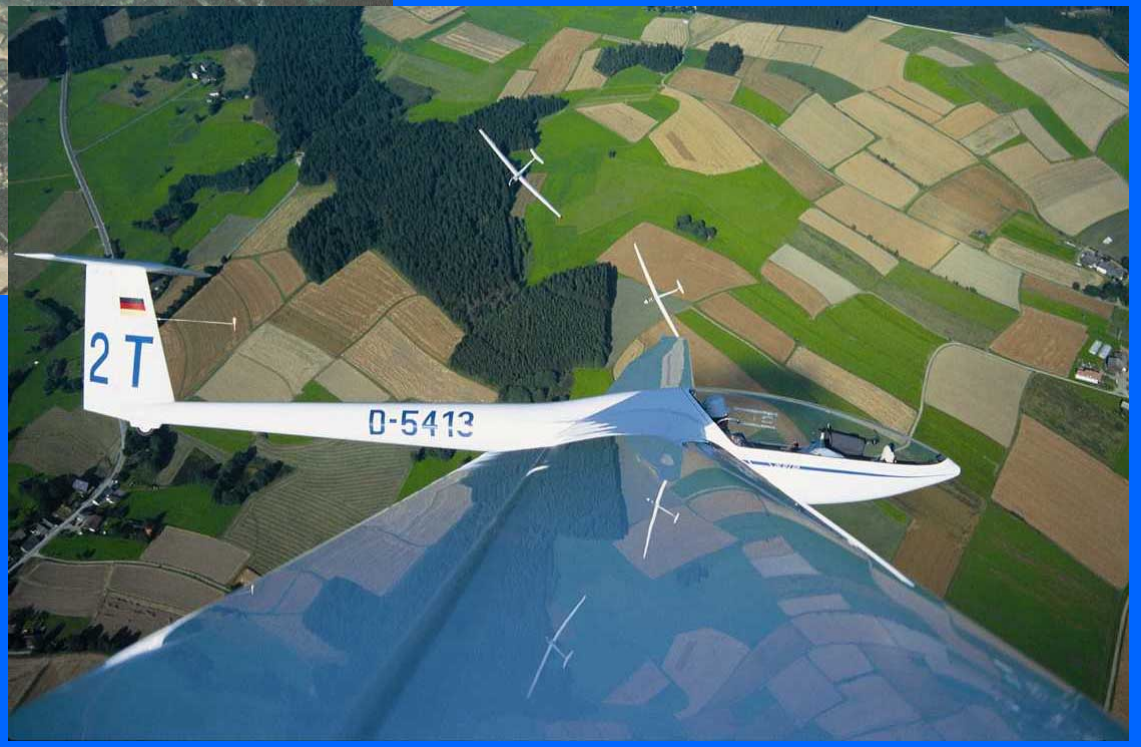
Cumulus Cloud

Picture by Mark Zivley

Dust Devil

Picture by Roger Felton

Many gliders may gain altitude together in a single thermal



All gliders circle the same direction in a thermal

Photos located by David Fitch

Ridge Lift

- Ridge lift is also called orographic lift
- When a steady wind is blowing against a hill or ridge, the wind on the upwind side of the hill is deflected upward by the ridge. Ridge lift doesn't go much higher than the top of the ridge
- Glider pilots fly near the top of the ridge in the upward moving air to maintain altitude.
- The higher the speed of the wind and the steeper the ridge, the stronger the lift.
- Ridge lift is not found in areas which are flat.

← Photo located by David Fitch

Gliders fly along the upwind side of the ridge to find lift. The stronger the lift, the faster the gliders can fly.

Sometimes gliders fly very close to the top of the ridge!

Wave Lift

- Wave is similar to ridge lift in that it is created by wind blowing over a mountain range.
- Wave lift is found on the downwind side of the mountain, and is typically very smooth. Wave lift can go higher than the top of the mountain
- Wave lift goes to high altitudes. Wave typically rises to between 20,000 and 40,000 feet. The world altitude record in a glider is 50,000 feet! That's almost 9 1/2 miles high.
- Wave lift is not found in areas which are flat.

Smoke in a wave current

Lenticular Cloud

← Photo by Brian Lewis, Colorado Soaring Assn.

Wave is found near mountain ranges and is usually marked by Lenticular clouds (lower left)

Photo by Hugues Beslier↑

← Photo by Al Macdonald

You can fly a glider BEFORE you can drive a car!

- A person can take instruction at any age.
- Must take the FAA written test
- Must get a student license
- A person must be 14 in order to fly solo!
- Several students each year make their solo flight on their 14th birthday!
- No medical exam is required for gliders
- You must be 16 years old in order to get a private pilot’s license!

FAI Soaring Badges

- “A” badge for the first solo flight
- “B” badge for the first 30 minute flight
- “C” badge for the first hour long flight
- Silver badge
  - 50 Kilometer (31 mile) flight
  - 5 hour long duration flight
  - 1000 meter (3281 feet) gain in altitude
- Gold badge
    - 300 Kilometer (187 mile) flight
    - 3000 meter (9,843 feet) gain in altitude

Contests, or Glider Races!

- Gliders are raced in contests held each summer
- Gliders are raced in 4 classes
  - **Standard** class (15 meter wingspan, no flaps)
  - **15 meter** class (similar to Standard, but with flaps)
  - **Open** class (maximum wingspans, up to 27 meters)
  - **Sports** class (all different types of gliders, but handicapped to keep the race equal)
- Pilots fly as fast as possible around a course made up of turnpoints which can be found from the air. Gliders must fly over the turnpoints.
- Most gliders can fly up to 155 MPH!

Photo located by David Fitch

Lots of gliders gathered in a big thermal. This is called a gaggle. Large gaggles are frequently found at contests.

Gliders making a high speed pass down the runway, dumping water ballast from the wings. Water ballast helps a glider fly faster when the lift is strong.

Photo by Erik Bertsen

Greater Houston Soaring Association

- Located just east of Wallis, Tx on Hwy 36, approximately 45 minutes from downtown Houston
- Membership of approximately 85 people
- 2 towplanes
- 5 club owned gliders (L-13, L-23, 1-26, 2 Larks)
- 12 privately owned gliders, many in partnerships
- Each member works at the airport once a month
- Introductory rides available. Rides last about 30 min.
  - $60 for adults - $50 under age 21
- Come out and watch for free!
- Saturdays and Sundays, weather permitting

L-23

Lark

1-26E

L-13

Ag-wagon

Pawnee

Questions?