

NASA ADVISORY COUNCIL
National Aeronautics and Space Administration
Washington, DC 20546
Dr. Kenneth M. Ford, Chairman

April 12, 2010

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 Headquarters on February 18-19, 2010.

As you know, this was the first meeting of the Council in which the restructured committees provided reports from their respective meetings. The Science Committee brought forth three recommendations for deliberation by the Council, and these three recommendations were approved. They are enclosed for your consideration, along with the minutes from our Council meeting to provide additional background and context.

Thank you for the opportunity to provide our observations, findings, and recommendations concerning NASA and the U.S. civil space program. If you have any questions or wish to discuss further, please contact me.

Sincerely,



Kenneth M. Ford
Chairman

4 Enclosures:

- 2010-01-01 (SC-01): Restart of Domestic Pu-238 Production**
- 2010-01-02 (SC-02): Technology Space Flight Test Program**
- 2010-01-03 (SC-03): Establish Program Analysis Groups (PAGs) in Astrophysics**
- NAC Meeting Minutes: February 18-19, 2010**

**Tracking Number: 2010-01-01 (SC-01)
Restart of Domestic Pu-238 Production**

NASA Advisory Council Recommendation:

The Science Committee urges NASA to work with the Department of Energy (DoE) to seek an equitable solution for the restart of domestic production of Plutonium-238 (Pu-238), and for the development and testing of advanced Radioisotope Power Systems (RPSs). The Science Committee requests to be kept informed of developments on this issue at the next meeting.

Major Reasons for the Recommendation:

The use of RPS power sources is vital to robotic exploration of the outer solar system and to many other situations where solar power is insufficient or not available. Without Pu-238 to fuel RPSs, exploration of the outer solar system will have to be abandoned and other exploration objectives curtailed. Pu-238 production in the US has been stopped and the amount available from Russia will not meet the needs for robotic planetary exploration into the next decade. Russia has also stopped shipment of Pu-238 pending contract renegotiation. The 2011 budget contains funds for restarting Pu-238 production by DoE. The budget is sufficient for production of only a certain amount per year, the issue being resolution of the amount required by NASA between requirements in SMD and in ESMD. Additional funding will be necessary if the amount of Pu-238 required by NASA exceeds the value presumed by the 2011 budget.

**Tracking Number: 2010-01-02 (SC-02)
Technology Space Flight Test Program**

NASA Advisory Council Recommendation:

The Science Committee urges that NASA institute a technology space flight test program to close the "mid-technology readiness level (TRL) gap" between Earth-based tests and flight readiness. This program would take testing of new flight technologies and instruments to the next level, bridging a critical gap to keeping the technology pipeline open and sustaining a robust technology development community.

Major Reasons for the Recommendation:

There is a persistent gap between testing of new flight subsystem and instrument technologies on Earth and their eventual acceptance for use in space flight. This is commonly termed the "mid-TRL" level gap. Technical reviewers of proposals for flight projects, and flight project managers, are very reluctant to approve new technologies for flight that have no previous flight heritage. To eliminate this conundrum, a flight program is required whose sole purpose is to take the necessary risks to fly new technologies and certify them for science and exploration flights. NASA's past "New Millennium" technology flight program used to provide this service and should be revived.

**Tracking Number: 2010-01-03 (SC-03)
Establish Program Analysis Groups (PAGs) in Astrophysics**

NASA Advisory Council Recommendation:

The Science Committee recommends establishing PAGs for two other themes in Astrophysics (Physics of the Cosmos and Cosmic Origins).

Major Reasons for the Recommendation:

The NAC Science subcommittees organize Program Analysis Groups to provide specialized input to analysis of specific programs within SMD. These PAGs have proved very useful to the Planetary Science Subcommittee where they were pioneered, and the Astrophysics Subcommittee would like to take advantage of this experience by establishing two PAGs organized along the major Astrophysics themes.