

measurements of Mars would be carried out using robotic assets at Mars. Central among the questions to be addressed is: "Did life ever arise on Mars?" Life, as is currently understood, cannot exist without liquid water. Following the water means searching for scientific evidence that liquid water was present persistently in the past or is present today. Science experiments and technology demonstrations that provide critical information for the potential human exploration of Mars would also be incorporated through an integrated planning approach.

The overall strategy of the MEP is to generate a continuous flow of information and discoveries from scientific and exploration robotic spacecraft, including orbiters, landers, mobile laboratories (rovers), and atmospheric probes through a Mars-Earth communications network. It is intended that one or more major U.S. missions would be launched at every Mars launch opportunity (approximately every 26 months) through at least the first two decades of the 21st century. Foreign participants with NASA in the MEP may include, but not necessarily limited to, the Agenzia Spaziale Italiana (ASI, the Italian space agency), the Centre National d'Etudes Spatiales (CNES, the French space agency), the Canadian Space Agency (CSA), and the European Space Agency (ESA). Launches would most likely take place from Cape Canaveral Air Force Station in Florida and, although unlikely, from Vandenberg Air Force Base in California.

**DATES:** Interested parties are invited to submit comments or environmental concerns in writing on or before September 5, 2003, to assure full consideration during the scoping process.

**ADDRESSES:** Comments should be addressed to Mr. Mark R. Dahl, NASA Headquarters, Code SM, Washington, DC 20546-0001. While hardcopy comments are preferred, comments may be sent by electronic mail to: [mep.nepa@hq.nasa.gov](mailto:mep.nepa@hq.nasa.gov).

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**SUPPLEMENTARY INFORMATION:** Consistent with the NASA strategic plan, the MEP has established objectives to address the scientific questions associated with the exploration of the planet. These objectives are: (1) Seek evidence of ancient or present life on Mars, (2) understand the current state and

evolution of the atmosphere, surface, and interior of Mars, (3) provide scientific support for the planning of potential human exploration of Mars.

The program would implement a series of scientific investigations and experiments, developed and prioritized by the broad planetary science community, that support the objectives of the program. It would include comprehensive Mars data analysis with the full participation and involvement of the space science community. Due to the program's broad scope and public interest, the MEP would place significant importance on education and public outreach.

As a goal, the program would launch at least one spacecraft at each opportunity, providing robotic assets that would enable a near-continuous data return from Mars. Each orbiter mission would include a communications relay capability designed to operate as part of a Mars-Earth communications network. Each mission would be designed to support the ongoing program by validating technologies and providing data and lessons learned to future missions.

Technology developments and improvements over the course of the program would enable a progressive increase in the science data returned from instruments delivered to Mars orbit and to the surface by program spacecraft, enhance the capability to safely and precisely place payloads at any desired location on the surface, and enable full access to the subsurface, surface and atmospheric regions. Technology improvements would also enable extended (one Mars year (1.88 Earth years) or more duration, as a goal) surface science investigations, and support the development of robotic assets to provide a near-continuous data return from the Mars surface. Extended duration missions to the surface are likely to include radioisotope power systems as a baseline.

The MEP missions currently contemplated for launch by 2010 are described below. As new information and techniques become available during the course of the program, the timing, focus and objectives of subsequent MEP missions could be redirected.

- The Mars Exploration Rover (MER) project will launch two identical spacecraft to Mars in 2003. The purpose of this project is to place two rovers on the surface of Mars to remotely conduct geological investigations and characterize a diversity of rocks and soils which may hold clues to past water activity. Because planning for this project began prior to final definition of the MEP, potential environmental

impacts of the MER-2003 project have already been discussed in separate NEPA documentation. NASA published a notice of intent to prepare an EIS and to conduct scoping for the MER-2003 project in the **Federal Register** (FR) (66 FR 11184, February 22, 2001). A Draft EIS for the MER-2003 project was made available for public review and comment (67 FR 48894, July 26, 2002), and NASA published its Final EIS (67 FR 75863, December 10, 2002).

- The Mars Reconnaissance Orbiter (MRO) mission will be launched in 2005 to investigate global atmospheric transport processes, conduct globally distributed observations of aqueous sediments and hydrological process indicators, and collect high-resolution imagery of the surface of Mars. ASI is contributing a ground penetrating radar science instrument to MRO. No radioisotope heater units or radioisotope power systems are proposed for this mission. NASA has designated MRO as a routine payload in accordance with the Environmental Assessment (EA) for Launch of NASA Routine Payloads and Finding of No Significant Impact (FONSI) published by NASA (67 FR 41525, June 18, 2002).

- In 2007, the program would launch a continuing series of competitively selected small missions, called Scouts, which could allow the science community to design investigations that augment the objectives of the MEP from new vantage points (e.g., airborne platforms, rovers, networks of landers). The Scout missions currently remaining in competition for the 2007 opportunity have not proposed the use of radioisotope heater units or radioisotope power systems.

- In 2009, the program would launch the Mars Science Laboratory (MSL), which could conduct multi-disciplinary investigations related to biology, climatology, geology, and geochemistry. The MSL could utilize a radioisotope power system to provide continuous electrical power for mobility and extended duration. A separate Tier 2 environmental document for the MSL mission may be prepared. Also in 2009, the program would launch a telecommunications orbiter (Telesat) to provide science data relay capability for multiple Mars missions. No radioisotope heater units or radioisotope power systems are proposed for the Telesat mission.

Missions to Mars in the following decade would be dependant upon the knowledge gained and the discoveries of this decade. NASA, working with the science community, has developed potential paths of scientific inquiry (called pathways) into the next decade.