

Technology Roadmaps for Space Exploration (09)
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Author: Mr. Jacques Blamont
Centre National d'Etudes Spatiales (CNES), France, jacques.blamont@cnes.fr

A ROADMAP TO CAVE DWELLING ON THE MOON AND MARS

Abstract

On the Moon and Mars, Man's habitat could be situated in lava tubes recently discovered. These subterranean structures have typically a diameter around 50 meters, communicate with the surface by roof collapses, and display a length of hundreds of meters. Settling there could provide a unifying scheme for exploration, with testing survival in tunnels would start on the Moon in the 2030's and continue on Mars in the 2040's-2050's. Preparation for this option would include two types of missions, which will be described in detail :

- . Cartography of lava tubes by orbital radar and thermal mapping on the Moon and on Mars ;
- . Development of specific technology for descending in tunnels, deploying inflatable structures inside the lava tube and creating life support system adapted to caves.