Hot Air Balloons and Lighter Than Air Flight





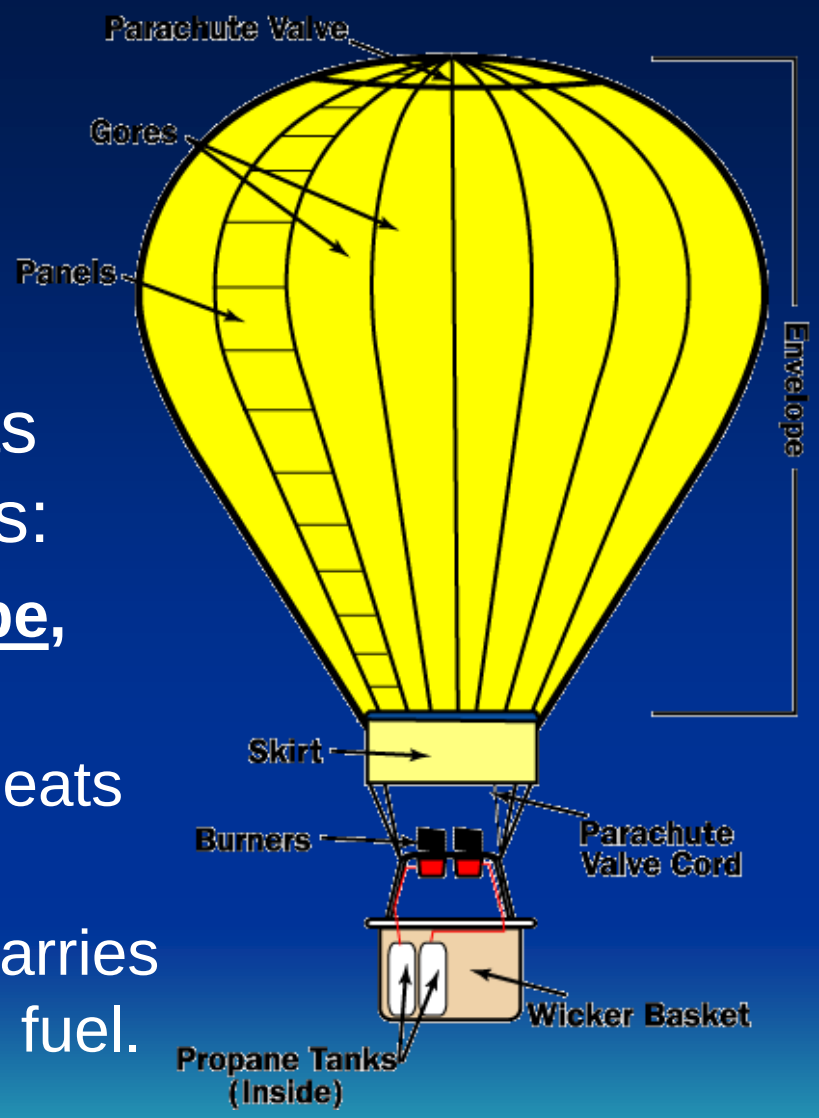



Hot Air Ballooning History

- **September 19, 1783 ~** A sheep, a duck, and a rooster become the first passengers in a hot air balloon launched by the Montgolfier brothers, Joseph and Ettienne.
- **November 21,1783 ~** The first recorded manned flight in a hot air balloon took place in Paris. The flight was a 22 minute flight by Jean Franois Piltre de Rozier and the Marquis Franois-Laurent d'Arlandes. The balloon was built from paper and silk.
- **January 7, 1785 ~** The team of Jean-Pierre Blanchard and John Jeffries became the first to fly across the English Channel.
- **January 9, 1793 ~** The first flight of a balloon in North America occurred in Philadelphia and was piloted by Jean-Pierre Blanchard.
- **October 10, 1960 ~** The birth date of the modern hot-air balloon. The first man-carrying free flight took place at Bruning, Nebraska.
- Today there are over 3,000 balloons and 5,000 pilots in the U.S.

Balloon Parts

- A hot air balloon has three essential parts:
  - the balloon **envelope,** which holds the air;
  - the **burner**, which heats the air; and
  - the **basket,** which carries the passengers and fuel.



Envelopes

- In modern hot air balloons, the envelope is constructed of reinforced nylon or polyester panels.
- The material is very light weight, but is very strong. The fabric is coated on the inside to prevent leaks.
- The skirt, at the base of the envelope, is coated with special fire-resistant material.

Burners

- Modern day burners use propane and are designed to turn it from a liquid to a gas, before it is ignited.
- The burners are very powerful and efficient.
- Typical burner can create enough heat to warm over 100 homes.

The Basket

The basket holds the

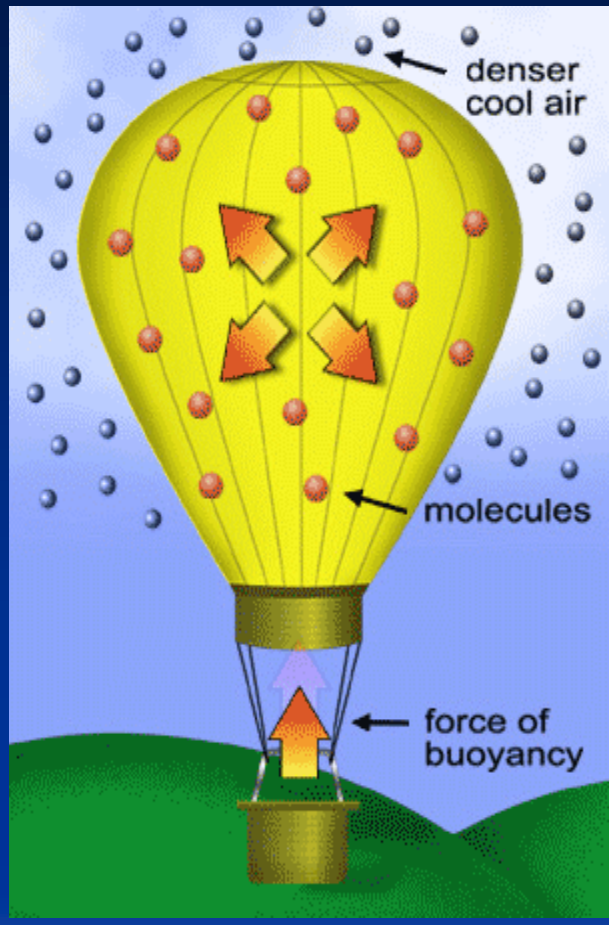
- Fuel tanks
- Instruments for the pilot
- Pilot and Passengers

Basket Parts

- Wicker Sides
- Uprights
- Envelope Attachments
- Fuel Tanks & Hoses
- Burner Attachments
- Floor

Why a Balloon Flies

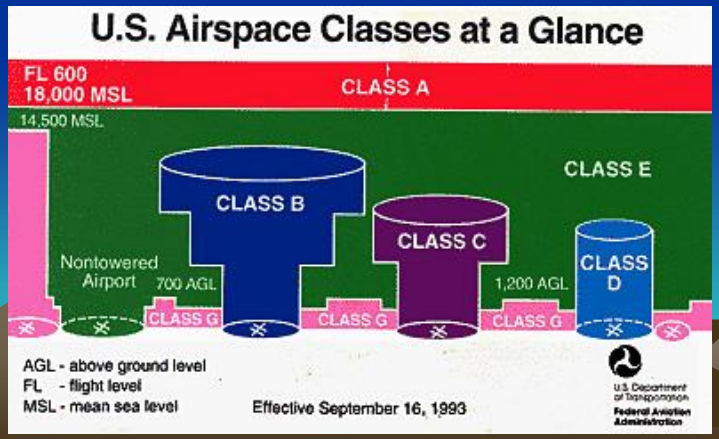
- Hot air weighs less than cold air.
- Gravity pulls the cold air down and it pushes the hot air up.
- When the pilot uses the burner to heat the air in the envelope, the balloon will go up.
- When the pilot lets the air in the envelope escape or lets the air cool the balloon will come down.
- The hot air can't escape from the envelope.

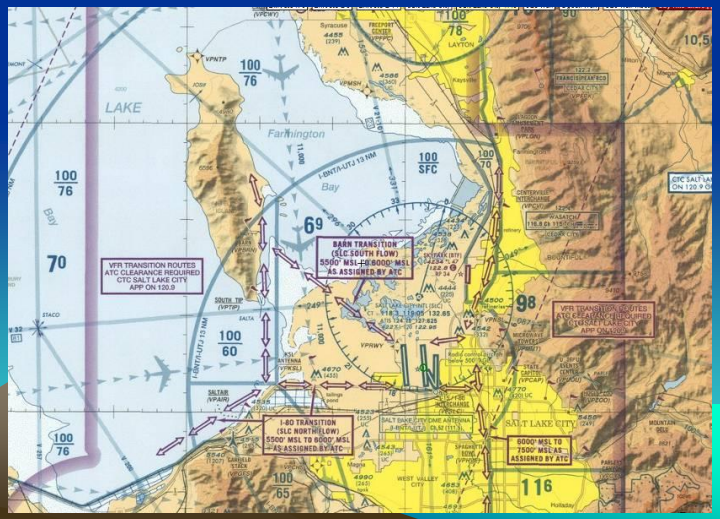


Kind of Hot Air Balloons

Flying Hot Air Balloons

- **Who can fly a hot air balloons?** Balloon pilots need a pilot's certificate to fly.
- **Where can hot air balloons fly?** Balloons float along in the air currents, but they must obey the rules.
- **When can hot air balloons fly?** Balloons need stable winds to operate effectively and the hours just following sunrise are the best for finding these calm gentle winds.





Safety First

- If the weather is good
- If the winds are right
- If the equipment checks out OK
- If the pilot and crew are ready
- If everything is perfect…

…only then there is a Flight

Balloon’s Eye View

Chariots of Fire

When fire was discovered,
The human race began,
to dream of heights to conquer,
by woman and by man.

In a million other ways,
we have advanced the human race,
with fire we propel ourselves,
on land, on sea, in space.

But remember when you dream
of heights to which we should aspire,
Balloonists were the first to ride
on Chariots of Fire.

Questions?