

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

April 3, 2006

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

Dear Dr. Griffin:

Since it first met in late November 2005, the restructured NASA Advisory Council and its Committees have considered, in significant detail, the issues you brought to their attention. The full Council has met twice, both times in Washington, DC, and the five Council Committees have all met separately in fact-finding sessions.

During our most recent meeting in February 2006, the Council fully discussed a number of recommendations brought by its Committees and unanimously agreed that those given below should be forwarded to you. Though the following recommendations were agreed upon by the full Council, for ease of reference they are arranged below by the committee from which they were initially suggested. Further background for each recommendation is attached.

Aeronautics

- 1) Assure that, during the restructuring and implementation of the NASA Aeronautics program, key personnel and areas of expertise are retained and rejuvenated over time. Milestones for evaluating the status of this recommendation should be created. **(A-06-1)**
- 2) Assure that, during the restructuring and implementation of the NASA Aeronautics program, clear milestones are established and tracked and independent experts regularly conduct program and project reviews. The reviewers should be subject matter experts for each specific program and should be able to review all aspects of the program (Technical, Management, Cost and Collaboration). **(A-06-2)**
- 3) Assure that the Aeronautics Research Mission Directorate works with the heads of other relevant agencies to identify opportunities to leverage NASA's Aeronautics program activities by fostering personnel and project interactions at all levels, formal and informal, particularly among engineering staff. Clear milestones for interagency interactions should be established and tracked. **(A-06-3)**

Audit and Finance

- 4) Assure that Center-level financial personnel report jointly through the Center Director and the NASA Chief Financial Officer. If this dual reporting structure appears infeasible, the Council's Audit and Finance Committee should receive a detailed report from the Associate Administrator as to why this is so. **(AF-06-1)**

- 5) Hold the Chief Financial Officer and appropriate individuals accountable in annual performance reviews for audit and financial control deficiencies noted by the General Accounting Office and the Agency's independent auditors in their annual review. **(AF-06-2)**
- 6) Create a process of regular communication between the Chief Financial Officer and the Director of the Office of Environmental Management regarding accounting issues related to identifying and tracking potential and actual environmental liability. **(AF-06-3)**

Exploration

- 7) Review implicit reductions in buying power within the budgets of the Space Operations and Exploration Systems Mission Directorates due to recent broad legislative and administrative actions. It should be rigorously determined what effects these reductions may have on NASA's ability to reliably and safely execute the remainder of the Space Shuttle missions and to transition to future exploration systems in a timely and successful manner. A plan of action to counteract any significant effects also should be implemented. **(E-06-1)**

Science

- 8) Re-examine the Research and Analysis (R&A) program through the following initiatives **(S-06-1)**:
 - a. Request that the Science Mission Directorate, in consultation with the Council's Science Committee, develop options for near-term restructuring of the R&A program so that it is more forward-looking, emphasizing both space science mission opportunities beyond 2010 and opportunities for younger scientists. **(S-06-1.1)**
 - b. Request that the Science Mission Directorate, in consultation with the Council's Science Committee, develop options for rebalancing the R&A program in FY08 and beyond to provide a significant increase in funding levels above FY07 projections. **(S-06-1.2)**
- 9) Prioritize future research in lunar exploration science, lunar science and lunar-based science associated with the Vision for Space Exploration via the following initiatives **(S-06-2)**:
 - a. Establish a Science & Engineering Working Group for the robotic lunar exploration program, including science done in preparation for human lunar expeditions, with appropriate sponsorship from, or ties to, the Subcommittees of the Council's Science Committee. **(S-06-2.1)**
 - b. Request that the Science Mission Directorate, with concurrence from the Council's Science Committee and the Council Chair, work with the National Research Council (NRC) Space Studies Board (SSB) to create a long-term vision and conceptual plan for robotic and human lunar science. **(S-06-2.2)**
 - c. Request that the Science Mission Directorate sponsor a comprehensive NRC/SSB study of lunar science goals, in the context of the Decadal Survey, which can serve as a foundational consensus statement of scientific community interests in lunar science in the context of the Exploration program. This study should have early drops for: a) general science goals (August 2006) and b) science priorities for Robotic Lunar Exploration Program (Fall 2006). **(S-06-2.3)**

- d. Request that the Council's Science Committee and its relevant Subcommittees, supported by the Science and the Exploration Systems Mission Directorates, plan a workshop to prioritize objectives for lunar exploration science, lunar science and lunar-based science associated with the Vision for Space Exploration, the results of which should feed back into the NRC/SSB study. **(S-06-2.4)**

10) Encourage international participation in lunar science via the following initiatives **(S-06-3)**:

- a. Invite international participation in NRC/SSB studies related to the Vision for Space Exploration. **(S-06-3.1)**
- b. Encourage international participation in robotic exploration of the Moon, including productive participation in the human exploration program within the context of the aims of the United States. **(S-06-3.2)**
- c. Request that SMD and ESMD examine the Interagency Consultative Group (IACG) as a model for coordinating/leveraging the science missions of several nations. **(S-06-3.3)**

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

Best Regards,



Harrison H. Schmitt
Chairman

Enclosures (10)

NASA Advisory Council
Committee Recommendations
Tracking Number: A-06-1

Committee Name: Aeronautics

Chair: Mr. Neil Armstrong

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of the Recommendation
Retention of personnel and expertise

Short description of the Recommendation
Assure that, during the restructuring and implementation of the NASA Aeronautics program, key personnel and areas of expertise are retained and rejuvenated over time. Milestones for evaluating the status of this recommendation should be created.

Outline of the major reasons for proposing the Council make the Recommendation NASA aeronautics cannot establish long term research programs that benefit the aeronautics community if its key personnel and expertise cannot be retained and young researchers added continuously. The in-house workforce is critical to the success of the Aeronautics Directorate.

Outline of the consequences of no action on the Recommendation
If key personnel and expertise are not protected within NASA's aeronautics programs, NASA will not have the capability to properly execute its research programs or interact well with the research community at large. The programs may be perfectly developed but will not succeed without the personnel and expertise available to execute them.

NASA Advisory Council
Committee Recommendations
Tracking Number: A-06-2

Committee Name: Aeronautics
Chair: Mr. Neil Armstrong
Date of public deliberation: February 9, 2006
Date of transmission: April 3, 2006

Short title of the Recommendation

Independent program reviews

Short description of the Recommendation

Assure that, during the restructuring and implementation of the NASA Aeronautics program, clear milestones are established and tracked and independent experts regularly conduct program and project reviews. The reviewers should be subject matter experts for each specific program and should be able to review all aspects of the program (Technical, Management, Cost and Collaboration).

Outline of the major reasons for proposing the Council make the Recommendation

Peer review of NASA's aeronautics programs by independent experts will help ensure the programs continue to conduct focused cutting edge research and that the community at large is aware of that research. It will also help to ensure the program objectives are relevant to the mission of NASA and its stakeholders.

Outline of the consequences of no action on the Recommendation

Lack of outside peer review will increase the risk of the aeronautics research becoming irrelevant with respect to the aeronautics challenges of NASA and its stakeholders. In addition, without proper peer review, the aeronautics research programs may lose the respect of the aeronautics community and Congress.

NASA Advisory Council
Committee Recommendations
Tracking Number: A-06-3

Committee Name: Aeronautics
Chair: Mr. Neil Armstrong
Date of public deliberation: February 9, 2006
Date of transmission: April 3, 2006

Short title of the Recommendation

Program partnerships with other agencies

Short description of the Recommendation

Assure that the Aeronautics Research Mission Directorate works with the heads of other relevant agencies to identify opportunities to leverage NASA's Aeronautics program activities by fostering personnel and project interactions at all levels, formal and informal, particularly among engineering staff. Clear milestones for interagency interactions should be established and tracked.

Outline of the major reasons for proposing the Council make the Recommendation

Collaboration between NASA and other Government Agencies will provide the best and most efficient use of taxpayer funds with respect to conducting aeronautics research. Collaboration will prevent research duplication and encourage leveraging of common work and assure that NASA is fully informed of all relevant federal research activity.

Outline of the consequences of no action on the Recommendation

Without interagency partnerships, duplicative research within the Government will likely be conducted and the best use of taxpayer funds will not be achieved. NASA will not be able to leverage its research off that of other agencies.

NASA Advisory Council
Committee Recommendations
Tracking Number: AF-06-1

Committee name: Audit and Finance Committee

Chair: Mr. Robert Hanisee

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of the Recommendation

Dual reporting responsibility for center line management and staff

Short description of the Recommendation

Assure that Center-level financial personnel report jointly through the Center Director and the NASA Chief Financial Officer. If this dual reporting structure appears infeasible, the Council's Audit and Finance Committee should receive a detailed report from the Associate Administrator as to why this is so.

Outline of the major reasons for proposing the Council make the Recommendation

This change will improve accountability of center line financial management and staff, increase their accessibility to the resources of the NASA Chief Financial Officer's organization, and improve internal control functions.

Outline of the consequences of no action on the Recommendation

There would be continued confusion among center financial personnel regarding financial reporting priorities.

NASA Advisory Council
Committee Recommendations
Tracking Number: AF-06-2

Committee name: Audit & Finance Committee

Chair: Mr. Robert Hanisee

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of the Recommendation

Centralized management accountability for Government Accountability Office (GAO) deficiencies

Short description of the Recommendation

Hold the Chief Financial Officer and appropriate individuals accountable in annual performance reviews for audit and financial control deficiencies noted by the GAO and the Agency's independent auditors in their annual review.

Outline of the major reasons for proposing the Council make the Recommendation

Committee's fact finding revealed that Office of the Chief Financial Officer is directly responsible for only three (3) of forty five (45) open GAO recommendations coming from the latest GAO audit. Holding the Office of the Chief Financial Officer fully responsible for clearing all open GAO recommendations will be a major step toward correcting NASA's current financial reporting problems.

Outline of the consequences of no action on the Recommendation

The persistence of a high number of open GAO recommendations prevents the correction of NASA's financial reporting difficulties and feeds into a continued negative public and Congressional perception of NASA's financial management.

NASA Advisory Council
Committee Recommendations
Tracking Number: AF-06-3

Committee name: Audit & Finance Committee

Chair: Mr. Robert Hanisee

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of the Recommendation

Improve communication between mission support offices

Short description of the Recommendation

Create a process of regular communication between the Chief Financial Officer and the Director of the Office of Environmental Management regarding accounting issues related to identifying and tracking potential and actual environmental liability.

Outline of the major reasons for proposing the Council make the Recommendation

Environmental liability was a reportable condition in the FY05 Financial Statement Audit, which could be dispositioned prior to issuance of the FY06 Financial Statement Audit. This situation requires concentrated senior management attention.

Outline of the consequences of no action on the Recommendation

This reportable condition would be carried over for another fiscal year, continuing to prevent NASA from receiving a clean audit opinion.

NASA Advisory Council
Committee Recommendations
Tracking Number: E-06-1

Committee name: Exploration Committee

Chair: Lt. Gen. James Abrahamson

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of the Recommendation

Evaluate reduced buying power in mission directorates

Short description of the Recommendation

Review implicit reductions in buying power within the budgets of the Space Operations and Exploration Systems Mission Directorates due to recent broad legislative and administrative actions. It should be rigorously determined what effects these reductions may have on NASA's ability to reliably and safely execute the remainder of the Space Shuttle missions and to transition to future exploration systems in a timely and successful manner. A plan of action to counteract any significant effects also should be implemented.

Outline of the major reasons for proposing the Council make the Recommendation

The Space Operations Mission Directorate and Exploration Systems Directorates budgets appear to reflect a well crafted strategy to initiate the transition to future exploration systems. Particularly noteworthy are the collegial mutual support of the Directorates, innovative approaches to provide additional moneys for the change from a recyclable to a disposable sparing philosophy for shuttle as it reaches retirement, and a procurement strategy for the transition to the next generation vehicle that will to take advantage of consolidation of contracting mechanisms.

An area of concern however, is the reduction in buying power caused by “taxes” implicit in the Katrina rescission, the general appropriation reduction, the 0.28% rescission, increases in allocation for the Independent Technical Authority, and other increases in effective overhead costs. For example, the Council's Exploration Committee finds that there has been a 5% reduction in space shuttle program buying power in FY 2006, 2.4% in FY 2007.

Outline of the consequences of no action on the Recommendation

These reductions may strain the programs to a degree that will endanger their timely, reliable, and safe execution.

NASA Advisory Council
Committee Recommendations
Tracking Number: S-06-1

Committee name: Science
Chair: Dr. Charles F. Kennel
Date of public deliberation: February 9, 2006
Date of transmission: April 3, 2006

Short title of recommendation

Re-Examine Research and Analysis (R&A) program

Short description of this recommendation

Re-examine the R&A program through the following initiatives (**S-06-1**):

- a. Request that the Science Mission Directorate (SMD), in consultation with the Council's Science Committee, develop options for near-term restructuring of the R&A program so that it is more forward-looking, emphasizing both space science mission opportunities beyond 2010 and opportunities for younger scientists.
(S-06-1.1)
- b. Request that the Science Mission Directorate, in consultation with the Council's Science Committee, develop options for rebalancing the R&A program in FY08 and beyond to provide a significant increase in funding levels above FY07 projections.
(S-06-1.2)

Outline of the major reasons for proposing the Council make the Recommendation

R&A lays the groundwork for future missions. Yet FY07 R&A is proposed to be reduced 15% across the Science Mission Directorate, and by 50% in Astrobiology with these reductions maintained in FY08 and beyond. The rationale for R&A and astrobiology reductions has not been fully articulated nor has their impact on future NASA programs been examined in detail. The profile of space science missions shows a decline as the end of the decade approaches, with a beginning of re-building after 2010. NASA needs to keep the science community engaged thru the funding bottleneck, and can do so by taking a future-oriented approach to R&A.

Outline of the consequences of no action on the Recommendation

Vitality of the space science community will be seriously reduced by lack of research and education opportunities during this transition period (thru 2010 / transition from Shuttle to the successor system). This will adversely affect the science community's ability to maintain a flow of youthful talent, to reap the full science value of the several missions to be launched in the next three years, and to plan the science missions called for in the NRC's decadal surveys and NASA's community roadmaps.

NASA Advisory Council
Committee Recommendations
Tracking Number: S-06-2

Committee name: Science

Chair: Dr. Charles F. Kennel

Date of public deliberation: February 9, 2006

Date of transmission: April 3, 2006

Short title of recommendation

Prioritization of Lunar Science Program

Short description of this recommendation

Prioritize future research in lunar exploration science, lunar science and lunar-based science associated with the Vision for Space Exploration via the following initiatives **(S-06-2)**:

- a. Establish a Science & Engineering Working Group for the robotic lunar exploration program, including science done in preparation for human lunar expeditions, with appropriate sponsorship from, or ties to, the Subcommittees of the Council's Science Committee. **(S-06-2.1)**
- b. Request that the Science Mission Directorate, with concurrence from the Council's Science Committee and the Council Chair, work with the National Research Council (NRC) Space Studies Board (SSB) to create a long-term vision and conceptual plan for robotic and human lunar science. **(S-06-2.2)**
- c. Request that the Science Mission Directorate sponsor a comprehensive NRC/SSB study of lunar science goals, in the context of the Decadal Survey, which can serve as a foundational consensus statement of scientific community interests in lunar science in the context of the Exploration program. This study should have early drops for: a) general science goals (August 2006), b) science priorities for Robotic Lunar Exploration Program (Fall 2006). **(S-06-2.3)**
- d. Request that the Council's Science Committee and its relevant Subcommittees, supported by the Science and the Exploration Systems Mission Directorates, plan a workshop to prioritize objectives for lunar exploration science, lunar science and lunar-based science associated with the Vision for Space Exploration, the results of which should feed back into the NRC/SSB study. **(S-06-2.4)**

Outline of the major reasons for proposing the Council make the Recommendation

NASA's near and long term lunar science activities need to be well-rationalized and coordinated. In addition, science and engineering activities within NASA related to a return to the Moon need to be integrated. The recommended activities can provide the scientific guidance and implementation advice NASA needs and serve to get the scientific community fully engaged early enough to assure Exploration programs produce scientific results that examine fundamental questions in lunar science and in other areas of science that can be addressed on the Moon.

Outline of the consequences of no action on the Recommendation

The nation will miss the opportunity to assure Exploration programs are fully productive scientifically, and Exploration programs will lack science community support outside those directly involved in the lunar and planetary sciences. Further, we may miss clear definition of the full resource potential of the Moon relative future mission to Mars and beyond and to future space and terrestrial needs.

NASA Advisory Council
Committee Recommendations
Tracking Number: S-06-3

Committee name: Science
Chair: Dr. Charles F. Kennel
Date of public deliberation: February 9, 2006
Date of transmission: April 3, 2006

Short title of recommendation

Encourage international participation in lunar science

Short description of this recommendation

Encourage international participation in lunar science via the following initiatives (**S-06-3**):

- a. Invite international participation in NRC/SSB studies related to the Vision for Space Exploration. (**S-06-3.1**)
- b. Encourage international participation in robotic exploration of the Moon, including productive participation in the human exploration program within the context of the aims of the United States. (**S-06-3.2**)
- c. Request that the Science and Exploration Systems Mission Directorates examine the Interagency Consultative Group (IACG) as a model for coordinating/leveraging the science missions of several nations. (**S-06-3.3**)

Outline of the major reasons for proposing the Council make the Recommendation

Several nations are planning robotic missions to the Moon, and some cross-nation instrument contributions are approved and planned. There is an opportunity to enhance the science return through coordination of future robotic and human exploration.

Outline of the consequences of no action on the Recommendation

There will be lost opportunities to leverage international investments to achieve common science goals.