

HUMAN EXPLORATION OF THE MOON AND MARS SYMPOSIUM (A5)
Strategies to Establish Lunar and Mars Colonies (1)

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A CONCEPT OF MANNED MISSION TO MARS. COMPARATIVE ANALYSIS OF VARIANTS

Abstract

A manned mission to Mars is one of the nearest stages of the development of the terrestrial civilization. A manned mission will intensify the process of Mars exploration and make it more effective. Besides, it can create prerequisites for the development of this planet, which has the best prospects for colonization. Development of the Martian mission complex (MMC) will require synergy of the most innovative technologies. At the same time, implementation of this task will open a way to using these technologies for public ends and contribute to the World stability.

Nevertheless, unconditional actuality of the manned mission to Mars realization does not cancel necessity of cost analysis of such a large-scale project. Considering assumed expenses for MMC development it seems expedient to carry out the project realization in the framework of international program. This will also serve bringing nations together to solve the common task.

Current concept of a manned mission to Mars is presented. Conceptual decisions are analyzed on questions like selection of the mission scenario, the number of the crewmembers, load carrying capacity for the launch vehicles used to deliver the interplanetary complex components to the low-earth orbit, MMC configuration, crew safety and others. Martian mission complex variants with different principles of propulsion systems development, which use either solar or nuclear energy, are considered.