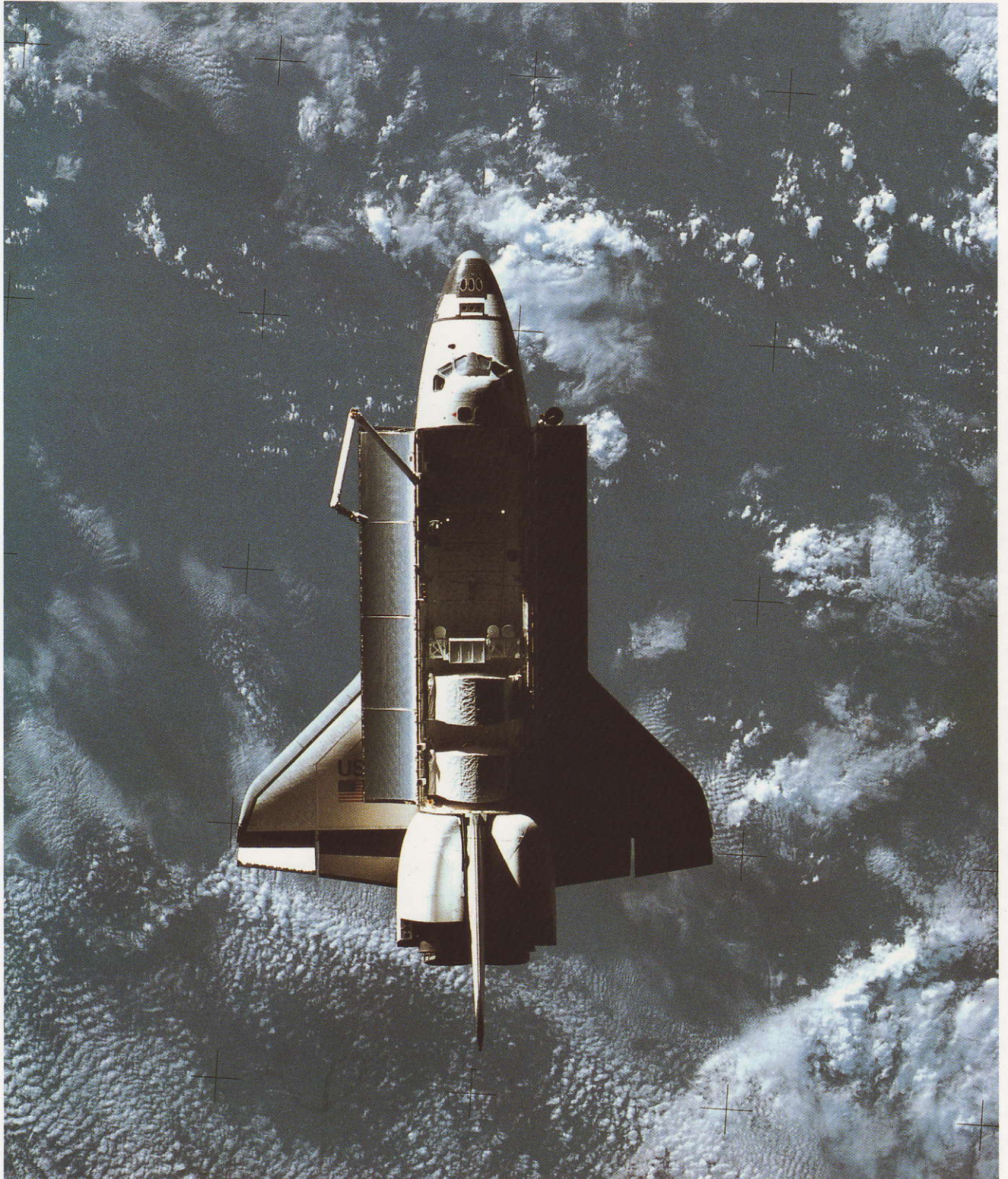




National Aeronautics and
Space Administration

Space Shuttle Orbiter





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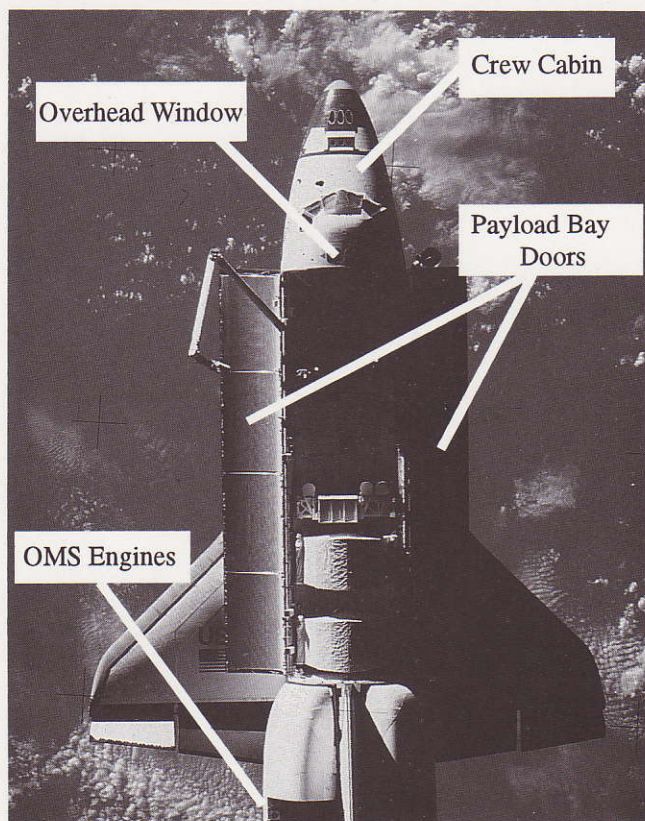
The combined forces of Earth's gravity and the speed the Space Shuttle orbiter achieves during launch help the orbiter maintain its orbit of Earth. No engines are running during this phase of the mission. The height of the orbit depends on the purpose of the mission but ranges between 120 and 350 miles above Earth. The orbiter circles Earth at a speed of about 17,500 miles per hour (or 5 miles per second) and, at that speed, takes about 90 minutes to orbit Earth once. The orbiter circles Earth following the same path, while Earth rotates beneath it.

The nose of the orbiter houses the crew cabin, which is a pressurized area where astronauts live and work during missions. This compartment supports guidance, navigation, and control equipment; environmental controls and the life support system; and displays and controls. It also contains crew accommodations for sleeping, waste management facilities, and a galley.

The part of the orbiter that corresponds to the passenger section of an airplane is called the payload bay. This bay is not pressurized and during a mission is used for transporting satellites and scientific experiments to and from Earth as well as transporting International Space Station components to space.

The payload bay doors play an important role in each mission. When these doors are open, the heat generated by the orbiter's electronics can be radiated into space as a primary means of cooling the orbiter. The doors are 60 feet long and composed of a composite epoxy material. The payload bay doors are the largest aerospace structure constructed from a composite material and weigh approximately 3,264 pounds (on Earth).

The orbital maneuvering system (OMS) engines at the rear of the orbiter are used to change orbit,



to leave orbit, and to return to Earth. These engines cannot be used once the orbiter enters Earth's atmosphere.

A variety of cloud types form the backdrop for this scene of the Space Shuttle orbiter. The image was captured during STS-7 in June 1983 by a 70-mm camera aboard a free-flying satellite.

For more information on NASA's Shuttle program, visit the NASA Office of Space Flight Home Page at <http://www.osf.hq.nasa.gov/>

To find out about NASA On-line Resources for Educators, visit the NASA Education Home Page at <http://www.hq.nasa.gov/education>