

400,000 feet above Earth. At this point, *Columbia* was about 4,390 miles from the Edwards landing strip in California.

At 151,000 feet, traveling more than eight times the speed of sound, Crippen saw coastline ahead. "What a way to come to California!" he called. The worst of the waiting was over. Theory was becoming a reality.

Twin sonic booms announced the arrival of *Columbia* while the vehicle was still at an altitude of 54,000 feet. About 400 feet above the desert, landing gears were lowered.

Columbia landed on Runway 23 of Rogers Dry Lake at Edwards Air Force Base in the Mojave Desert, rolling 8,993 feet—within 200 feet of the estimate.

Shuttle program officials and astronauts said *Columbia* exceeded performance expectations and dubbed it their "incredible flying machine."



Astronauts John W. Young (left), commander, and Robert L. Crippen, pilot, crewed Space Shuttle Columbia on its maiden voyage—the first orbital test flight of the Space Transportation System.

Shuttle program 'firsts'



STS-3

The Space Shuttle Columbia touches down on the Northrup Strip at White Sands Missile Range, New Mexico, marking the first (and only) time it touched New Mexico soil. Landing was shortly after 9 a.m. Mountain Standard Time on March 30, 1982.

STS-7

Early shuttle program firsts continued with the flight of STS-7 in June 1983. Sally K. Ride became the first American woman to go into space aboard Challenger on its second flight. Between her first and second missions (STS-41G), Ride became the first female "CAPCOM" in Mission Control to relay information to the STS-2 and STS-3 crews on orbit.



STS-8

Astronaut Guion (Guy) S. Bluford became the first African-American in space aboard Challenger on the first mission to launch and land at night August/September 1983. Bluford flew three more shuttle flights before leaving NASA in 1993.

STS-41B

The first mission to end with landing at the Kennedy Space Center included another historic first when Astronaut Bruce McCandless II flew untethered outside Challenger during a demonstration spacewalk. The nitrogen-propelled, hand-controlled manned maneuvering unit was used operationally on the next mission to retrieve and repair the ailing Solar Maximum Mission spacecraft.



STS-63

Astronaut Eileen M. Collins became the first woman pilot of the space shuttle on the first mission to rendezvous with the Russian space station Mir in 1995. She later flew three more times, most recently as commander of STS-114 last July. Collins became the first woman to receive the National Space Trophy on March 24, 2006. The trophy was established by the Rotary National Award for Space Achievement Foundation, and is presented annually in Houston to an American for career achievements in space exploration.



STS-71

This view of the Space Shuttle Atlantis still connected to Russia's Mir space station was photographed by the Mir-19 crew on July 4, 1995. The STS-71 mission was the first time that the shuttle docked with the Mir space station.



STS-88

A variety of white and gray clouds form the backdrop for this 35mm scene of the connected Zarya and Unity modules floating in space after having been released from Endeavour's cargo bay a bit earlier. Six crewmembers, who had earlier spent the majority of their on-duty mission time working on the tandem of space hardware, watched from Endeavour as the joined modules moved away from the shuttle.



Space Shuttle Facts

- Propellant weight at liftoff: 3,851,887 lbs.
- Air pressure = 14.7 pounds per square inch (psi), same air pressure as sea level on Earth. (The space station is about 14 psi (equal to the average atmospheric pressure in Oklahoma City, altitude 1,285 ft; normal air pressure in Las Vegas = 13.6 psi, and in Denver it's 12.1 psi).
- Windows (six across the front, two looking into the payload bay, two overhead and one hatch) each are actually three panes, not just one. So how thick are they (discounting the hatch)? Outer: 0.6 inch; middle: 1.3 inches; inner: 0.5 inch
- Missions (all 114) have begun from the Kennedy Space Center in Florida. Twenty-eight of those were launched at night.
- At full power, the shuttle main engines generate, in watts, the equivalent output of 13 Hoover Dams.
- During the first two shuttle missions, the external tank was painted white. Beginning with STS-3, NASA decided not to paint the tank, saving 1,100 pounds on each flight.
- The flow of fuel from the shuttle external tank into the main engines is equal to draining an average swimming pool in 25 seconds. The pump pressure equals that of a submarine three miles deep.
- The shuttle's solid rocket boosters have a combined thrust of 5.3 million pounds, which is equal to 44 million horsepower, or 14,700 six-axle diesel locomotives, or 400,000 subcompact cars.
- The SRBs are two feet shorter than the Statue of Liberty (they're 149 feet, 1.6 inches tall), but each, at 700 tons, weighs three times as much.

Where the wild things are

by Brad Thomas



Cutting-edge technology and sophisticated rocket ships are often associated with NASA's Johnson Space Center. But once inside the gates, it can become very apparent that engineers, astronauts and support personnel are not the only ones on site. They share the 1,580-acre facility with an abundance of creatures.

JSC is the home of a wide range of wildlife and domesticated animals. The wildlife includes, but is not limited to, deer, possums, squirrels, skunks, snakes, koi and a large assortment of feathered friends. There has even been a documented sighting of a bobcat on site. Also, JSC hosts domesticated livestock and is involved in an effort to breed an endangered species, the Attwater's Prairie Chicken.

Stephanie Walker, a flight crew systems manager, said that she enjoys the outdoor surroundings at JSC, in particular the ducks. "I think it is a great stress release to watch the ducks," she said. "Pure concrete does not relax me."

Walker is also co-chairperson of the Wildlife Committee, which was chartered by the JSC Safety Action Team (JSAT). One purpose of the group is to educate JSC employees on how to coexist safely with JSC wildlife and provide information on seasonal wildlife issues.

Deer are the largest wild animals on site and are one of the animals most likely to be involved in an incident, in particular collisions with automobiles.

Wildlife Committee Co-chairperson Andy Ideler said that Texas A&M University estimates that there are between 160 to 174 deer on site. Ideler is responsible for the group's deer committee.

JSAT started the deer committee to address the increasing deer population at the center. Ideler said that different options were discussed including capture/relocate and birth control before JSC opted for birth control.

continued on page 14