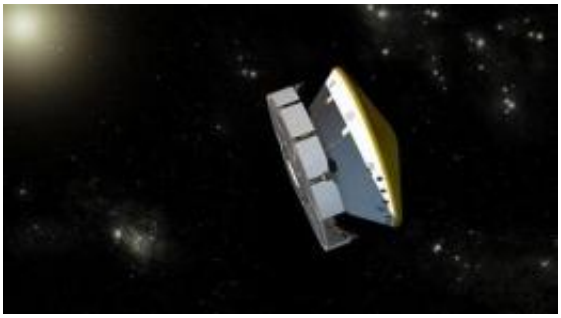
Mars-bound NASA rover adjusts course to red planet (Update)

January 12 2012



This artist concept provided by NASA on Tuesday Jan.10,2012 shows the Curiosity rover cruising toward Mars. The spacecraft will adjust its flight path several times as it heads for an August landing in a Martian crater. (AP Photo/NASA/JPL

Firing on all engines, NASA's latest rover to Mars executed a course adjustment Wednesday that put it on track for a landing on the red planet in August.

Deep space antennas monitored the one-ton rover nicknamed Curiosity as it fired its thrusters in a choreographed three-hour maneuver.

"We're a big step closer to our entry point at the Martian atmosphere," said Arthur Amador of the NASA Jet Propulsion Laboratory.

The course correction is the most important task Curiosity will perform

during its 352-million-mile trip to Mars, but it's not unprecedented. Previous robotic explorers have had to adjust their paths several times en route to landing.

As NASA celebrated Curiosity's latest milestone, Russia's space agency grappled with its doomed Phobos-Ground probe.

Bound for a Martian moon, Phobos-Ground became stranded in Earth orbit soon after launching in November. After several failed attempts to put it back on course, pieces of the probe could plunge through Earth's atmosphere as early as this weekend.

Meanwhile, Curiosity had racked up 80 million miles and was traveling at 10,200 mph relative to the Earth.

The action began Tuesday when engineers uploaded commands to Curiosity's on-board computers. On cue, it refined its trajectory without human interference - thrusting 200 times in short bursts Wednesday and increasing its speed by 12 mph.

"It was pretty darn flawless," Amador said.

The team will spend the next week testing the spacecraft's communication system and other components. A second smaller path adjustment was planned for March.

If Curiosity did not tweak its route, it would miss Mars altogether because it was initially not aimed at the planet. Engineers did this by design to prevent the upper stage of the rocket that launched the spacecraft from hitting Mars.

Now that Curiosity has separated and is on its way, the team has several chances to fine-tune its path before touchdown. During the

interplanetary cruise, the rover is tucked in a shell that will protect it during its plunge through the upper Martian atmosphere.

Curiosity, whose formal name is the Mars Science Laboratory, is aiming for a 96-mile-wide crater near the Martian equator that boasts a towering mountain in the center. The six-wheel, nuclear-powered rover planned to drive to the lower flanks and examine the layered deposits to determine whether the area once had conditions capable of supporting microbial life.

Armed with a toolkit including a laser to zap into bedrock and a jackhammer, Curiosity is more sophisticated than previous Mars surface spacecraft. Despite its capabilities, it won't be able to detect life. Instead, it will hunt for the chemical building blocks of life during its two-year, $2.5 billion mission.

Since Curiosity is too heavy to use a cocoon of airbags or rely solely on its parachute to safely reach the planet's surface, NASA will attempt a new type of landing using a so-called sky crane system.

The parachute will detach and a rocket-powered platform will fire its engines, then lower the rover to the ground on a tether similar to the way hovering heavy-lift helicopters lower huge loads at the end of a cable.

Even before arrival, Curiosity has not been idle. Several weeks after launch, it turned on its radiation detector to monitor high-energy particles streaming from the sun and exploding stars. Once at Mars, it will measure radiation levels on the surface.

Citation: Mars-bound NASA rover adjusts course to red planet (Update) (2012, January 12)