

Dated: 02/22/01

EXHIBIT I

MARS EXPLORATION PROGRAM OVERVIEW

PROGRAM OBJECTIVES, SCOPE, AND CHARACTER

The Mars Exploration Program (MEP) encompasses all NASA Mars robotic mission activities and analyses undertaken to characterize the solid planet and its atmosphere, its geological history, its climate and the relationship to Earth's climate change process; to determine what resources it provides for future exploration; and to search for evidence of extinct or extant life on Mars.

The Mars Exploration Program is a science-driven, technology-enabled effort to characterize and understand Mars. Chief among the questions to be addressed by the Program is: "Did life ever arise on Mars?"

Scientific and engineering measurements of the nature of Mars will be carried out using robotic assets at Mars. Experiments which provide critical information for the eventual human exploration of Mars will be incorporated through an integrated planning approach.

**KEY PROGRAM REQUIREMENTS AND CONSTRAINTS
FROM THE PROGRAM COMMITMENT AGREEMENT AND
PROGRAM PLAN**

- The Program shall return a set of scientifically selected samples from the Martian surface to Earth.
- Samples shall be treated and handled in a manner consistent with NASA planetary protection requirements, in accordance with NPD 8020.12B
- The MEP shall be designed to fit within the approved funding profile.
- The Program shall seek to launch at least one mission at each Mars opportunity, consistent with Program resources and technical feasibility.
- Each mission within the Program shall contribute to both science and technology objectives of the Program.
- New technology shall be incorporated into planned missions only after it has reached suitably mature Technology Readiness Levels (TRL).
- The Program shall avoid major increases in technical or programmatic risk from one mission to the next.
- Each mission within the Program shall be designed to feed forward validated technologies and lessons learned to future missions.
- Missions shall be developed or conducted with major participation by industry.
- Radioisotope Heater Units (RHUs) may be used on Program missions, as may advanced RPS systems, once available. Any use of radioisotope power or heat sources shall comply fully with applicable requirements for the handling and launch of nuclear materials.
- Each Mars orbiter mission shall include a communications relay capability designed to operate at least two Mars years.
- Mars samples shall be curated in the NASA Planetary Materials Curatorial Facility

KEY PROGRAM MILESTONES (MISSION QUEUE)

Launch opportunity date - Mission

- 1996 - MGS (in flight)
- 1998 - MCO/MPL (missions failed in flight)
- 2001 - Odyssey Mars Orbiter
- 2003 - Mars Exploration Rovers
ESA Mars Express Support (NASA support to radar system)
- 2005 - Mars Reconnaissance Orbiter
- 2007 - Opportunity for:
Smart Lander
CNES Orbiter (NASA support)
Competed Scout Mission
ASI Telecom Orbiter (NASA support)
- 2009 - ASI Science/Telecom Orbiter (NASA support)
- 2011 - Opportunity for:
Sample return (samples may reach Earth in 2014)
Competed scout mission
- 2013 - Opportunities for:
Additional sample return missions, orbiters, landers, scouts, etc.

KEY PROGRAM FUNDING ASSUMPTIONS

- The Mars Exploration Program is currently funded at a total annual budget of approximately 500 M Real Year Dollars per year.
- For the purposes of this study, it should be assumed that the total funding available for development of a 2011 Mars Sample Return Project will be between one billion and two billion dollars, including launch vehicle(s) and the mission operations system, but not including technology development, flight validation demonstrations, mission operations, or preparation for and implementation of handling the returned sample on Earth.