



# Bush unveils vision for moon and beyond

President seeks \$1 billion more in NASA funding

**WASHINGTON (CNN) --Saying "the desire to explore and understand is part of our character," President Bush Wednesday unveiled an ambitious plan to return Americans to the moon by 2020 and use the mission as a steppingstone for future manned trips to Mars and beyond.**

"We do not know where this journey will end, yet we know this -- human beings are headed into the cosmos," Bush said. "Mankind is drawn to the heavens for the same reason we were once drawn into unknown lands and across the open sea. We choose to explore space because doing so improves our lives and lifts our national spirit."

The president unveiled what he billed as a "new course" for the nation's space program in a speech at NASA headquarters, shifting the long-term focus from the space shuttle and the international space station to the creation of a new manned space vehicle that will be flying with a crew in 10 years and will return humans to the moon within 16 years.

Bush proposed spending \$12 billion over the next five years on the effort. About \$1 billion of that will come from an increase in NASA's budget, while the other \$11 billion would come from shifting funds from existing programs within NASA's current \$86 billion budget. The overall NASA budget would stay at about 1 percent of the federal budget, according to White House figures.

But some in Congress questioned whether the funding would be enough to achieve the president's ambitious goals. And the project drew criticism from groups who say the money would be better spent on domestic programs. ([Full story](#))

However, Bush conceded the initial funding for the space exploration plan would be "only a beginning" and that future funding decisions "will be guided by the progress we make in achieving these goals."

The idea behind returning to the moon will be to develop the capability to use it as a launch pad for deeper space exploration, as well as tapping resources on the lunar surface that could be used in those missions, Bush said.

"Establishing an extended human presence on the moon could vastly reduce the cost of further space exploration, making possible ever more ambitious missions," he said. "Lifting heavy spacecraft and fuel out of the Earth's gravity is expensive. Spacecraft assembled and provisioned on the moon could escape its far lower gravity using far less energy and thus far less cost."

Bush also said the soil of the moon "contains raw materials that might be harvested and processed into rocket fuel or breathable air."

"With the experience and knowledge gained on the moon, we will then be ready to take the next steps of space exploration -- human missions to Mars and to worlds beyond," he said.

The president did not announce a date for a Mars mission, but administration sources said the earliest date for a journey to the red planet would be 2030.

NASA Administrator Sean O'Keefe said that "each of the individual milestones and objectives is to be priced out. ... [The cost] depends on which option you choose. But between now and then, the objective is to try to find the means to make any of those debates possible."

Bush pledged that unlike the Apollo effort, which was a race with the Soviet Union, the United States would welcome international participation in the project.

"We'll invite other nations to share the challenges and opportunities of this new era of discovery," he said. "The vision I've outlined today is a journey, not a race, and I call on other nations to join us on this journey, in the spirit of cooperation and friendship."

However, as part of the shift in focus, the United States will wrap up its current obligations on building the international space

station by 2010, after which it will retire the remaining three space shuttles used to build and service the station, Bush said. Russia and 14 other countries are partners with the United States in the ISS.

The shuttles have been grounded since Columbia broke up while returning to Earth last February. The president said NASA will return the shuttles to flight for the remainder of the decade, based upon recommendations from the Columbia Accident Investigation Board.

The board has told NASA that it would have to re-certify the space shuttles if it wanted to fly them beyond 2010 -- an onerous and expensive task the Bush administration opted to forgo.

The initial spurt of new funding will be used to begin work on what a "crew exploration vehicle," which O'Keefe said will "look totally different" from the space shuttle. It will be developed and tested by 2008 and will conduct its first manned mission no later than 2014. Lunar missions will begin between 2015 and 2020.

The new vehicle will be capable of traveling to the space station. It has not been determined whether the craft will be reusable, like the space shuttle, or a spacecraft like those on the Apollo missions, which were used just once.

Also, NASA will begin sending a series of robotic missions to the moon beginning in 2008 to conduct research and prepare for future missions, and research will be conducted on the space station on the long-term effects of extended space travel on human physiology.

In his speech, Bush touted the new space exploration effort as an investment that "will be repaid many times over" in technological advancements.

Past space exploration "has brought tangible benefits that improve our lives in countless ways," he said.

"Along this journey, we'll make many technological breakthroughs. We don't know yet what those breakthroughs will be, but we can be certain they'll come."

The president also said that "the fascination generated by further exploration will inspire our young people to study math and science and engineering and create a new generation of innovators and pioneers."

Bush also made his case for why manned exploration is needed, rather than sending unmanned missions, such as the Mars rover, Spirit, currently sending information back from the red planet.

"The human thirst for knowledge ultimately cannot be satisfied by even the most vivid pictures or the most detailed measurements," he said. "We need to see and examine and touch for ourselves, and only human beings are capable of adapting to the inevitable uncertainties posed by space travel."

*CNN space correspondent Miles O'Brien and CNN senior White House correspondent John King contributed to this report.*

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