The Case for Space: Examining the Value of Space Exploration

Senate Committee on Commerce, Science, and Transportation
Subcommittee on Science and Space
October 21, 2009

Chair: Bill Nelson (D-FL)
Ranking Member: David Vitter (R-LA)

Witnesses

- Dr. Stephen Katz, Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health (prepared statement)
- Dr. Scott Pace, Space Policy Institute, Elliott School of International Affairs, The George Washington University (prepared statement)
- Dr. Lennard A. Fisk, Vice Chair, Committee on the Rationale and Goals of the U.S. Civil Space Program, Space Studies Board, National Research Council, Thomas M. Donahue Distinguished University Professor of Space Science at the University of Michigan (prepared statement)
- Dr. Jeanne L. Becker, Associate Director, National Space Biomedical Research Institute (prepared statement)
- Ms. Helen Greiner, CEO, The Droid Works (prepared statement)

Background

The Obama Administration is assessing the future of the U.S. civil space program and created a committee chaired by Norman Augustine to look specifically at the human space flight program. The Augustine committee's findings will be important in the ongoing discussion. Its final report will be released on October 22, 2009. A Summary Report was issued by the Augustine committee in September 2009 that identified continued insufficient funding for NASA as the major impediment to a sustainable human space flight exploration program. When considering whether to provide budgetary increases for NASA, Congress and the Obama Administration will consider the benefits obtained through NASA's activities. The purpose of this hearing was to outline and publicize some of the tangible benefits brought about by 50 years of investment in NASA activities. A webcast of the hearing is available.

Nuggets

"We are by nature explorers and adventurers and we've always had a frontier; if we give up that pursuit, we become a second-rate nation."

Chairman Nelson

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"…in this broad context, civil space occupies a central position in the American way of life…it's a wonder we have to defend its value."

Dr. Fisk

"NASA funding is a national competitiveness issue."

Ms. Becker

Hearing Highlights

This Senate Commerce, Science and Transportation's Subcommittee on Science and Space hearing featured detailed discussion on specific benefits of the civil space program in the areas of health, international relations and commercial entrepreneurship. The pervasiveness of space technology and applications and their role in enabling the American way of life were some of the main themes in the discussion, as well as the current opportunity and need for the Obama Administration to set out a clear, driven and appropriately funded strategy for the civil space program – particularly in the area of human space flight.

In his opening remarks, Chairman Nelson spoke with conviction about the broad benefits stemming from NASA, which he said followed from a comparatively small investment. With respect to the International Space Station (ISS), which enabled several of the benefits highlighted during the hearing, he said "its many economic, scientific and economic payoffs are soon to be realized." The Senator stressed, though, that the catalyst for meaningful return is presidential leadership. Ranking Member Vitter highlighted the need to communicate the tangible benefits of space exploration "in a very basic way" to feed into the ongoing discussion of the future space program.

Senator Kay Bailey Hutchison (R-TX), ranking member of the full committee, hinted at some of the health investigations that have been enabled by space exploration, and mentioned specifically that the National Institutes of Health (NIH) were the first to partner with NASA on the ISS back in 2002. Dr. Katz, from NIH, then spoke about this partnership and how it has enabled the medical application of a fiber optic probe, originally developed for the space program, which allows for early identification of cataracts. Dr. Katz also mentioned the heart pump; the original device was an "enormously sized [main-engine] pump from the Space Shuttle" and has now been reduced to a 4 ounce object that can be implanted into people waiting for a heart transplant. In a similar vein, the research done by Dr. Becker's team at the National Space Biomedical Research Institute using astronauts aboard the ISS has enabled the early stages of development of a salmonella vaccine. According to Dr. Katz, the research that spawned these important applications has been driven by an interest "in what space can teach us and has taught us about human health." If the Obama Administration decides to continue the ISS beyond 2016, that will enable continued research and discoveries in these fields.

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George Washington University's Scott Pace underscored the international aspects of national space policy, specifically the important and positive relationships that have been tested and strengthened through the ISS program – which he called a "true international partnership." He stressed the need to think beyond ISS to sustain international leadership and support those relationships. Dr. Pace stressed that lack of direction will not only reduce U.S. leadership, but may cause it to miss the opportunity to shape the increasingly international space environment.

Dr. Lennard Fisk, vice-chair of a National Research Council study on the rationale and goals of the U.S. civil space program, America's Future in Space: Aligning the Civil Space Program with National Needs, said that while experiments aboard the ISS have proven incredibly beneficial, the United States must look beyond that or risk "stepping back" from what he called "our image of a nation at the forefront, pressing the frontier."

That leadership is also sustained in the commercial sector, a sentiment that Dr. Greiner, CEO of the Droid Works, expressed. The success of her company and the U.S. robotic industry has been in large part enabled by NASA's support, she said. To highlight the growth of the robotic industry, Dr. Greiner mentioned, for example, the Department of Defense's use of robots in Afghanistan, which "have saved the lives of hundreds of soldiers and thousands of civilians". As a result of NASA's early support in the industry, the "U.S. is leading the world in robotics."

The discussion made evident that there are several important contributions that stem from space activities and affect our daily lives. Senator Vitter joked that it could be thought of as a slogan that is opposite to the famous comment about Vegas -- "what happens in space does not stay in space." This statement bluntly captured the feeling that since space is evidently useful and important to everyday citizens, why was this hearing necessary to highlight its value? It may be because space is so "endemic" in today's society, ventured Dr. Fisk, that its value is sometimes overlooked or taken for granted. Drawing from the NRC report on America's Future in Space, Dr. Fisk reiterated the "centrality" of civil space in the American lifestyle. When asked whether the government changes suggested in the NRC report should be geared towards the resurrection of a National Space Council at the White House to coordinate U.S. space policy, Dr. Fisk said that while that is an option, the key is to create a mechanism that the President wants and will use to ensure the proper coordination between the space program and national goals.

There appeared to be consensus on the important task of the Administration to determine the future course of the U.S. civil space program. According to Dr. Fisk, the lack of a "cohesive national space strategy" should be addressed by understanding how "space can help ensure America's future." This task can only begin by integrating the real positive benefits accrued by the civil space program and considering those that it may facilitate in the future.

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