



BROWN

Department of Geological Sciences

Dr. Sean Solomon
Chair, Planetary Science Subcommittee

Dear Sean:

Sept. 30, 2008

The purpose of this letter is to report on MEPAG's mid-year meeting on Sept. 18, 2008. This meeting was held in Monrovia CA at the same venue and immediately following a major 3-day MSL landing site workshop. Attendance at the MEPAG meeting was about 150 in person, including representatives from multiple NASA centers, NASA-HQ, academia, contractors, the press, and several foreign space agencies (ESA, CNES, JAXA, CSA, and Australia). In follow-up to our experiment at the last MEPAG meeting, we also webcast this meeting, and this allowed many additional people to participate, including a number from Europe.

The meeting agenda is attached. Key discussion topics for the meeting included:

- Discussion of Mars program status and future planning, including potential international collaborations for sample return and notional architectures for the MEP through 2024.
- Results and implications of the Phoenix mission.
- The first public presentation of the content of 2013 Scout Mission by the selected PI.
- Planning for future MEPAG work.

We expand upon these items in the following paragraphs.

- 1) **Discussion of Mars Program status.** Doug McCuiston noted the financial and technical challenges of getting MSL to the launch pad in 2009 will be a primary challenge of MEP for 2008-09. NASA is paying close attention to the progress and costs with a review scheduled for October 2008. He also announced NASA's intent to have the 2016 mission be a rover. This is one of several options that had been identified by previous architecture planning teams, and for which the decision has been assumed to be discovery-dependent. Lastly there is a significant effort in planning for the 2018+ period.
- 2) **Phoenix:** MEPAG congratulates the Phoenix mission on its scientific efforts to date. Since MEPAG is not an appropriate forum for the publication of scientific data, the primary purpose of the MEPAG discussion was to discuss results that may have implications for possible future follow-up exploration activity by the Mars Exploration Program. In many respects, Phoenix shows how Mars science is increasingly turning to a "Habitability" theme.
- 3) **2013 Scout mission.** MEPAG heard a report from the **Mars Atmosphere and Volatile Evolution Mission (MAVEN)** mission PI Dr. Bruce Jakosky regarding the science expected from this mission. MAVEN, as its name implies, will observe upper atmosphere processes driving the current loss of volatiles to space providing the data needed to quantify models of loss early in Mars history, thereby addressing a key area of research called out by the

Decadal Survey. Currently, MAVEN and ExoMars are the missions slated for the 2013 launch opportunity.

4) **Mars Program architecture planning.**

Dr. Phil Christensen, the chair of the Mars Architecture Tiger Team -2, reported on their deliberations on the next decade of the MEP under the theme “Seeking Habitable Environments.” The team determined that high priority science objectives can be addressed in the 2016-2026 timeframe with a series of coordinated missions, including Mars Sample Return, which remains the highest priority goal for MEP. However, the launch of the MSR flight elements is budget-driven and the MSR lander is unlikely to launch before 2020. Based on this, MATT derived two preferred mission architectures, each starting with a landed rover in 2016 and a Mars Science Orbiter launched in 2018.

Dr. Rich Zurek presented the current conceptual planning for a rover in 2016. A 2016 rover is the first element of the MATT for planning in the next decade. Broadly, this mission would have a dual purpose. As part of a stand-alone science mission, this rover would explore a new site in response to recent discoveries from orbit of areas known to have had aqueous activity. Once there, it would characterize the geologic history of the site, the role of water, and the potential for habitability. In addition, the rover would develop technology for sample return by selecting and caching samples for possible return by MSR. It was felt that this could be achieved with a rover which in mass, power, and payload was more MER-like than MSL-like. The many issues associated with such a mission were touched upon as background for a possible MEPAG SAG.

Dr. David Beaty gave an update on the iMARS planning process for MSR. The “potential plan” for an international MSR was presented to the International Mars Exploration Working Group (IMEWG) in Paris on July 8. This plan described in a white paper (and available on the MEPAG web site), was discussed by the IMEWG delegates and IMEWG enthusiastically accepted the report. IMEWG is considering a charter that would ask iMARS to proceed with the refinement of these plans, and to continue the coordination of international MSR activity, for at least the next year. The second was a public roll-out of this potential plan at a major MSR conference in Paris on July 9-10. The response to the scientific objectives, sample mass/type/condition needed to achieve those objectives, flight architecture, and technology development planning was favorable. Three aspects of the iMARS report were flagged for additional future discussion: 1). Consider options for a 3-element, rather than a 2-element MSR; 2). 2020 for the launch of the MSR lander may be overly aggressive—would 2022 be more realistic; 3). More refinement of the planning for sample management once the samples return to Earth.

5) **Planning for future MEPAG work.** MEPAG planning has begun for the following major future activities. A SAG for the 2016 opportunity. This SAG will help define the specific scientific goals, mission requirements, and cost/benefit trades associated with the 2016 rover. Preparation for the decadal survey. This effort will begin by documenting how Mars’ objectives relate to NASA’s larger strategic objectives.



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The Mars Exploration Program continues to make significant strides in understanding Mars as a planet and its potential for habitability as shown by the success of Phoenix and selection of MAVEN. However, much remains to be done to continue the successes of MEP while making MSR a reality. This will be difficult given the present cost pressures from MSL and the uncertainties regarding the future budgets for MEP and NASA. As these issues are being resolved, MEPAG will focus in the near term on updating its goals document, supporting the decadal survey activities, and defining the science goals for the 2016 and 2018 Mars launch opportunities.

Sean, please don't hesitate to contact me if you have any questions.

Best regards

A handwritten signature in black ink, appearing to read 'Jack Mustard', with a stylized, sweeping flourish at the end.

Jack Mustard

Cc: Doug McCuiston
Fuk Li
Michael Meyer
David Beaty
Rich Zurek
Joyce Pulliam, for forwarding to the MEPAG mailing list

Agenda for MEPAG meeting of September 18, 2008 in Monrovia, CA

Start	Time	Agenda Item	
<i>Note: Unless otherwise indicated, all time speakers should assume that 30-50% of their time allocation is for discussion.</i>			
Thursday, September 18			
8:00 AM	0:10	Welcome; MEPAG Purpose, Scope, Expected Results	J. Mustard
8:10 AM	0:25	Mars Program Director's Comments	D. McCuiston
8:35 AM	0:25	Mars Exploration Program Update	F. Li
9:00 AM	0:15	Mars Science Status	M. Meyer
9:15 AM	0:20	European Update	J. Mustard
9:35 AM	0:20	Discussion	J. Mustard leads
9:55 AM	0:15	Break	
10:10 AM	0:45	Phoenix results	P. Smith
10:55 AM	0:30	MSL Status (including landing site)	J. Grotzinger
11:25 AM	1:30	Lunch	
12:55 PM	0:30	Scout Science	Selected mission PI
1:25 PM	0:10	Goals Committee (II, III results; I, IV plan)	J. Johnson
1:35 PM	0:20	Report on ESA-CNES MSR Conference	D. Beaty
1:55 PM	0:45	MATT Team Report	P. Christensen
2:40 PM	0:15	Report on Ground Truth from Mars Workshop	C. Shearer
2:55 PM	0:15	Break	
3:10 PM	0:25	2016+ planning	R. Zurek
3:35 PM	0:45	Mars Architecture Discussion	J. Mustard leads
4:20 PM	0:20	Communication and participation in MSR planning	L. Billings
4:40 PM	0:20	Future Planning for MEPAG Activities	J. Mustard
5:00 PM		Adjourn	