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BUSH BACKS GOAL OF FLIGHT TO MOON TO ESTABLISH BASE

By DAVID E. SANGER and RICHARD W. STEVENSON

WASHINGTON, Jan. 14— President Bush on Wednesday set a goal of returning to the Moon by no later than 2020 and eventually using a lunar base as a launching pad to Mars. But in a speech that offered a sweeping vision for space exploration, Mr. Bush offered little new money for his idea and few technical details.

"We'll build new ships to carry man forward into the universe, to gain a new foothold on the Moon and to prepare for new journeys to the worlds beyond our own," Mr. Bush said to an audience of astronauts and other employees at NASA's headquarters here. [Excerpts, Page A26.]

To accomplish the goal, Mr. Bush said, the United States would retire its aging fleet of space shuttles six years from now and replace it with a crew exploration vehicle, capable of ferrying people to a lunar base where, at some time the president left unspecified, they would depart for Mars or beyond. But officials said they had not decided what that vehicle would look like, and under the president's plan, there would be no American manned access to space between the shuttle's retirement in 2010 and the launching of the exploration vehicle, envisioned for 2014.

Speaking 17 days shy of the first anniversary of the loss of the space shuttle Columbia and its seven astronauts, an event that revealed major failings at NASA and led to a broad re-evaluation at the White House of the nation's future in space, the president said he would seek an additional \$1 billion over the next five years to begin research on the program. And in a move with profound implications for other space science, he directed NASA to divert \$11 billion from existing programs, especially the shuttle, from its current budget of \$86 billion for the next five years to support development of the technology need to reach the Moon and Mars.

Summoning the spirit of Lewis and Clark, who set out two centuries ago to explore the wilds of the uncharted West, Mr. Bush noted the United States' pathbreaking history in space but also said the nation was working on goals set years ago with technology that is now generations old.

For 30 years, he said, no human has ventured more than 386 miles from Earth, roughly the distance from Washington to Boston.

"It is time for America to take the next step," the president said.

Drawing a distinction with the Mercury, Gemini and Apollo missions and the rush to beat the Soviet Union to the Moon during the cold war in the 1960's, Mr. Bush invited other nations to participate.

"The vision I outline today is a journey, not a race, and I call on other nations to join us on this journey in a spirit of cooperation and friendship," Mr. Bush said.

Sean O'Keefe, the administrator of NASA, was asked Wednesday whether those nations could include China and India, which have ambitions to reach the Moon.

"Who knows?" Mr. O'Keefe replied. "I wouldn't want to speculate."

In his speech, Mr. Bush was vague about even the basic details of a manned mission to Mars, including when the technology would be ready to make it possible. He described the Moon as the stepping stone, saying that its soil could be turned into rocket fuel, and that its comparatively small gravitational pull would make it far easier to launch missions to other places in the solar system -- one of several theories about how best to propel astronauts to Mars.

"We do not know where this journey will end, yet we know this: human beings are headed into the cosmos," he said.

In 1989, President Bush's father envisioned a permanent base on the Moon and a manned mission to Mars, and the next year he set a goal of reaching Mars by 2020, the outside target date the current President Bush has set for a return to the Moon. The first President Bush's plan came to naught; but the program announced on Wednesday was somewhat more specific, a series of missions that would start with robots and culminate, someday, in lengthy human explorations.

But if the vision Mr. Bush sketched was expansive, it was at least partly rooted in earthly political concerns.

With the nation deeply divided along partisan lines on the most pressing issues of the day, including the war in Iraq, tax cuts and the environment, Mr. Bush's political advisers backed the plan as a way of associating the president with a unifying and uplifting election-year goal that transcends politics.

But with the budget deficit growing rapidly and Democrats pressing for a greater focus on health care, education and other issues, Mr. Bush's plan is sure to face scrutiny on Capitol Hill on fiscal, scientific and ideological grounds. Under the rough budget issued on Wednesday, relatively little new money would be spent over the next five years. Money would be shifted from the shuttle and the International Space Station, which would be considered complete around 2010, and the big spending would probably not come until 2014. Democrats were quick to question whether Mr. Bush's projections were rooted in reality.

"While I'm encouraged by the administration's renewed interest in the space program, their interest doesn't reflect an honest assessment of the fiscal and organizational realities facing NASA

and the financial realities facing the country," said Senator Ernest F. Hollings, Democrat of South Carolina. "Disregarding these concerns will only further jeopardize the safety of our astronauts, the integrity and viability of our broad American agenda for space and the nation's fiscal health."

The plan was put together under the direction of the National Security Council. Participants said that Vice President Dick Cheney had run several meetings and that the deputy national security adviser, Stephen J. Hadley, had organized many of the options. "The president didn't make these choices, but he approved them," a senior official said.

In the end, they came up with a program that embraces the economical efficiency of using robots and probes -- like the Spirit, the robotic rover now on Mars -- to pave the way for the kind of far riskier manned missions that excite the imagination and loosen the purse strings in Congress.

The plan also resolves the question of what to do with the aging fleet of shuttles, which suffered two catastrophic accidents in 17 years. The retirement date of 2010 is intended to coincide with the completion of the building phase of the International Space Station, and would save the agency the arduous process of recertifying the shuttles' safety, a step the Columbia accident investigation commission insisted on.

Adm. Harold W. Gehman Jr., who led the commission, said he was pleased that the national debate on the direction of the space program was beginning. That, Admiral Gehman said, could avoid again designing the next-generation space vehicle without defining its purpose.

"The board was not pleased to find ourselves here this late in the shuttle life span and not have a replacement on the drawing board, much less under construction," said Admiral Gehman, who is retired. He said the shuttle "doesn't have a lot of life left in it."

The shuttle, said Eugene A. Cernan, the last man to leave his footprints on the Moon, was no longer suited to America's needs. "It's sophisticated, it's high-tech, but it doesn't go anywhere and it's expensive," Mr. Cernan said on Wednesday.

But Mr. O'Keefe, the NASA administrator, left open the question of what the replacement would look like, or even whether it would be a reusable vehicle like the shuttle or a one-time shot, like the Apollo space capsules.

"We have to avoid getting fond of a design," said Mr. O'Keefe, a former deputy director of the Office of Management and Budget and chief financial officer of the Defense Department.

No matter what the answer to the design problem, building a vehicle with the kind of range and sustainability that Mr. Bush described on Wednesday would be a huge undertaking. John Logsdon, the director of the space policy institute at George Washington University and a member of the commission that investigated the Columbia accident said Mr. Bush had done a good job of describing the mission, but added: "It's a modest beginning to a rather bold vision. But given the budget and political realities, I think this is the best we can do."

Photos: President Bush announced his sweeping plans for NASA yesterday in Washington. He shared the stage with Sean O'Keefe, the agency's administrator, in addressing astronauts and other NASA employees. (Photographs by Stephen Crowley/The New York Times)(pg. A27)

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