

February 5, 2008

Dear MEPAG member,

For the past twenty years, I have been proud to be a part of the Mars exploration community. Whether part of a flight mission team, developing mission and technology concepts, serving on a project review board, or simply watching with fascination as the secrets of this scientifically compelling, Earth-like world have been uncovered, I am an unabashed supporter of NASA's Mars exploration program. Paced by the robotic exploration successes of the past few years, our country has completed the critical first steps of a truly phenomenal exploration adventure. In the past decade, NASA's robotic explorers have shown Mars to be a complex and dynamic world, provided intriguing evidence of present-day water on Mars, and offered tantalizing clues regarding the potential that Mars could once have harbored life.

It is not any one mission or science measurement which has singularly changed my view of Mars. Rather, it is the conglomeration of evidence, gathered through an interconnected set of measurements, obtained by a carefully engineered sequence of science missions. This is the definition of a successful exploration program. Rather than flying a series of independent missions, the Mars program has constructed a system that is greater than the sum of its parts. Each mission in the Mars program builds upon the scientific discoveries and the technological breakthroughs that arise from the previous missions. There is continuity of people and processes that enable cost-effective exploration of Mars, with a success rate that belies the inherent risks of these endeavors. Is there any doubt that Phoenix has been helped immensely by Odyssey and MRO, that MER was aided by Odyssey, and that MER ground truth has influenced our selection of MSL landing sites? Would we even attempt MSL today without the scientific knowledge and engineering confidence gained from the missions that have preceded it?

This week, in stark contrast to the successful performance of the Mars exploration program, NASA announced a significant reduction in the FY09 budget for Mars exploration. Not only is the Mars exploration program budget contained within this Agency request in direct contradiction to the guidance NASA received in the FY08 Congressional Appropriations Act, but this budget is clear evidence of the gutting of what the American people consider one of NASA's most successful programs. For reference, the FY08 Congressional Appropriations Act, enacted into law in December 2007 states:

“The Appropriations Committees agree with the comments in the House report commending NASA for its robotic Mars program which is one of the agency's most successful programs that has made major scientific discoveries and engaged the public. The Appropriations Committees continue to strongly support a robust Mars Exploration Program with a rate of at least one mission at every opportunity (every 26 months), which is consistent with the Administration's fiscal year 2008 request of \$625,700,000. Full funding is provided to: continue operating all present missions (Odyssey, Mars Reconnaissance Orbiter, Spirit and Opportunity); prepare Phoenix for launch in 2007, Mars Science Lab for a launch in 2009, and Scout in 2011; and to start the definition and development of Mars Science orbiter for launch in 2013, and the Astrobiology Field Lab or Mid size rovers for launch in 2016.”

Funded at \$386.5M, well below the FY08 Congressionally-mandated floor (\$626.4M) and void of launches in several opportunities over the next decade, NASA's FY09 budget request for Mars exploration is neither aligned with the past success of this program or this recent Congressional direction. In fact, this budget request includes more than a \$200M reduction (~35%) relative to that planned for FY09 in the December 2007 enacted legislation. Making this request even more alarming is the proposed five-year annual budget average for Mars exploration of about \$350M, with only \$300M in FY10 (less than one-half of the FY07 Mars program budget). This compares to an average annual budget plan of about \$620M from FY09 to FY12 in last year's budget request.

By removing any semblance of a continuous exploration sequence, this week's announcement puts the future Mars program on a path toward irrelevance. Let's take a closer look at one likely future. Following

the Phoenix landing later this year, MSL will be launched in 2009. Beyond this date, the future Mars program launch opportunities consist of: nothing in 2011, a Mars Scout orbiter in 2013, the potential for a single medium-class mission in 2016, nothing in 2018, and the glimmer of hope for an international MSR campaign that may begin in 2020. Of course, since this is a five-year budget request that runs through FY13, there need be essentially no funds for MSR contained within it. This is not a program that will produce compelling science. It is the beginning of the end of what has been a dramatic advancement in our understanding of the Mars system. In addition, this budget request portends a potential decade gap between MSL and our next Mars surface mission. The NASA administrator has spoken eloquently about the ramifications that a gap in human spaceflight would have on our Nation. Is this Mars surface exploration gap no less significant or concerning for the scientific and engineering literacy of our country?

What of the scientific and engineering talent that has been developed over the last decade? These people are currently at the top of their game. However, NASA's FY09 budget request sets into motion a means by which the engineering and science talent that delivered these recent exploration achievements will be lost. Already Mars program personnel at the Jet Propulsion Laboratory and some of the NASA Centers are making plans to pursue other endeavors in FY09 (just eight months from now). As a country, we have invested a great deal of time and effort in these people and the technologies they have advanced. They are ready to take on the next challenge of Mars exploration today. Do you truly believe they will be sharp, ready and willing to begin implementing a MSR campaign subsequent to 2014, after a 5+ year hiatus?

As an aerospace engineering faculty member, I know firsthand the impact which the Mars program has had on drawing engineering and science students into our Nation's universities. I hear the students' stories and dreams of one day being part of the Mars program every day. We have a pipeline of new science and engineering talent just beginning to come into our program. What will continue to inspire them to work to improve our Nation's scientific drive, technological leadership and economic edge?

Like me, you might wonder, what can I do about this? As a start, come to the MEPAG meeting planned for February 20-21 in Monrovia, CA. Among the discussion, will be a presentation on the future of the Mars program, given by SMD AA Dr. Alan Stern. Listen carefully to what he has to say. Think critically about the feasibility of this plan. Then, decide for yourself:

- Is this a Mars program or a random set of missions that happen to have a common destination?
- Is this a program that I am proud to be a part of?
- Is the interconnected nature of the past-decade Mars program important to me?
- Do I believe we are actually on a path that will enable sample return?

We are at a critical juncture in planning this program. Now is the time for your voice to be heard.

Planetary exploration is a unique symbol of our country's scientific drive, technological leadership and pioneering spirit. Over the past decade, the Mars program has been the strongest and most successful element in NASA's exploration portfolio. This program has addressed scientific questions of fundamental importance, inspired our children, built the scientific and engineering literacy of our country, and increased our economic and technological competitiveness. Now is the time to accelerate, not curtail, the pace and scope of our Mars exploration program. Let's not let our program go without ample consideration.



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