

NASA ADVISORY COUNCIL
National Aeronautics and Space Administration
Washington, DC 20546
Hon. Harrison H. Schmitt, Chairman

November 21, 2006

The Honorable Michael D. Griffin
Administrator
National Aeronautics and Space Administration
Washington, DC 20546

Mike
Dear Dr. Griffin:

The NASA Advisory Council held our first meeting of the new fiscal year on October 12, 2006 at the Goddard Space Flight Center (GSFC) in Greenbelt, Maryland. While at GSFC, the Council heard briefings on various aspects of NASA's policies and plans and received an engaging and educational tour of the facilities.

The public meeting was a busy one and, following deliberation among all of the members, three recommendations were approved for transmittal to you from the Council. For ease of reference, the recommendations below are arranged by the committee from which they originated.

Aeronautics

- 1) NASA should establish a TPS technology consortium with experts from the Department of Defense (DoD), other government agencies, industry and academia similar to the Integrated High Performance Turbine Engine Technology (IHPTET) consortium. The TPS consortium should enable NASA to leverage its TPS research and development by fostering personnel and project interactions at all levels, formal and informal, particularly among engineering staff. Clear milestones for specific interactions should be established and tracked. (A-06-4)

Science

- 2) NASA should conduct selected planetary mission concept and technology costing studies to determine whether future Europa Orbiter, Enceladus Explorer, and Titan Explorer missions can be fit into the New Frontiers class or if they instead require flagship-class missions. (S-06-9)
- 3) NASA should develop a process to expand and reassess the field of solicited mission candidates for the New Frontiers mission line prior to each New Frontiers solicitation. NASA should engage the science community in this reassessment of targets/missions prior to the creation of each Announcement of Opportunity for New Frontiers. (S-06-10)

If there are any questions on the above recommendations or the attached background material, please contact me. It is the Council's intention to assist in the tracking of the disposition of each recommendation. If, in your judgment, any recommendation should be re-considered by the Council, please let me know and provide the rationale for such re-consideration.

Best Regards,



Harrison H. Schmitt
Chairman

Enclosures (3)

NASA Advisory Council
Committee Recommendations
Tracking Number: A-06-4

Committee Name: Aeronautics

Chair: Neil Armstrong

Date of Public Deliberation: October 12, 2006

Date of Transmission: November 21, 2006

Short title of the proposed Recommendation

Establish a Thermal Protection System (TPS) technology consortium

Short description of the proposed Recommendation

NASA should establish a TPS technology consortium with experts from the Department of Defense (DoD), other government agencies, industry and academia similar to the Integrated High Performance Turbine Engine Technology (IHPTET) consortium. The TPS consortium should enable NASA to leverage its TPS research and development by fostering personnel and project interactions at all levels, formal and informal, particularly among engineering staff. Clear milestones for specific interactions should be established and tracked.

Major reasons for proposing the Recommendation

Current research and development in TPS is of vital need to continued NASA as well as other civil and military aerospace endeavors, particularly for final design and production of the Orion Crew Exploration Vehicle (CEV). Collaboration between NASA, DoD, other government agencies, industry and academia will provide the best and most efficient use of taxpayer funds with respect to conducting TPS research and development. Collaboration will prevent research and development duplication and encourage leveraging of common work, assuring that NASA is fully informed of all relevant research activities.

Consequences of no action on the proposed Recommendation

Without a consortium, duplicative research and development within the Government and in the external community will likely be conducted and the best use of taxpayer funds will not be achieved. NASA will not be able to leverage its research and development off that of other agencies.

NASA Advisory Council
Committee Recommendations
Tracking Number: S-06-9

Committee Name: Science
Chair: Edward David
Date of Public Deliberation: October 12, 2006
Date of Transmission: November 21, 2006

Short title of the proposed Recommendation

Conduct outer planet mission concept studies to determine their cost-size category

Short description of the proposed Recommendation

NASA should conduct selected planetary mission concept and technology costing studies to determine whether future Europa Orbiter, Enceladus Explorer, and Titan Explorer missions can be fit into the New Frontiers class or if they instead require flagship-class missions.

Major reasons for proposing the Recommendation

Strategic missions, including missions to the outer planets, and landed missions to the inner planets, are generally larger in cost than competed missions in Discovery and like programs. New Frontiers missions are approximately twice as large as Discovery missions, i.e., in the realm of \$800M. It is unclear at this stage whether some planetary missions of high interest could be of the New Frontiers class or if instead they require the larger Flagship class (generally greater than \$1 billion). NASA needs to understand the realistic costs of selected mission concepts in order to classify them into an appropriate acquisition category.

NASA's Science Plan specifically calls out Europa, Titan, and Enceladus as key targets for exploration of the outer solar system. However, it is not clear that a mission within the constraints of New Frontiers will be adequate to address the science objectives associated with these missions. This recommendation is intended to encourage NASA to frame such potential missions more accurately and better plan its mission AO process for the next several years.

Consequences of no action on the proposed Recommendation

Without realistic cost information, NASA would neither be able to logically plan future outer planet exploration or be able to make the best-informed selections in terms of science, technology, and cost for the New Frontiers-3 AO and the next planetary flagship mission.

NASA Advisory Council
Committee Recommendations
Tracking Number: S-06-10

Committee Name: Science

Chair: Edward David

Date of Public Deliberation: October 12, 2006

Date of Transmission: November 21, 2006

Short title of the proposed Recommendation

Reassess list of solicited mission candidates for New Frontiers mission line.

Short description of the proposed Recommendation

NASA should develop a process to expand and reassess the field of solicited mission candidates for the New Frontiers mission line prior to each New Frontiers solicitation. NASA should engage the science community in this reassessment of targets/missions prior to the creation of each Announcement of Opportunity for New Frontiers.

Major reasons for proposing the Recommendation

The New Frontiers mission line was created in direct response to the NRC decadal survey recommendation that NASA provide a means to select from among five mission concepts identified as high priority and of intermediate size between Discovery and Flagship class. Two of those five (New Horizons/Pluto and Juno/Jupiter orbiter) have been selected. In the intervening years, however, new scientific discoveries from such missions as Cassini have raised the importance of targets such as Enceladus that were not included in the original decadal survey list for this mission class. Thus, in order to select the best science for limited New Frontiers opportunities, NASA should update the field of candidate targets/missions prior to the next New Frontiers solicitation. This recommendation is meant to supplement/update the decadal survey outcome on a timetable relevant and responsive to NASA's current needs, by incorporating the most important findings of recent planetary missions. For example, such a reassessment could be accomplished through a study by the Committee on Planetary Exploration (COMPLEX) of the NRC in 2007.

Consequences of no action on the proposed Recommendation

The next New Frontiers solicitation – planned for FY08 and the only one for several years to come—would not have a field of mission candidates to choose from that reflects an up-to-date assessment of the best scientific opportunities.