

To: Ken Ford, chair, NAC; Jack Burns, chair, NSC

June 29, 2009

Dear Ken and Jack,

I am writing to report on the June 2009 meeting of the Astrophysics Subcommittee. The Subcommittee heard presentations from J. Morse, T. Roellig, J. Mather, R. Griffiths, J. Kasting and D. Leckrone. We are grateful to the presenters for the care and time they took to inform us, and to NASA staff for their excellent support.

The Subcommittee wishes to convey the following items to the NAC.

The Subcommittee reviewed notable science accomplishments during the year, and helped draft text for a report on these for compliance with the Government Performance and Results Act. When the final version is available I commend it to your Committee for a summary of some noteworthy NASA achievements in astrophysics during the past year.

The Division asked our advice about whether the Hubble Space Telescope should be part of a senior review in 2010 of its continuing operations. The Subcommittee agreed that this is not necessary, and that a senior review in 2012, the baseline plan, is soon enough. After the spectacular success of SM-4, the Hubble should be regarded as a new instrument, and there is no question about the science value of its operations for the next two years. Of course its operations should always be scrutinized for cost effectiveness, and in the long run, weighed against other activities.

The NAC should be aware of a feature that has reappeared in the out year budget plans: the cost of deorbiting HST at the end of its operational life is currently planned to be borne by the Astrophysics Division.

At our last meeting we convened a working group to offer advice about new postdoctoral fellowship programs. One important new idea is that NASA could fund prize fellowships in instrumentation, as a way to encourage and advance careers of technologically oriented astrophysicists in their early stages. Many practical details need to be considered before implementation. The working group, chaired by Nick Suntzeff with Chris Martin as vicechair, will report with recommendations at our next meeting.

We also heard an early status report from James Kasting on the Exoplanets Analysis Group. The creation of ExoPAG has been approved by the NAC. This group will consist of a chair, initially Kasting, along with a small steering group of perhaps nine members. The chair must be a member of the APS subcommittee, and the ExoPAG reports back through the APS. The purpose of the ExoPAG is to provide a mechanism for the entire exoplanet community to provide feedback on issues related to exoplanet science and missions. As currently chartered, the ExoPAG can be tasked either by the APS, the Science Committee of the full NAC, or by SMD management to perform various analyses. The ExoPAG does *not* provide direct advice back to NASA management; rather, it reports to APS, and then APS makes recommendations, if it so wishes, to NASA. The ExoPAG steering committee members are to be chosen by October 2009, and the first meeting is tentatively scheduled to be held in concert with the AAS meeting in Washington in January, 2010.

The Subcommittee is interested in the possibility of advancing this operational idea to the other themes of the Division, Physics of the Cosmos and Origins. We believe this could be an effective way to improve the connection of our Subcommittee with a broader community, and help follow up with implementation of the strategic plan being developed by the Astro2010 Decadal Survey. We would like the NAC to consider this general plan and initiate serious discussion about it. If the NAC and APS agree on this direction, we ask that the necessary procedures be implemented soon so that we can have new groups in place by next summer, when the decadal recommendations are released.

John Mather described the status of JWST, the largest project of the Division. Most technical challenges are being met but the size and complexity of the project are daunting and risks remain. We are hopeful that these too will be resolved and that the project will launch successfully within the budgeted cost and schedule. The requirement for JWST contingency funds continues to restrict opportunities for new initiatives in the years ahead.

A report about Joint Dark Energy Mission from Richard Griffiths, based largely on the questions posed by Astro2010, highlighted the unsettled state of this mission. Fundamental aspects of the design, the scope, the partners, and even the science goals remain fluid at this time, as the project is being reviewed by Astro2010. The Subcommittee agrees that the prioritization of this mission should be decided by Astro2010.

We heard about SOFIA, which is on track to start delivering early science summer of 2010. This project promises new capabilities in the infrared and opportunities for continued instrument development. It also involves considerable investment in new technologies and activities that are not easily translated to other activities of the Division, such as aerodynamical engineering of a large open door in a 747 aircraft, as well as ongoing flight operations. The overall costs of this project are comparable to a Great Observatory. The partnership with Germany seems to be going well.

The Subcommittee heard a detailed narrative of the SM-4 mission from David Leckrone. The scientific success of the new Hubble is yet to be proven, but the outstanding performance of the NASA teams--- both the heroic astronauts, and the people that support them on the ground--- is beyond doubt. This last visit to Hubble shows NASA at its best.

Respectfully submitted on behalf of the Astrophysics Subcommittee,

Craig Hogan, chair