

*NASA Advisory Council*  
National Aeronautics and Space Administration  
Washington, DC 20546

Dr. Steven W. Squyres, Chairman

August 14, 2012

Mr. Charles F. Bolden, Jr.  
Administrator  
National Aeronautics and Space Administration  
Washington, DC 20546

Dear Administrator Bolden:

The NASA Advisory Council held a very productive public meeting at NASA Goddard Space Flight Center in Greenbelt, Maryland, July 25-27, 2012.

As a result of its deliberations, the Council approved nine recommendations and eight findings. They are enclosed for your consideration. If you have any questions or wish to discuss further, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Squyres', with a long horizontal line extending to the right.

Steven W. Squyres  
Chairman

Enclosures

## NASA Advisory Council Recommendation

### Space Basic Research (Engineering Science) Program 2012-02-01 (TIC-01)

**Name of Committee:** Technology and Innovation Committee

**Chair of Committee:** Dr. William Ballhaus

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** Space Basic Research (Engineering Science) Program

**Recommendation:** The Council recommends that NASA establish a space basic research (engineering science) program relevant to its long-term needs and goals.

- The Council suggests that the Chief Technologist collaborate with the Chief Scientist and the Chief Engineer to establish formal guidance and to consolidate, and seek future funding for, space basic research in engineering science. The Council further suggests that NASA begin by managing the Agency's space basic research portfolio as a pilot activity that is funded separately from the Space Technology Program, similar to how the Office of Chief Technologist coordinates the Agency's technology portfolio.

**Major Reasons for the Recommendation:** The Council recognizes that the distinction has been established between basic research and technology. NASA's technology programs now have advocacy and, in the form of the Strategic Space Technology Investment Plan (SSTIP), strategic guidance. However, basic research (or engineering science) that may lead to the development of technology and engineering tools is no longer explicitly part of NASA's technology enterprise, which focuses on *applying* the disciplines of engineering science to synthesize a *device, process or subsystem* to enable a specific capability.

**Consequences of No Action on the Recommendation:** Erosion of NASA's research and technology capabilities.

## NASA Advisory Council Recommendation

### Workforce Skill Mix 2012-02-02 (CSC-01)

**Name of Committee:** Commercial Space Committee

**Chair of Committee:** Ms. Patti Grace Smith

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** Workforce Skill Mix

**Recommendation:** The Council recommends that as NASA evolves its workforce skill mix and human capital planning to accommodate the Agency's future direction in the post Space Shuttle era, the unique skills needed for effectively overseeing commercialization initiatives should be considered and secured.

**Major Reasons for the Recommendation:** Clearly, NASA will need many of the same skills that flew Space Shuttle safely to manage their commercial launch providers and ensure commercial crew transportation safety. However, overseeing commercialization initiatives also requires skills and experience in areas such as business development, business analysis, and business operations, which do not appear to be currently available in great depth in the Agency. NASA should address this gap through training, recruitment, and/or other personnel actions.

**Consequences of No Action on the Recommendation:** The Agency's workforce will continue to lack the depth in some critical skills and experience needed to effectively oversee commercial space initiatives.

## NASA Advisory Council Recommendation

### Elevation of Communications Coordinating Committee 2012-02-03 (EPOC-01)

**Name of Committee:** Education and Public Outreach Committee

**Chair of Committee:** Mr. Lars Perkins

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** Elevation of Communications Coordinating Committee

**Recommendation:** The Council recommends that building on the success of the Education Coordinating Committee (ECC), the Communications Coordinating Committee (CCC) should be elevated to a Council, moving it from a coordination role to strategic and decisional function.

**Major Reasons for the Recommendation:** The ECC has been successful in bringing together Center education resources to coordinate their activities and present a higher profile, integrated presences to the public. A similar opportunity exists now for communication.

**Consequences of No Action on the Recommendation:** Duplicative messaging to the public, lack of message coordination, less “wood” behind more “arrows,” leading to public confusion.

## NASA Advisory Council Recommendation

### Education and Public Outreach Centers of Excellence 2012-02-04 (EPOC-02)

**Name of Committee:** Education and Public Outreach Committee

**Chair of Committee:** Mr. Lars Perkins

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** Education and Public Outreach Centers of Excellence

**Recommendation:** NASA should identify "centers of excellence" for Education and Public Outreach (EPO) activities with which project teams can coordinate when developing their EPO programs. These should include (but not be limited to): social media, web site design, app development, data visualization, and video production.

**Major Reasons for the Recommendation:** Lower costs, reduce duplication of effort, share best practices, move towards consistency in communication style and usability.

**Consequences of No Action on the Recommendation:** NASA will overspend as it continues to "reinvent the wheel" as each project/mission develops its own online, mobile and social presence. The various implementations may "speak with different voices" and not be aligned with NASA's overall strategic goals.

## NASA Advisory Council Recommendation

### One Message 2012-02-05 (EPOC-03)

**Name of Committee:** Education and Public Outreach Committee

**Chair of Committee:** Mr. Lars Perkins

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** One Message

**Recommendation:** The Council recommends that NASA should develop one overarching message under which all NASA activities and programs (e.g., Aeronautics) can be integrated and presented to the public. All NASA websites, videos, apps, and social media should be consolidated and be organized thematically under this message and exposed via [www.nasa.gov](http://www.nasa.gov).

**Major Reasons for the Recommendation:** The public is exposed to NASA activities through various channels and without a unifying conceptual framework, leading to confusion about NASA's identity and purpose. Some activities (e.g., Aeronautics Research Mission Directorate) have little public awareness.

**Consequences of No Action on the Recommendation:** Continuing public confusion about NASA's mission and direction, leading to eroding public support and marginalization of NASA's societal value.

## NASA Advisory Council Recommendation

### Systems Integration 2012-02-06 (HEOC-01)

**Name of Committee:** Human Exploration and Operations Committee

**Chair of Committee:** Mr. Richard Kohrs

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Recommendation:** Systems Integration

**Recommendation:** Integration among the Space Launch System (SLS), Orion, and Ground Systems programs requires definition and implementation. The Council recommends that a small team of experienced integrators, led by an empowered, accountable and responsible leader, should be established to ensure adequate integration of the three programs.

**Major Reasons for the Recommendation:** Integration at the NASA Headquarters level appears to be insufficient to ensure schedule, technical and cost performance of the system composed of the three separate programs.

**Consequences of No Action on the Recommendation:** Due to lack of adequate integration of the three programs, design and configuration disconnects will be identified late resulting in cost overruns, schedule slips and risk to mission.

## NASA Advisory Council Recommendation

### New Telescope Assets 2012-02-07 (SC-01)

**Name of Committee:** Science Committee

**Chair of Committee:** Dr. Wesley Huntress (*Dr. David McComas, Acting Chair*)

**Date of Council Public Deliberation:** July 27, 2012

**Short Title of Recommendation:** New Telescope Assets

**Recommendation:** The Council recommends that NASA should study possible scientific uses of the National Reconnaissance Office (NRO) - donated telescope assets, to see whether it can capitalize on this opportunity or not, exploring possible applications to high priority science identified in the various Decadal surveys in consultation with the broad scientific community.

**Major Reasons for the Recommendation:** The donation appears to involve very high quality telescope assets with excellent capabilities, better than the best NASA ultraviolet/near-infrared telescopes operating in space today (e.g., the Hubble Space Telescope). The telescope assets could leverage the limited budget available for NASA science in the coming decade, for a much greater scientific reach than would otherwise be possible.

**Consequences of No Action on the Recommendation:** In order to decide how best to respond to the transfer of telescope assets, NASA needs to understand – much better than it currently does – the possible scientific uses of these assets, considering possibilities across the Science Mission Directorate disciplines. Without more study, NASA’s decision will be made in the absence of this crucial information.

## NASA Advisory Council Recommendation

### Independent Assessment of Cross-Directorate Mars Exploration 2012-02-08 (SC-02)

**Name of Committee:** Science Committee

**Chair of Committee:** Dr. Wesley Huntress (*Dr. David McComas, Acting Chair*)

**Date of Council Public Deliberation:** July 27, 2012

**Short Title of Recommendation:** Independent Assessment of Cross-Directorate Mars Exploration

**Recommendation:** The Council recommends that NASA arrange for independent, authoritative assessment and advice through the National Research Council about the newly established cross-Directorate partnership for the exploration of Mars.

**Major Reasons for the Recommendation:** NASA needs the broad support of the U.S. space enterprise to realize the promise of success for Mars exploration during the next several decades. An independent assessment body will provide strategic guidance to Mars program plans, ensuring that goals are well connected to the priorities and strategies laid out in the Decadal Reports.

**Consequences of No Action on the Recommendation:** NASA will be less able to integrate the goals of different stakeholder communities and garner the broad support of the space community for the Mars exploration program.

## NASA Advisory Council Recommendation

### Embracing the President's Export Control Reform 2012-02-09 (SC-03)

**Name of Committee:** Science Committee

**Chair of Committee:** Dr. Wesley Huntress (*Dr. David McComas, Acting Chair*)

**Date of Council Public Deliberation:** July 27, 2012

**Short Title of Recommendation:** Embracing the President's Export Control Reform

**Recommendation:** The Council recommends that NASA even more fully embrace and support the ongoing President's Export Control Reform (ECR) effort. To ensure that open scientific and international collaboration is enable to the maximum extent possible, the Council further recommends that NASA convene a discussion with the academic and non-profit community on the effects of current export control restrictions on international research and research projects that include foreign nationals.

**Major Reasons for the Recommendation:** In carrying out its role as the preeminent space agency in the world, NASA engages in foreign collaborations in many of its programs, projects, and missions. Mutual exchanges of knowledge and know-how in civil space technologies are an important part of these cooperative efforts. Additionally, NASA science is carried out in universities, field centers, non-profits, and other organizations where foreign students and researchers are engaged in order to make these organizations and NASA the best they can be. These critical interactions have been adversely effected and in some cases completely inhibited by the current export control regime.

**Consequences of No Action on the Recommendation:** NASA will spend more money, have less robust programs, and miss important leadership opportunities.

**NASA Advisory Council Finding**  
**NASA/FAA Coordination and Collaboration**

**Name of Committee:** Aeronautics Committee

**Chair of Committee:** Ms. Marion Blakey

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** NASA/FAA Coordination and Collaboration

**Finding:** The Council commends the strong coordination and collaboration between NASA and the Federal Aviation Administration (FAA) in air traffic management research. In particular, the Council finds that the use of research technology transition teams (RTTs) by NASA and the FAA are a key component that enables NASA research to be integrated with stakeholder needs and facilitates the successful transition of research technologies into an operational environment. The Council encourages NASA to continue to foster a strong collaborative environment with the FAA as it moves forward with plans for air traffic management technology demonstrations within the Airspace Systems Program.

## NASA Advisory Council Finding

### Integration of Unmanned Aircraft Systems Into the National Airspace System

**Name of Committee:** Aeronautics Committee

**Chair of Committee:** Ms. Marion Blakey

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Integration of Unmanned Aircraft Systems Into the National Airspace System

**Finding:** The Council is pleased that the NASA Aeronautics Research Mission Directorate (ARMD) is working to address the challenges of the integration of Unmanned Aircraft Systems (UAS) into the National Airspace System (NAS). Given the complex issues surrounding UAS, the Council has found very valuable the work of the UAS Subcommittee which is able to delve into issues in greater depth with NASA staff. The Council endorses the continued work of the Subcommittee and looks forward to further discussions between the Subcommittee and NASA.

In its review of the UAS integration into the UAS project, the UAS Subcommittee reported that the project appeared to lack an overall systems engineering approach to addressing the challenges to UAS integration. This is a cause of concern for the Council as it is important to handle the transition of integration of UAS into the NAS in a stepwise, systematic approach. The Council strongly believes that the project needs to take a rigorous overall systems engineering approach to ensure that the right steps are identified and the activities within the project are better coordinated.

## **NASA Advisory Council Finding**

### **Education and Public Outreach for NASA's Aeronautics Programs**

**Name of Committee:** Aeronautics Committee

**Chair of Committee:** Ms. Marion Blakey

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Education and Public Outreach for NASA's  
Aeronautics Programs

**Finding:** The Council notes and applauds NASA's proactive Education and Public Outreach initiatives. We note, however, that the Aeronautics programs are not frequently prominently featured or highlighted in these initiatives. The general public and NASA could benefit from understanding the scope and depth to which the Aeronautics activities at NASA contribute to the nation's aviation economy.

**NASA Advisory Council Finding**  
**Strategic Space Technology Investment Plan**

**Name of Committee:** Technology and Innovation Committee

**Chair of Committee:** Dr. William Ballhaus

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Strategic Space Technology Investment Plan  
(SSTIP)

**Finding:** The Council agrees with the content and strategy of the SSTIP as the Agency's space technology strategic plan moving forward. The Council offers two suggestions: (a) simplify the description of the plan in the SSTIP; and (b) reorganize the SSTIP to emphasize what the plan is, and de-emphasize how it was delivered.

## NASA Advisory Council Finding

### Implementation of Commercial Space Policy at NASA Centers

**Name of Committee:** Commercial Space Committee

**Chair of Committee:** Ms. Patti Grace Smith

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Implementation of Commercial Space Policy at NASA Centers

**Finding:** The Council finds that Kennedy Space Center sets an excellent example of how to gain acceptance by employees and contractors of the commercial space policy—specifically, commercial space initiatives at the center director level, including documents like the KSC Director’s Planning Guidance, 2011.

## NASA Advisory Council Finding

### Access to Draft Legislation

**Name of Committee:** Commercial Space Committee

**Chair of Committee:** Ms. Patti Grace Smith

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Center Director Concerns

**Finding:** The Committee finds that there is concern at the Center Director level that before proposed legislative material leaves the Agency for further vetting and consideration, a review by Center Directors would be desirable.

## NASA Advisory Council Finding

### Commercial Crew Program Office Size and Involvement

**Name of Committee:** Commercial Space Committee

**Chair of Committee:** Ms. Patti Grace Smith

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Commercial Crew Program Office Size and Involvement

**Finding:** The Council finds that the success of NASA's commercial space initiatives critically depends on how well the Agency manages the government-to-industry interfaces and the level of involvement of the governing program offices.

## NASA Advisory Council Finding

### Education Coordinating Committee Success

**Name of Committee:** Education and Public Outreach Committee

**Chair of Committee:** Mr. Lars Perkins

**Date of Council Public Deliberation:** July 26, 2012

**Short Title of Finding:** Education Coordinating Committee

**Finding:** The Council finds that the Office of Education should be recognized for its initiative in creating the Education Coordinating Committee (ECC), and for its success in driving closer collaboration between the NASA Centers' education activities. As an example, we applaud the planned multi-center Curiosity@NASASocial event. In the future, we strongly encourage NASA senior management to support the ECC's oversight role.