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

Dr. Steven W. Squyres, Chair

January 22, 2015

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

Dear Administrator Bolden:

The NASA Advisory Council held its first public meeting of 2015 at NASA Stennis Space Center in Mississippi, January 14-15, 2015. This meeting had been originally scheduled to be held at NASA Stennis Space Center on December 8-9, 2014, but was postponed by one month due to schedule constraints related to the Orion Exploration Flight Test-1 (EFT-1) launch taking place during that period.

We appreciated very much the considerable time you spent with the Council during our meeting. As a result of our deliberations, and in accordance with our "two-tier" approach for transmitting recommendations and findings to the NASA leadership, the Council approved two Council recommendations and one Council finding for your consideration (enclosed). The Council also approved three Committee findings for consideration by the respective NASA Associate Administrators. Copies of the latter also are enclosed for your information and awareness.

If you have any questions or wish to discuss further, please contact me.

Sincerely,

Steven W. Squyres
Chair

Enclosures

NASA Advisory Council Recommendation

Asteroid Redirect Mission
2015-01-01 (Council-01)

Name of Committee:	NASA Advisory Council
Chair of Committee:	Dr. Steven Squyres
Date of Council Public Deliberation:	January 15, 2015
Short Title of Recommendation:	Asteroid Redirect Mission

Recommendation: The Asteroid Redirect Mission (ARM) has two objectives that are particularly important contributors to Humans to Mars (H2M): Large scale solar electric propulsion (SEP) and maneuvering in a low gravity environment in deep space. As work on ARM goes forward and costing is completed, focus on a mission architecture that will preserve these two key H2M objectives if the redirection of an asteroid must be descoped.

Major Reasons for Proposing the Recommendation: The specific ARM objective of capturing part or all of a small asteroid contributes little to the long-term goal of H2M, contributes only peripherally to planetary defense, and may add a great deal of cost, resulting in exceeding the suggested $1.25B budget cap.

Consequences of No Action on the Proposed Recommendation: There is a risk that meeting a full set of requirements that includes capturing an asteroid will cause the ARM cost cap to be exceeded, resulting in either a) the cancellation of the entire project, including the very important H2M objectives, or b) the budgetary "goalposts" moving and budget overruns that will threaten other programs.

NASA Advisory Council Recommendation

Over-Application of Travel Restrictions
2015-01-02 (SC-01)

Name of Committee:	Science Committee
Chair of Committee:	Dr. David McComas
Date of Council Public Deliberation:	January 15, 2015
Short Title of Recommendation:	Over-Application of Travel Restrictions

Recommendation: The Council recommends that NASA change its definition of the class of persons (specifically, "contractors") who are subject to the travel restrictions externally mandated for Civil Servants. This definition could continue to provide travel controls on those personnel that NASA considers appropriate (for example, scientists at specific institutions), but should not include others, such as those at most universities, non-profits, and private companies funded through mission contracts.

Major Reasons for Proposing the Recommendation: The Council finds that the broad definition of "contractor" with respect to the application of travel restrictions using NASA funds has resulted in significant loss of efficiency and scientific productivity across the science community. This broad loss of efficiency and productivity is unnecessary and solely driven by what appears to be NASA's internal choice to expand the group included in the mandated travel restrictions. Regular and open communication between scientists and technologists is essential for healthy and productive research. Although electronic and virtual means of communication play an increasing role in interacting with colleagues and can accommodate much routine project activity, they cannot replace face-to-face interactions. Specific examples include the much-valued give-and-take of vibrant (sometimes heated) discussions, insight derived from multiple ideas being discussed spontaneously, informal (often unplanned) interactions and brainstorming that occurs before or after a presentation. These in-person contacts are extremely cost-effective and are key components in productive scientific interactions.

Consequences of No Action on the Proposed Recommendation: Scientists not normally considered as NASA employees, and not required by external mandates, will continue to be included in the travel restrictions, which will continue to lead to significant loss of efficiency and scientific productivity for NASA.

NASA Advisory Council Finding

Domestic Hydrocarbon Rocket Main Engine

Name of Committee:	Technology, Innovation and Engineering Committee
Chair of Committee:	Dr. William Ballhaus
Date of Council Public Deliberation:	January 15, 2015
Short Title of Finding:	Domestic Hydrocarbon Rocket Main Engine

Finding: The Council believes that it is important for NASA and the nation to assess the need for a new domestic alternative to the currently available foreign hydrocarbon rocket main engines, and to invest accordingly. The Council also believes NASA can and should play a key role in this activity, especially in the development and understanding of advanced materials and metallurgy technologies for a future domestic hydrocarbon rocket main engine.

NASA Advisory Council – Committee Finding

Human Exploration and Operations Committee Finding
to NASA Associate Administrator for
Human Exploration and Operations Mission Directorate

Expanding the NASA Research Community

Name of Committee:	Human Exploration and Operations Committee
Chair of Committee:	Mr. Kenneth Bowersox
Date of Council Public Deliberation:	January 15, 2015
Short Title of Finding:	Expanding the NASA Research Community

Finding: The Human Exploration and Operations Committee endorses the NASA Human Exploration and Operations Mission Directorate effort to broaden participation in the NASA research community evidenced by the recent NASA Research Announcement in Space Biology, in which 75% of the submitted proposals were from principal investigators new to Space Biology, and 62% of the awards were to new principal investigators. This result followed a year of effort at major scientific conferences to publicize the opportunity to conduct biological research on the International Space Station. Broadening the community and engaging the best new ideas for research from the nation's scientists will greatly strengthen the foundations of space research and enhance the productivity of NASA's investments. NASA should continue to seek to bring in new investigators, within the limits of its available resources, and continue to track this metric.

NASA Advisory Council – Committee Finding

Aeronautics Committee Finding
to NASA Associate Administrator for
Aeronautics Research Mission Directorate

Unmanned Aerial System Traffic Management

Name of Committee:	Aeronautics Committee
Chair of Committee:	Ms. Marion Blakey
Date of Council Public Deliberation:	January 15, 2015
Short Title of Finding:	Unmanned Aerial System Traffic Management

Finding: The Aeronautics Committee supports the approach that the NASA Aeronautics Research Mission Directorate (ARMD) has taken toward establishing a research effort for Unmanned Aerial System Traffic Management. In particular, ARMD efforts taken thus far to proactively engage the right stakeholders and partners in the process will be critical to reducing implementation barriers. The Committee encourages ARMD to broaden the scope of community engagement even further to enlist all stakeholders in being part of the solution and helping to enable a broader acceptance of this important area of aeronautics research.

NASA Advisory Council – Committee Finding

Aeronautics Committee Finding
to NASA Associate Administrator for
Aeronautics Research Mission Directorate

Aeronautics Research Mission Directorate Program Restructure and Aviation Safety Research, Especially Verification and Validation

Name of Committee:	Aeronautics Committee
Chair of Committee:	Ms. Marion Blakey
Date of Council Public Deliberation:	January 15, 2015
Short Title of Finding:	Aeronautics Research Mission Directorate Program Restructure and Aviation Safety Research, Especially Verification and Validation

Finding: The Aeronautics Committee endorses the current NASA Aeronautics Research Mission Directorate (ARMD) program restructuring, but stresses that critical areas of aviation safety research need to be maintained as the former Aviation Safety Program elements are transitioned in the new structure. The Committee finds that it is especially imperative for ARMD to maintain its commitment to research in verification and validation since this is a critical national need and an important area of work for NASA.