

MEPAG MEETING REPORT

FEB. 26-27, 2003 Tempe (AZ)

Jack Farmer, MEPAG Chair
March 15, 2003

A MEPAG meeting was held on Feb. 26-27, 2003 in Tempe, AZ. On the previous day (Feb. 25), an all-day committee meeting (of the MSPSG team, chartered to synthesize materials for next decade planning) was also held, as well as the first meeting of the MEPAG Executive Committee that same evening. Attendance at the full MEPAG meeting, held the following two days, ran about 100 people and included scientific representation from France, Italy, Russia, and Canada.

Introduction

The agenda covered three major areas:

1. Basic information exchange regarding the NASA Mars Exploration Program and mission status, with commentary from international attendees.
2. Draft reports from two major MEPAG-chartered committees (MSL PSIG and MSPSG), for which MEPAG discussion and feedback had been solicited. (Points raised in discussion will be addressed in the final draft reports of those groups).
3. Initiation of a formal process to revise the "MEPAG Goals" document, which was last published in July 2001.

1. Basic information exchange.

Status reports from the Mars Program Director Orlando Figueroa, the Mars Program Manager (JPL), Firouz Naderi, and by the Mars Lead Scientist Jim Garvin showed the Mars program to be in excellent health.

2. Discussion of two major reports.

MSPSG

Since October 2002, the Mars Science Planning Synthesis Group (MSPSG), Co-chaired by Dan McCleese and Jack Farmer, has been developing several potential pathways for the exploration of Mars from 2009-2020. The MSPSG based its work on a previous report from the MEPAG Pathways SSG, completed in June of 2002, with additional systems engineering and technology inputs. These pathways focus on four approaches for scientific enquiry: the Search for Evidence of Past Life, Exploration of Hydrothermal Habitats, Search for Present Life, and Exploration of the Evolution of Mars. Each pathway presented an associated, candidate mission queue. Dan McCleese presented the team's report at the MEPAG meeting and requested feedback from the community.

Overall, the MSPSG report received a positive response from the community in attendance. However, there were some concerns raised, which centered around the following points:

- One issue concerned whether the pathways defined represent a departure from the previous "follow the water" emphasis that has been a highly public focus for the program in the past.
- Although the four pathway options were presented as examples of science implementation scenarios that might be pursued, there was a concern that as presently defined, important approaches may have been missed. Dan McCleese requested that the MEPAG members identify any major outliers and provide them to the MSPSG team for consideration.
- The role of Scouts (fully competed, PI-mode missions to Mars) within the pathways was embraced by the community as an important program element to allow flexibility and responsiveness to new discoveries. However, the group also raised concerns over too much flexibility, which might undermine the overall program strategy. It will be important to maintain a proper balance between these two elements.
- Overlaps between some of the pathways made it difficult for participants to determine what, when and how new discoveries might cause the program to enter a specific pathway, and how new discoveries, either from MRO or MSL, might set the program on a pathway that is different from the one currently being pursued (i.e., which McCleese pointed out was most consistent with "the Search for Evidence of Past Life").
- Because of time limitations, the traceability of the pathways to MEPAG science goals (and specific prioritized investigations) was not presented to the group, and participants suggested that in order to enhance clarity, this information should be included in future reports. Additionally, the primary goals of each pathway need to be clarified, especially with respect to how Astrobiology objectives will be implemented.

PSIG (MSL Project Science Integration Group)

A MEPAG-chartered study team (Co-chairs, Dan McCleese and Jack Farmer) has been working for the past ~4 months to refine the scientific basis for MSL within realistic programmatic and technological constraints. Dan McCleese presented this team's draft report to the MEPAG audience, and requested their feedback. This feedback will be considered in preparing the final revision of the report, which is planned for public release (through a NASA HQ website). Discussion points fell into the following areas:

- As noted above, although the scientific logic of the MSL mission has been developed to a high degree by the PSIG (cf. Feb. 14 Draft Report of the PSIG to the Mars Program Director), it was not adequately explained in the presentation, perhaps as a consequence of the time available for the briefing. In future presentations the PSIG should clearly describe the important science drivers for MSL, giving more detail, rather than placing such a strong emphasis on instruments that were largely used to define a straw payload. (This straw payload was developed purely for the purpose of understanding critical resource allocation issues).
- The PSIG report proposed a minimum science floor for MSL in order to define a scientifically viable mission. This minimum mission would obviously be improved if a broader range of science, instrumentation and site/sample access

(lateral and subsurface mobility) were possible. However, there was broad agreement that the science floor that has been identified for MSL represents a substantial forward step toward developing our understanding of Mars habitability and the potential for past life.

- Astrobiology strategy. There was general acceptance of the mission theme of habitability, but questions regarding the specific investigations emerged during discussions. Examples raised included the “breadth vs. depth” of the investigations, the design and degree to which carbon chemistry should be a focus for investigations, and the relative priority of the search for ancient biosignatures preserved in rocks vs. searching for biosignatures of recent life.
- An important question raised by the community concerned the process by which this document gets turned into a formal solicitation for the science payload (i.e., in NASA parlance, an Announcement of Opportunity, or AO). Specifically, there was discussion about the potential for proposing instruments that would support secondary investigations (broadening the scope of the mission), but which are not a part of the current science floor.
- There was also discussion of how much feed-forward technology MSL will be able to deliver by way of flight demonstration (and specifically, feed forward to enable a ground-breaking MSR).

3. Revision of the MEPAG Goals document.

In January 2003, MEPAG chartered a standing committee to oversee the MEPAG Goals document. This committee is operating under the leadership of Jeff Taylor (Univ. Hawaii), and consists of eight Mars scientists (two from each of the four MEPAG goal areas). As preparation for the activities of this committee, updates of science discoveries made since the MEPAG strategy document was first published (July 2001, JPL Document 01-7), were presented by Odyssey PI's, with an overview by Jim Garvin.

The MEPAG Goals committee identified a process for updating MEPAG's summary document on Mars Goals, Objectives, Investigations, and Measurements. This process was set in motion through breakout sessions held on Thursday, Feb. 27. The process will continue for the next 1-2 months using a web-based system designed by Andrew Steele (Carnegie Institution, Washington) and Dawn Sumner (U.C. Davis), which will allow Mars scientists who were unable to attend the meeting to contribute their ideas. The committee will process the web-acquired information and produce a revised draft of the MEPAG strategy for discussion at the MEPAG meeting in September 2003. Reports were presented by each of the four theme groups (Life, Climate, Geology and Preparing for human missions) at the end of the meeting. On the basis of those reports it appears that a revision of ~30% of the material in the original MEPAG document is warranted to make it current.

ALL MARS SCIENTISTS ARE ENCOURAGED TO WATCH FOR INFORMATION ON THIS REVISION PROCESS IN THE COMING MONTHS.

4. Organizational Changes.

A few organizational changes have occurred within MEPAG, as noted below:

- Bruce Jakosky (U. Colorado) will succeed Jack Farmer as MEPAG Chair in March, 2003.
- Noel Hinnners has been retained as a special consultant to MEPAG.
- A MEPAG Executive Committee was formed to help identify future directions for MEPAG and to optimize the use of the MEPAG. The group presently consists of the current and outgoing MEPAG Chairs (Bruce Jakosky and Jack Farmer, respectively), James Garvin (Lead Scientist for Mars Exploration, NASA HQ), Daniel McCleese and David Beaty (Mars Exploration Program, JPL) and Noel Hinnners (special consultant to MEPAG). The group met for the first time on Feb. 25 to discuss meeting logistics and to begin the process of improving the effectiveness of MEPAG as a voice for the community.
- Because of the need to be more careful with how we manage electronic documents, Dave Beaty has developed a new information management plan, which is compliant with the procedures of ITAR, Document Review, and JPL IT Security. This will be distributed via a letter from the new Chair of MEPAG, Bruce Jakosky.
- Action teams formed in response to “parking lot” issues at the last MEPAG meeting (Sept. 2002) have delivered six reports. So far, four of these reports have been accepted and I have asked that they be added to the MEPAG electronic files. These reports contain findings on various topical issues that came up in the Sept. 2002 meeting. The remaining two reports will be returned to committee for additional work and future deliberation at MEPAG meetings.
- The MEPAG Executive Committee will be working on a plan for presentation to the MEPAG concerning how the group may wish to direct its efforts over the next 6-12 months in order to remain responsive to Mars program needs and opportunities.