

**OPENING STATEMENT OF GEORGE T. WHITESIDES  
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**BEFORE THE  
SUBCOMMITTEE ON SPACE, AERONAUTICS, AND RELATED SCIENCES  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE**

**Hearing on  
“Reauthorizing the Vision for Space Exploration”**

**May 7, 2008**

Chairman Nelson, Ranking Member Vitter, and members of the subcommittee:

Thank you for the opportunity to share with you the views of the National Space Society on the upcoming reauthorization of NASA.

I serve as the Executive Director of the National Space Society (NSS). NSS is an independent, grassroots organization with over 20,000 members, founded with the goal of promoting space exploration and development. Our members are citizens who live and work in every state in our great country, but I should note that we have some of our strongest chapters in Florida. In preparation for this testimony, we solicited their views on these issues, and the members responded with eloquent and nuanced comment on future space activities. I will share some of their words with you as part of this statement.

NSS was founded over 30 years ago by a group of leading Americans that included Wernher von Braun and Hugh Downs. Their vision, and that of our current governors, such as John Glenn, Tom Hanks, and Buzz Aldrin, continues to inspire us today. The ultimate vision of the society is:

“People living and working in thriving communities beyond the Earth, and the use of the vast resources of space for the dramatic betterment of humanity.”

While the first part of that vision emphasizes exploration and settlement of space, the second emphasizes how the resources of space can be used to improve life on Earth. These are both crucial, as I will discuss in more detail below, for they hold the key to the long-term future of the agency and its mission.

As one of those members wrote to me just a few days ago, America is facing a new “Space Nexus”, a critical transition similar to the situation after Apollo. “We must make sure the US makes wise choices so that, on the other side of the Nexus, we will have a robust, flexible space launch capability that will allow us to pursue a variety of goals. We must avoid the mistakes we made at the end of Apollo, in which we carelessly discarded capabilities, infrastructure, and most importantly human talent.”

Recognizing that our full statement will be entered into the record, we would like to share the following three major recommendations for the Reauthorization, as you consider how to guide NASA through the challenging future:

**First, the Vision for Space Exploration should be reauthorized by the Congress.** Endorsed with bipartisan support in 2005, the Vision sets out an inspiring path towards human habitation and use of the

solar system. It builds on the hard-won wisdom following the Columbia accident: that the risk faced by American astronauts deserves a worthy goal: the exploration of the Moon, Mars and beyond.

It has been said that a thousand years in the future, our era will be remembered most for the birth of spaceflight, the moment in human history when we developed the ability to travel to space. It is humanity's ultimate destiny to explore the universe, to develop the ability to live for extended periods off planet Earth, and eventually, to build communities in space.

But we live in the present, and together we must confront the three interlinked challenges of our time:

- Education, competitiveness, innovation and our economy;
- Energy, resources, climate, and environmental protection;
- Security, diplomacy, and peace.

**Space is a key part of the solutions to all of these present-day, national challenges.** That fact is something that we do not hear enough of today, and it is critical to ongoing public support for future space activities. What America must understand is that the full breadth of NASA's skills, people and technologies will be required to meaningfully respond to and solve the biggest challenges of our time.

NASA can be the keystone to the future of America, central to the great challenges of the present, essential to solving the issues that Americans care most about. But only if we can put forward a bold program that links the needs of Earth with the potential benefits of space.

- To strengthen the Vision's sustainability, we would recommend that Congress direct via the Authorization that the work of human and robotic exploration should be conceptually and programmatically linked with solutions to the pressing challenges of planet Earth, particularly those issues related to climate, energy and the environment. Full recommendations for how that linkage could be made can be found in our full statement.

**Second, the most urgent space issue our nation faces in the next years is the human spaceflight gap** between the retirement of the Space Shuttle and the start of Constellation Program operations.

Jerry Carr, Commander of the final Skylab flight – a man who knows about such issues firsthand – wrote me the following comments just a few days ago:

“I thought that we had learned the lesson during the seven-year hiatus between the Apollo and Shuttle programs. A huge body of NASA and contractor skill and experience just left to do something else. Then the workforce had to be built up all over again at no mean cost in order to proceed with the Shuttle and Space Station programs.

Curtis Schroeder, a member from Atlanta, Georgia, put it this way:

“We cannot outsource our manned space flight needs to other countries if we are to be a world leader.”

Another gap is indeed upon us. NSS believes that this committee should make that gap as short as possible, and should use multiple means of doing so.

**We recommend that NASA receive an authorized budget addition of \$2 billion** this coming fiscal year. With these funds, Congress could shorten the gap, fund the development of multiple launch

vehicles, and reimburse NASA for the expenses it sustained in adding safety systems to the Shuttle following the Columbia accident. NASA is significantly underfunded if it is to achieve the VSE without damage to other worthy efforts, particularly if it is to engage in new climate and energy efforts.

### **Fund Acceleration of the Constellation Program**

NASA and its contractor team are well on their way toward development of the Ares I launch vehicle and Orion capsule. Starting over or even stopping to re-evaluate the designs would further extend the gap. Therefore, we believe NASA should receive the resources it needs to develop the Ares/Orion architecture as it now stands on an accelerated schedule.

### **Authorize and Fund COTS Option D**

In addition to supporting NASA's current efforts to reduce the gap, NSS favors providing additional funding for commercial development of crew transportation to the International Space Station. Once SpaceX, Orbital, or other providers begin to show results, it is incumbent upon NASA to select those services to support ISS, with Ares and Orion providing the backup. If the private sector is truly able to generate the economies of scale necessary to dramatically reduce the cost of LEO access, it would truly be a waste of highly capable exploration hardware to make those trips.

**Third, we recommend that the Authorization reiterate that NASA should, wherever possible, purchase commercial services,** particularly as they relate to requirements short of the exploration frontiers. Buying services encourages the innovative powers of the American entrepreneurial spirit (in small and large companies), creating dynamics that over time will grow our economy, lower the cost of space access, and enable NASA to focus its own efforts and funds on exploration of the frontiers.

The Senate should commend NASA's leadership for its active pursuit of services, including in particular COTS, parabolic flight, and the new area of suborbital flight services. ISS servicing competition, and the COTS demonstration program, are the leading examples of potential service purchases. Three other areas that deserve attention are suborbital services, parabolic flight and Centennial Challenges.

- **Suborbital Commercial Vehicles** – Suborbital commercial spaceflight will transform the public's relationship with space, and unlock new opportunities for scientists and astronauts to fly to space with unprecedented frequency. These advantages have been recognized and supported in multiple speeches by NASA Administrator Michael Griffin. These new vehicles will serve as platforms for critical climate science research, and offer space professionals authentic space training at higher volumes and a fraction of the cost of orbital spaceflight.

This program should be supported via Congressional authorization, receive appropriations as part of the new NASA initiative in suborbital flight, and be encouraged to expand, for it offers students and researchers the chance to operate space experiments affordably and at high flight rates. It will also encourage a new generation of young people to pursue science and engineering degrees, knowing that they have a good chance to fly to space. Additionally, the US astronaut corps may find it valuable for space training, particularly during the gap in American orbital spaceflight capability.

- **Parabolic Flight:** NASA has recently engaged an outside provider of parabolic flight services after a lengthy competition. This direction is the right direction for the agency, because outside companies can defray their costs over multiple customers, saving the government money while building commercial American capability. The Senate should support this activity, and encourage the agency to pursue similar efforts.

- **Centennial Challenges** – While not a traditional service, the Centennial Challenges program rewards individuals or groups for the performance of a set goal, the same structure as a service. Congress should reinforce the important role Centennial Challenges can play in developing new technologies and capabilities critical to NASA’s mission, and in creating economic benefit for taxpayers. This is a relatively low-cost, low-risk way for the government to obtain the benefits of new technology, paying only for success.

I will close with four areas in which NASA could make highly leveraged investments that could generate significant ‘return’, in economic utility, public support, and global health and welfare, and which we recommend should be endorsed in the Reauthorization:

**A. Space Solar Power**

Space-based solar power, supported by lunar resources and human settlements in space, is a solution that could one day have tangible benefits directly affecting all Americans, and is a strategic goal worthy of our imaginations and national spirit. While SSP is not a short-term solution for national energy production, the nation must begin investing in such technologies at higher levels, so that we will be ready for transitions away from traditional fuel sources in the decades to come. Congress should authorize NASA and related agencies to perform a new study of the Space Solar Power concept, and to create a space-based solar power prototype satellite, to be operated in Earth orbit or at the International Space Station.

**B. Participatory Exploration Activities**

As a tactical and practical matter, NASA must integrate public participation meaningfully at the initial design phases of its missions. This means using the tools of the Internet as means of allowing private citizens access and input into future exploration missions. This goes beyond the simple distribution of images via the Web, to an era in which the public truly experiences space exploration, in real-time and in high resolution. Participatory exploration offers the opportunity for NASA and other space organizations to redefine the public’s relationship with exploration, and energize the public about space exploration goals and missions.

**C. Global Climate Change Initiative**

NASA may be the most well-equipped agency in the world to help to solve the monumental challenge facing our generation: climate change. NASA was instrumental in diagnosing the problem, and now is well equipped to help ameliorate it.

- The connections between NASA and the Earth’s environment are deep and powerful. NASA is one of the world’s foremost climate change research organization, producing more climate data than any institution on Earth. It also possesses world-class engineering capabilities. There is growing agreement that NASA must make climate and energy research more central to its mission and purpose, and that NASA can play a central global role connecting scientific results with solutions for the planet. The work of certain NASA centers to initiate this work, as well as the new mission starts, should be encouraged by Congress.

**D. Planetary Defense**

There are vast numbers of asteroids in near-Earth orbits. Though it may seem unlikely, if we do nothing, sooner or later we will be hit by an asteroid large enough to threaten life on Earth. Given the nature of this threat, the space program is a logical place to start developing strategies for overcoming it. This is environmental protection of the highest order.

Thank you for the invitation to share the perspectives of the members of NSS with you today. I look forward to your questions.