

NASA details plan for craft that will fly to the moon

By Traci Watson, USA TODAY

WASHINGTON — The United States plans to send astronauts back to the moon as soon as 2018 on a mission that would be cheaper and more ambitious than man's first trip to the lunar surface nearly 40 years ago, NASA Administrator Michael Griffin said Monday.



The crew exploration vehicle would have room for four astronauts.

Artist's concept by John Frassanito and Associates

NASA wants to send a crew of four to the moon in a spaceship that resembles the capsule developed for the Apollo program in the 1960s. But this capsule would be able to land on either solid ground or water. The Apollo capsule only splashed down at sea.

It would also be safer than its forerunner. And it would be roomier, taking a crew of four to the moon rather than Apollo's three.

"Think of it as Apollo on steroids," Griffin said of the new ship.

Griffin said the cost of the moon program would be \$104 billion. Adjusted for inflation, that's roughly 55% of the cost of the first moon landing in 1969. He said NASA's budget would not need to grow to pay for the new effort and vowed not to raid other programs for funds. Savings would come from retiring the space shuttle in 2010.

"This is not about new money," Griffin said. "This is about a budget which keeps NASA ... approximately where it is today."

The plan fleshes out a proposal President Bush made in 2004 to return astronauts to the moon — last visited by humans on the Apollo 17 mission in 1972 — and later to send Americans to Mars, where no human has set foot.

NASA did not set a target date for the first human mission to Mars, a much more expensive and difficult trip than a moon shot.

NASA hopes to launch the new ship, the crew exploration vehicle, in 2012. At first, it would only ferry crews and cargo to the International Space Station orbiting the Earth. Later, the ship would carry astronauts to lunar orbit and wait there while another vehicle carried the

crew to the moon's surface.

The timeline leaves a two-year gap in the United States' ability to send people into space. The only other ship able to drop off humans at the space station is Russia's space capsule, the Soyuz.

NASA's blueprint does not indicate whether it would build a base on the moon. The answer, Griffin said, would depend partly on whether other countries are interested in such a project.

The spacecraft unveiled Monday could make two trips to the moon per year, but NASA has not worked out a schedule for the number or length of moon trips.

Some members of Congress, including Rep. Sherwood Boehlert, R-N.Y., praised the plan as cost-effective. But others questioned the worth of a new moon program.

"It is a terrible allocation of scarce resources," said Rep. Barney Frank, D-Mass. "The time has come to de-emphasize the manned space program."

NASA's record on holding to its original budget estimates is spotty, says space analyst Marco Caceres of the Teal Group, an aerospace and defense consulting firm.

"Whatever NASA says it will cost will be a low-balled figure so they won't scare too many people away," he said. "Their main goal is to get that (project) through."

He also noted that NASA won't save much money on the shuttle program until the vehicle is put in mothballs in 2010. But to meet its 2012 goal of launching the space capsule, NASA will need to start research and development now.

NASA aims to save money and time by recycling parts of the shuttle for use in its two new rockets:

- The crew launch vehicle would carry the capsule to orbit. It would be powered by a shuttle engine and by a stronger version of the shuttle's rocket booster.
- The heavy-lift vehicle would carry the unoccupied lunar lander into space. It would dock with the crew capsule and then power the whole package to the moon. It would rely on two shuttle boosters, each upgraded to provide extra lift, and five shuttle engines.

However, the designs also incorporate technology that could prove troublesome to develop. The engine that would lift the crew's lander off the lunar surface would burn liquid oxygen and methane, an untried combination. New engines require significant testing.

The risk of losing a crew with the new system is expected to be a third of what it was on an Apollo-era moon landing, said NASA's John Connolly, who helped lead the development effort.

For the trip to Earth orbit and back, he said, the capsule and its rocket would be 20 times safer than the shuttle, in part because the capsule would have an emergency rocket to lift the crew to safety during an aborted launch.

Comparing moon missions

How future moon explorations compare to the Apollo missions of the 1960s and '70s:

	Apollo	New mission
Crew	3	4
Launch vehicle	Saturn V rocket carrying both orbiter and lunar lander	Smaller rocket carrying crew capsule, second rocket carrying the lander. The two link up in space.
Size of crew vehicle	364 cubic feet	1,085 cubic feet
Orbiting the moon	One crewmember stays with orbiter	Crew capsule orbits empty
On the moon's surface	Two astronauts for up to three days	Four astronauts for up to a week
Return to Earth	Splashdown in ocean	Touchdown on land or sea

Source: USA TODAY reporting and NASA