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PIONEER 10 SPACECRAFT SENDS LAST SIGNAL

After more than 30 years, it appears the venerable Pioneer 10 spacecraft has sent its last signal to Earth. Pioneer's last, very weak signal was received on Jan. 22, 2003.

NASA engineers report Pioneer 10's radioisotope power source has decayed, and it may not have enough power to send additional transmissions to Earth. NASA's Deep Space Network (DSN) did not detect a signal during the last contact attempt Feb. 7, 2003. The previous three contacts, including the Jan. 22 signal, were very faint with no telemetry received. The last time a Pioneer 10 contact returned telemetry data was April 27, 2002. NASA has no additional contact attempts planned for Pioneer 10.

"Pioneer 10 was a pioneer in the true sense of the word. After it passed Mars on its long journey into deep space, it was venturing into places where nothing built by humanity had ever gone before," said Dr. Colleen Hartman, director of NASA's Solar System Exploration Division, NASA Headquarters, Washington. "It ranks among the most historic as well as the most scientifically rich exploration missions ever undertaken," she said.

"Originally designed for a 21-month mission, Pioneer 10 lasted more than 30 years. It was a workhorse that far exceeded its warranty, and I guess you could say we got our money's worth," said Pioneer 10 Project Manager, Dr. Larry Lasher.

Pioneer 10 was built by TRW Inc., Redondo Beach, Calif., and was launched March 2, 1972, on a three-stage Atlas-Centaur rocket. Pioneer 10 reached a speed of 32,400 mph needed for the flight to Jupiter, making it the fastest human-made object to leave the Earth; fast enough to pass the moon in 11 hours and to cross Mars' orbit, about 50 million miles away, in just 12 weeks.

On July 15, 1972, Pioneer 10 entered the asteroid belt, a doughnut-shaped area that measures some 175 million miles wide and 50 million miles thick. The material in the belt travels at speeds up to 45,000 mph and ranges in size from dust particles to rock chunks as big as Alaska. Pioneer 10 was the first spacecraft to pass through the asteroid belt, considered a spectacular achievement, and then headed toward Jupiter. Accelerating to a speed of 82,000 mph, Pioneer 10 passed by Jupiter on December 3, 1973.

The spacecraft was the first to make direct observations and obtain close-up images of Jupiter. Pioneer also charted the gas giant's intense radiation belts, located the planet's magnetic field, and established Jupiter is predominantly a liquid planet. In 1983, Pioneer 10 became the first human-made object to pass the orbit of Pluto, the most distant planet from the Sun.

Following its encounter with Jupiter, Pioneer 10 explored the outer regions of the solar system, studying energetic particles from the Sun (solar wind), and cosmic rays entering our portion of the Milky Way. The spacecraft continued to make valuable scientific investigations in the outer regions of the solar system until its science mission ended March 31, 1997.

Since that time, Pioneer 10's weak signal has been tracked by the DSN as part of a new advanced-concept study of communication technology in support of NASA's future Interstellar Probe mission. At last contact, Pioneer 10 was 7.6 billion miles from Earth, or 82 times the nominal distance between the Sun and the Earth. At that distance, it takes more than 11 hours and 20 minutes for the radio signal, traveling at the speed of light, to reach the Earth.

"From Ames Research Center and the Pioneer Project, we send our thanks to the many people at the Deep Space Network (DSN) and the Jet Propulsion Laboratory (JPL), who made it possible to hear the spacecraft signal for this long," said Pioneer 10 Flight Director David Lozier.

Pioneer 10 explored Jupiter, traveled twice as far as the most distant planet in our solar system, and as Earth's first emissary into space, is carrying a gold plaque that describes what we look like, where we are, and the date when the mission began. Pioneer 10 will continue to coast silently as a ghost ship into interstellar space, heading generally for the red star Aldebaran, which forms the eye of the constellation Taurus (The Bull). Aldebaran is about 68 light-years away. It will take Pioneer 10 more than two million years to reach it. Its sister ship, Pioneer 11, ended its mission September 30, 1995, when the last transmission from the spacecraft was received. Information about Pioneer 10 is on the Internet at:

http://spaceprojects.arc.nasa.gov/Space_Projects/pioneer/PNhome.html

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