



THE MARS SOCIETY

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Change and Inspiration:
Recommendations on U.S. Space Policy for
President-Elect Obama and the 111th Congress

December 3, 2008

Barack Obama campaigned on a promise of change and hope. In a time of great economic and geopolitical challenge, nothing has more potential to fulfill the promise of that campaign, integrate a diversity of interests, and unify generations of Americans than the prospect of a reinvigorated and revitalized U.S. space program. One goal, with a number of focused steps, will help bring this about.

Americans want something to be excited about, something positive, something they can be enthusiastic about. The space program can satisfy those needs if done in the right way. Interest in the space program is widespread but not deep. The reason is we need someplace to go. We need a goal that will fire our imagination, generate scientific and technical advance, and one that is worthy of the risk involved. That goal is and should be human exploration of the planet Mars.

If we are to engage in human spaceflight, we need a scientific objective worthy of the costs and risks. Mars uniquely provides such an objective. Indeed, as a world which possessed seas for a longer period of time than it took life to appear after the advent of liquid water on Earth, the Red Planet is the Rosetta Stone whose exploration can tell us the truth about the potential prevalence and diversity of life in the universe. The challenges to technical mastery and courage entailed in exploring it will inspire millions of our youth to development their minds to learn science and engineering in order to be able to partake in such an epic adventure, while mobilizing the most advanced capacities of American industry and academia to make breakthroughs in every field. The positive economic effects of such an effort on the United States and the world will be profound, and it will provide the basis to America to join together in a grand common endeavor with all other nations who share with us the noble ideals of progress, science and the search for truth.¹

¹ No destination comes close to the planet Mars in terms of the potential for scientific discovery or the ability to excite the imaginations of the people of the world. In addition, if this bold goal is set and funded, it would provide an enormous fiscal stimulus to our economy, since investments in our space program have historically generated a 10-1 return. Accomplishing this goal, which likely would cost nearly \$100 billion spread over 12 years, would employ tens of thousands of people across the country, lead to technological innovation unseen since the Apollo lunar program, advance scientific understanding of Mars and our own planet and unite the nations of the world in a U.S.-lead program of peaceful exploration.



Our space program is in desperate need of such change. After the loss of the Space Shuttle Columbia in 2003, NASA was given a bipartisan mandate to develop a replacement for the Space Shuttle (which would be retired after completing the International Space Station (ISS) by 2010), return humans to the Moon by 2020 and conduct manned missions to Mars and other destinations at some later date. However, NASA has not been given adequate funding to accomplish these goals. While the ISS is nearing completion and the Space Shuttle is still scheduled to be retired in 2010, its replacement (Orion and Ares I) will not be ready until at least 2015, during which time thousands of jobs will be lost and the United States will be dependent on other countries for access to space. Moreover, the lack of adequate funds has meant an excessive development time for missions beyond low earth orbit (LEO), which has resulted in very little public excitement or interest in this program.

In contrast, a reasonable increase in funding for NASA coupled with a Mars-focused mandate would stimulate the economy, provide thousands of good jobs and capture the imagination of people around the world. Calling for the initiation of a bold space program in the face of current economic crisis may seem totally unrealistic, but the fact of the matter is that it is in the toughest of times that the greatest of deeds have been done. It was the Lincoln administration, faced with a rebellion that threatened to destroy the nation, that initiated the visionary project of building the transcontinental railroad. It was the Roosevelt administration, faced with a fascist onslaught to enslave humanity, which initiated the greatest scientific mobilization the world had ever seen. It was the Kennedy administration, faced with imminent threat of nuclear war, that launched us on our path to the Moon.²

With respect to the space program, the situation remains as it has for the past three decades. NASA needs a goal, and that goal should be humans to Mars. This is so, because Mars is where the science is, it is where the challenge is, and it is where the future is. But with respect to the nation, the issue has reached its critical moment. We are faced with, as candidate Obama said, quoting Martin Luther King, with “the fierce urgency of now.” Because now is the time when we decide whether we are going to rise to the occasion or not. Is the dream of an unbounded future going to live, or will it die, snuffed out by a defeatist acceptance of the age of limits. It is in times of darkness that the torch needs to be lit. It is in times of fear that the flag needs to be raised.

A humans to Mars program would help mobilize our economy, at a time when it needs to be mobilized, and inspire millions of youth to develop their minds. But it would do more than that. It would raise the flag, the flag of courage, and hope, and the pioneer spirit. It would say to the world, and to ourselves, that we will not accept defeat. That we remain a nation whose great deeds will continue to be celebrated in newspapers, and not just in museums. That we as a nation are not old, but young; that we are living not at the end of our history, but at its beginning. It would say, in no uncertain terms: “Yes we can.” That’s the change we need.

² Such a program would not be starting from scratch. For the last several years, NASA has been developing the tools to conduct human missions of exploration to the planets as part of Project Constellation. However, this program has not been adequately funded and, as currently structured, would not result in a human mission to Mars for at least another 20-30 years. Nevertheless, many of tools and technologies necessary to conduct a mission to Mars have been or are currently being developed by NASA, including the Orion spacecraft, Ares I and V launch vehicles, regenerative life-support systems, solar power systems and new spacesuit designs. In short, Mars is closer today than the Moon was in 1960 when President Kennedy set the audacious goal of sending a man to the Moon within a single decade.



Summary of Recommendations

Funding:

Increase NASA's budget for FY 2009 by \$2.7 billion above the FY 2008 enacted level of \$17.3 billion, followed by annual eight (8) percent increases in FY 2010- FY 2015, and at least inflationary increases thereafter.

Program Directives:

1. Establish a program of human exploration of Mars as the primary goal of the U.S. space program, with a mandate to conduct the first Mars landing by 2022.
2. Complete the ISS by 2010, with research focused on supporting the Mars exploration program. Also, one mission should be added to the Space Shuttle launch manifest to deliver the Alpha Magnetic Spectrometer to the ISS, which also would shorten the gap between the retirement of the Space Shuttle and entry into service of its replacement (Orion/Ares I).
3. Accelerate development of the Orion/Ares I, with Orion/Ares I in service by 2013. Accelerate development of the Ares V heavy lift launcher, which should be ready by 2015.
4. Conduct relevant pre-cursor missions to the Moon and one or more asteroids to test systems and procedures necessary for human missions to Mars. Consistent with this purpose, every effort should be made to fly meaningful missions beyond LEO at the earliest possible date, with the first asteroid mission and lunar landing mission conducted by 2016.
5. Conduct a robust program of space science missions, including robotic missions to further our understanding of Mars.
6. Utilize the COTS program for ISS re-supply after the retirement of the Space Shuttle. Expand programs like COTS to larger roles in exploration after it has demonstrated cost savings in ISS re-supply.

Appointments:

Make a positive statement in key NASA and Science appointments. Appoint people who can not only run their agencies, but help inspire as well. For example, the Science Adviser has traditionally been virtually invisible to the public and perceived as a bureaucrat by many in the science and space community.