



RICE UNIVERSITY

EUGENE H. LEVY, PROVOST
HOWARD R. HUGHES CHAIR
PROFESSOR OF PHYSICS AND ASTRONOMY

July 18, 2006

TO: Harrison Schmitt, Chair, NASA Advisory Council
Charles Kennel, Chair, NAC Science Committee
Christopher Blackerby, NAC Executive Director
Greg Williams, NAC Executive Secretary
John Rummel, NASA HQ
Mary Cleave, NASA HQ
Members of the PPS

FROM: Eugene H. Levy *Gene*

ABOUT: Planetary Protection Subcommittee meeting, July 6, 2006

The Planetary Protection Subcommittee (PPS) had a one-day meeting on July 6, 2006, in conjunction with the meeting of the other Science Subcommittees in Washington, DC. This meeting was, for us, focused on developing a basis for PPS activities in connection with the planned Lunar Science Workshop to be held sometime in the first half of FY2007. At the July 6th meeting, the Subcommittee did not consider matters of a general nature, such as reviewing the NASA Science Strategic Plan (which is generally a subject outside of our Terms of Reference), nor did we take up issues within the scope of biological planetary protection which will await our later, and first-full meeting of the reconstituted and supplemented group.

Nonetheless, the Subcommittee had an interesting and engaging discussion related to NASA's current status and planning for lunar science. A full set of minutes for the meeting should be available shortly, but a thumbnail of our discussions is given here.

Some welcome management and budget news was heard, in that the House has proposed an increase in space science funding for FY07 for NASA, including an additional \$50,000,000 for research and analysis above the request, and \$15,000,000 to initiate planning for an orbiter/lander mission to Europa. The former increase may be able to provide some of the funding needed to address current planetary protection concerns for Mars (through research recommended by the National Research Council in their report on *Preventing the Forward Contamination of Mars*), whereas any mission to Europa will have to meet the challenge of keeping Europa free of Earth-source biological contamination.

The Subcommittee was provided with a status report on NASA's Mars program planning, although the new program plan for Mars (reflecting the funding reductions of FY2006 and those proposed for FY2007) is still a work-in-progress.

The PPS's main task was a discussion of various concepts in lunar research to support future planetary protection requirements definition and implementation decisions. For example, the PPS discussed a concept that has been suggested to use the Moon as a quarantine location for returned Mars samples. However, at this point, we are of the opinion that such a move would likely be impractical and unnecessary — as well as far more expensive than direct Earth-return of such samples. Other concepts are more likely to be productive, and the Committee will be exploring these approaches in future meetings.

At the end of our deliberations, the Subcommittee prepared the following ideas for discussion in the plenary session held on 7 July:

Planetary Protection Subcommittee suggestions on Lunar Science Workshop topics:

- Chemical and microbiological studies on the effects of terrestrial contamination and microbial survival
 - During the Apollo missions (study Apollo sites)
 - During lunar robotic and human missions (dedicated experiments and “natural” experiments in a variety of lunar environments/depths, etc.)
- Possible contamination of lunar ices with non-organically-clean spacecraft (mission-science and resource contamination concerns)
- Future *in situ* investigations of a variety of locations on the Moon by highly sensitive instruments designed to search for biologically derived organic compounds
 - Assess the contamination of the Moon by lunar spacecraft and astronauts
 - Valuable “ground truth” data on *in situ* contamination of samples supports future Mars sample return missions (sample integrity)
- Use of the Moon and lunar transit/orbits as test beds for procedures and technology involved with implementing human Mars mission requirements, prior to Mars missions being flown

Finally, the PPS discussed topics to be considered at our next planned meeting — the first full meeting of the PPS — to be held on September 28-29 in Washington, DC. These issues include: the status NASA planetary exploration activities/implementations (with an interest in management provisions); any issues associated with missions proposed to the current Discovery AO that should be subject of PPS advice, and any proposed Mars Scout mission proposals that might need early discussion by the Subcommittee (these to be done in closed session, as needed); the application of the Special Regions Concept to Mars planetary protection requirements; a consideration of planetary protection requirements for humans on Mars (and lunar opportunities for preliminary preparation); a report from the COSPAR Assembly in Beijing; NASA's current thinking on planetary protection future planning, responsibilities, and international cooperation; and the proposed (by NASA) extension of “orbital debris” regulations to missions operating around or on the Moon and Mars. The September meeting promises an interesting and engaging two-day session for the Subcommittee.

I look forward to seeing you at the upcoming NAC meeting.