Jupiter-bound craft runs into problem after flyby (Update)

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This 2010 artist's rendering depicts NASA's Juno spacecraft with Jupiter in the background. NASA's Jupiter-bound spacecraft will swing by Earth for one last visit Wednesday Oct. 9, 2013 before speeding to the outer solar system. Wednesday's flyby allows the Juno spacecraft to gather the momentum it needs to arrive at Jupiter in 2016. (AP Photo/NASA/JPL, File)

NASA's Jupiter-bound spacecraft hit a snag Wednesday soon after it

used Earth as a gravity slingshot to hurtle toward the outer solar system, but mission managers said it's on course to arrive at the giant planet in 2016.

Juno emerged from Earth's shadow in safe mode, a state that spacecraft are programmed to go into when there's some trouble.

Despite the problem, "we believe we are on track as planned to Jupiter," said project manager Rick Nybakken of the NASA Jet Propulsion Laboratory, which manages the $1.1 billion mission.

Engineers continued to diagnose the issue, which occurred after Juno whipped around Earth in a momentum-gathering flyby. Up until Wednesday, Juno had been in excellent health. While in safe mode, it can communicate with ground controllers, but its activities are limited.

Previous missions to the outer solar system have used Earth as a celestial springboard since there's no rocket powerful enough to make a direct flight. The Galileo spacecraft buzzed by Earth twice in the 1990s en route to Jupiter, the solar system's largest planet located 484 million miles from the sun.

Launched in 2011, Juno flew beyond the orbit of Mars, Earth's closest planetary neighbor, before looping back toward our home planet for a quick visit. Wednesday's rendezvous boosted Juno's speed from 78,000 mph (125,523 kph) relative to the sun to 87,000 mph—enough momentum to cruise past the asteroid belt to Jupiter, where it should arrive in 2016.

During the swing past Earth, Juno snapped pictures. The solar-powered, windmill-shaped spacecraft slipped into Earth's shadow as planned, but engineers were puzzled by the too little data it sent back afterward. At closest approach, it hurtled 350 miles above the ocean off the coast of

South Africa.

NASA said skywatchers with binoculars or a small telescope might have seen it streak across the sky, weather permitting. Ham radio operators around the globe were encouraged to say "Hi" in Morse code—a message that might be detected by Juno's radio.

By space mission standards, Juno's Earth rendezvous was low-key compared with the Curiosity rover's nail-biting landing on Mars last year, which drew crowds. Since flybys have been executed before, project managers predicted a smooth flight.

The unexpected problem causes "a moderate level of concern," Nybakken said.

Despite a government shutdown that has prevented NASA from updating its website or tweeting, the space agency's missions continue to operate. Earlier this week, NASA's newest spacecraft, LADEE, slipped into orbit around the moon.

Since the 1970s, spacecraft have circled or flown past Jupiter including the Voyagers, Pioneers, Galileo, Ulysses, Cassini and, most recently, the New Horizons barreling toward Pluto. Missions have beamed back stunning views of Jupiter's trademark Great Red Spot, a raging hurricane-like storm, and its many moons.

Juno promises to inch closer to Jupiter than previous spacecraft, orbiting the planet for at least a year and studying its cloud-covered atmosphere and mysterious interior to better understand how the giant planet formed.