

Proposed Changes to NASA's Exploration Program: What's Known,
What's Not, and What are the Issues for Congress?
House Committee on Science and Technology
Subcommittee on Space and Aeronautics
March 24, 2010

Chair: [Gabrielle Giffords](#) (D-AZ) ([opening statement](#))

Ranking Member: [Pete Olson](#) (R-TX) ([opening statement](#))

Witnesses

- Douglas Cooke, Associate Administrator, Exploration Systems Mission Directorate, NASA ([prepared statement](#))
- A. Thomas Young, Lockheed Martin (Ret.) ([prepared statement](#))

Background

President Obama's FY2011 budget request outlined a series of changes in NASA's exploration program, including the cancellation of the Constellation Program – which consists of the development of the Ares I and Ares V launch vehicles and the Orion spacecraft to transport humans to low Earth orbit (LEO) and beyond – and substantial investment to turn over crew transportation to and from LEO to the commercial sector. If approved, NASA would focus on technology development to enable future human space exploration to destinations such as the Moon, [Lagrange points](#), asteroids, or Mars – although specific dates or locations are not outlined in the new plan. This hearing was called to glean further details about the rationale for and impact of these changes, particularly with respect to reliance on the commercial sector as opposed to the government developing a crew transportation system to replace the space shuttle. For more information, see the [charter](#) and [webcast](#) of the hearing.

Nuggets

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Chairwoman Giffords

“I am not convinced that abandoning Constellation is in the nation's best interest.”

Representative Olson

“I believe we are a long way from having a commercial industry capable of satisfying human space transportation needs...The commercial crew option should not be approved.”

Mr. Young

“[W]ithin the current horizon the ultimate destination for human exploration is, of course, Mars.”

Mr. Cooke

Hearing Highlights

This hearing of the House Science and Technology Subcommittee on Space and Aeronautics highlighted that Congress has yet to approve the President’s budget request and the criticisms over insufficient details to inform its decision. “In place of good explanations and solid rationales for such sweeping and frankly puzzling changes, we have been given a combination of unpersuasive arguments and ‘we’re working on the details’ responses,” said Chairwoman Gabrielle Giffords (D-AZ) in her opening statement. She referred to previous hearings with NASA Administrator Charles Bolden saying he “was unable to satisfy many of the concerns of the Committee” and reiterated the need for details on *when, where, and how* the new exploration plans would take the country: “the Congress and the President need to get this one right,” she stated.

In a similar vein, Ranking Member of the Subcommittee, Representative Pete Olson (R-TX), said that “too many people are behaving as if these changes ...are a *fait accompli*.” He cautioned against the perception that Constellation “is dead,” particularly when its cancellation is being so heatedly debated. “That decision is Congress’ to make,” he said, and concluded that “I am not convinced that abandoning Constellation is in the nation’s best interest.”

NASA’s Exploration Systems Mission Directorate Associate Administrator Douglas Cooke outlined the major points of the exploration program’s budget request and said that the Administration’s new plan would allow the agency to focus on developing technologies to enable human exploration beyond LEO. Although unable to provide a date for the first mission to Mars, he said that “within the current horizon the ultimate destination for human exploration is, of course, Mars.” Explaining that he has worked for NASA for 36 years and seen a number of program transitions, Mr. Cooke also said, “I speak from experience when I say change is never easy,” but he offered an optimistic note by expressing confidence that members of the NASA team would deliver the best outcome whatever is asked of them. He added that NASA civil servants should rest assured that the agency has “meaningful work” for them to accomplish if the cancellation of Constellation is approved. He said that there will be funding available for them, though the outlook for the contractor workforce is less sanguine. Mr. Cooke was unable to provide further details on workforce transition plans or the number of jobs to be created if commercial crew is approved by Congress as the new path forward.

A. Thomas Young, Lockheed Martin (ret.), a venerable veteran of the aerospace industry who is often called upon to review civil and national security space programs

that run into trouble, was highly skeptical of the outcome of NASA's new technology development program if it does not have a perceived direction. He argued that usually technology development is conducted to achieve a specific result and outlined the areas of collateral damage that this "significant departure" would produce. He is strongly against relying on commercial crew services, which he described as a "colossal error," and explained that "we are a long way from having a commercial industry capable of satisfying human space transportation needs...The commercial crew option should not be approved." He argued that if the commercial crew approach is adopted and the government does not develop its own human space transportation system, the United States will be without an indigenous human space flight capability for the foreseeable future. That would also provoke the deterioration of the aerospace workforce, which is "not a resource that can be turned on and off."

The logical path forward, argued Mr. Young, is for NASA to develop a transportation system based on the Ares I/Orion system. He said there was "no other alternative as credible" and repeated that "deviating from that course...[is a] significant mistake."

Many subcommittee members also wanted to know about NASA's alleged actions towards cancelling the program. Chairwoman Giffords referenced the FY2010 Consolidated Appropriations Act, which included language prohibiting the use of funds for the termination of the Constellation program or initiation of a replacement program unless directed to do so by Congress in a subsequent appropriations act. She asked how NASA's cancellation of five planned procurements – including a solicitation for the Altair lunar lander conceptual design contracts – was not in contravention of this directive. Mr. Cooke replied that "we are continuing with major work on contracts" and that those specific cancellations were of requests for proposals, not contracts. Mr. Cooke repeated that no contracts have been changed or terminated. He also was asked about letters that reportedly were to be sent to Constellation contractors as early as the next day telling them to hold back some of the funds they have been awarded to cover termination costs. Mr. Cooke said that he had not seen or even knew of the existence of such letters: "we are not going to tell them [the contractors] anything that is not in their contracts." He added that he expected NASA to put out another request for proposal for heavy lift launch technologies in the coming months.

Representative Dana Rohrabacher (R-CA), on the other hand, seemed unconcerned with the lack of details that NASA can currently provide, saying that "we've faced this decision before" and that success in analogous transportation sections –namely railroads and airplanes – resulted from betting on commercial rather than on a government agency or bureaucracy for those services. He expressed support for the commercial crew option and said that the country was "on the verge of a huge step forward into space" by adopting that approach to human space flight.

Mr. Young replied to these comments by explaining that his position was not related to industry itself, but with the assumption that industry can succeed on its own: "industry is not constituted to carry out these things by itself," he said. A more responsible path forward would be a government-industry partnership featuring the "integration of capabilities" that NASA and industry each possess. He reviewed the problems

experienced by the national security space sector in the 1990s when a management approach called Total System Performance Responsibility (TSPR) was instituted where the government told its program managers to "back off" and let industry manage the programs. The results were devastating, he said, and explained that, on average, "we are getting half the program content for twice the cost, 6 years late." To be successful, one needs the "expertise of NASA and the implementation capability of industry," he stressed.

One such area where NASA will need to share its knowledge is human rating standards for commercially developed crew transportation systems. To a question over how long NASA will take to produce such standards, Mr. Cooke said that comments from industry on a preliminary draft will be due by the end of May, and that the publication of human rating requirements would take place by the end of the fiscal year. Although certainly a key step towards reducing the risk associated with these systems, Mr. Young cautioned that standards would not be enough to ensure safety. He said that requirements will not be able to cover every possible failure mode, citing several examples such as the loss of the Mars Climate Orbiter in 1999 which was caused by human error in not converting English units to metric units. He suggested that substantial experience will be needed before commercial crew vehicles are considered safe.

Safety and risk "comfort zones," as well as workforce sustainability concerns will continue to be some of the main issues to be weighed as debate over the President's proposed changes for NASA's exploration program continue. "We haven't closed out the conversation yet," said Representative Donna Edwards (D-MD) at the end of the hearing.