

Columbia Was First Reusable Space Ship

By Suzanne Freeman

Before the space shuttle *Columbia* was built in 1979, space vehicles at the end of a mission dropped from the sky into the ocean. The capsule of astronauts then bobbed in the water like a giant fishing cork, cooling off and waiting for rescue by boat. Most of those ships are now in the Smithsonian Air and Space Museum in Washington, D.C. Each craft could hold no more than one to three people. Compared to the space shuttle fleet, the *Apollo*, *Mercury*, and *Gemini* crafts resemble tuna cans more than space vehicles.

Space shuttles resemble jets, only fatter and much, much bigger. Each weighs more than 1 million tons without fuel and lands on a specially designed airstrip in Florida, much like commercial planes.

NASA's fleet of five ships is now down to three: *Endeavour*, *Discovery*, and *Atlantis*. *Columbia* was the oldest ship. The *Challenger* was the second shuttle built.

The First of Its Kind

Columbia was the first reusable space vehicle ever built. It cost \$25 billion to build, and \$25 million for each mission. It was finished in 1979, but did not make its first voyage until 1981. *Columbia* was named after a small sailing vessel that operated out of Boston in 1792 and explored the mouth of the Columbia River. One of the first ships of the U.S. Navy to circumnavigate the globe was named *Columbia*, named after the explorer, Christopher Columbus. The command module for the *Apollo 11* lunar mission was also named *Columbia*.

On *Columbia*'s last mission to space, STS-107, it carried some 80 experiments. STS stands for Space Transportation System. The 107 signifies the number of the missions. Missions are not flown in order. The space shuttles have flown 113 missions to date.

The seven crew members spent 16 days conducting experiments from both commercial and educational interests. Six schools from six different nations sent

experiments that included studying the affects of gravity on spiders, ants, ketchup, and sand. New York City school children sent up nearly four dozen experiments, testing gravity on magnetic strips and Central Park pond water.

What Makes a Shuttle

A space shuttle has three major components: the orbiter, the external fuel tank, and twin solid rocket boosters.

The external tank stores one-half million gallons of liquid hydrogen and liquid oxygen for fuel. After takeoff, it is jettisoned to burn up in the Earth's atmosphere.

The rocket boosters are attached to the external tank. They are jettisoned two minutes into the flight, but are recovered and reused.

The orbiter carries the crew, the engines, and the payload. The payload can include satellites for launching or experiments to be conducted in space.

The Last Remaining Ships

Discovery is the third of NASA's fleet of reusable, winged spaceships. It arrived at Kennedy Space Center in November 1983. Its first mission in August 1984 carried three communications satellites for deployment.

The *Discovery* also deployed the Hubble Space Telescope in April 1990. It launched the *Ulysses* spacecraft to explore the Sun's polar regions on a mission in October 1990.

Discovery is named for two famous sailing ships; one sailed by Henry Hudson in 1610-11 to search for a northwest passage between the Atlantic and Pacific Oceans, and the other by James Cook on a voyage during which he discovered the Hawaiian Islands.

Atlantis arrived at the Kennedy Space Center in April 1985. It lifted off on its maiden voyage on October 3, 1985.

Atlantis is named after a two-masted sailing ship that was operated for the Woods Hole Oceanographic Institute from 1930 to 1966.

The *Endeavour* was built to replace the *Challenger*. It was ready for flight in 1991. Its first flight was in 1992 to repair the the Intelsat VI satellite.

Endeavour is named after the first ship commanded by 18th-century British explorer James Cook. On its maiden voyage in 1788, Cook sailed into the South Pacific and around Tahiti to observe the passage of Venus between the Earth and the sun. During another leg of the journey, Cook discovered New Zealand, surveyed Australia, and navigated the Great Barrier Reef.