

21st IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Interactive Presentations - 21st IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR
SYSTEM (IP)

Author: Mr. Vladimír Kocour
Czech Technical University In Prague (CTU), Czech Republic, kocouv11@fd.cvut.cz

Mr. Bohumír Stedron
Charles University, Czech Republic, stedron@seznam.cz
Prof. Otto Pastor
Czech Technical University In Prague (CTU), Czech Republic, pastor@fd.cvut.cz

NEW APPROACH TO MARS TERRAFORMATION

Abstract

Bohumír Stedron developed the new idea to propel the moons Phobos and Deimos into the Martian polar caps, making the atmosphere more appropriate for humans in the American Journal Futurist in March-April 2004 p. 25.

The planet Mars was an attractive destination for many various spacecrafts from that time. Now, the spacecrafts are automatic, and they obtain data about Mars surface, physical processes, Mars weather, and indirectly even about the interior of Mars. However, the humankind will not be satisfied with this state. It will colonize Mars in coming decades with great probability. The specific date of manned mission to Mars is constantly postponed due to many problems. Sparse atmosphere of Mars and low temperature on Mars surface belong to them. Particular projects try to increase Mars atmosphere density with different methods. Mars has giant water reserves in subsurface frozen ocean with dimensions 800x800 km, discovered in 2005. We can use it for our benefit. It seems that the fastest way to make the atmosphere denser is to transfer Mars satellite Phobos or Deimos (or both) to descending trajectory and cause the fall of the satellite to Mars. If we aim the satellite or both satellites just to that ice ocean, big amount of water will sublimate, and surface air pressure and temperature will increase. The crucial question is how to change trajectory of Mars satellite to descending trajectory. Probably the simplest method is to use rocket motors. Contemporary Saturn V rocket has a thrust of 34 meganewtons (first stage) for 150 seconds. Solution of this task will require much higher level of reliability of all cosmic systems including telecommunication, drive, rocket motors etc. Artificial intelligence will be necessary for driving because limited speed of light is making impossible to control all the process from Earth. We must be also able to produce high-power rocket motors. Nuclear drive is being developed already now. It can be presumed that propulsion unit much more powerful than contemporary Saturn V will be available after 2050.

According to the various existing models and scenarios, Mars's atmosphere density can be increased. We estimate the new density as high as Earth's atmosphere density in height about 10-15 km above sea level. The whole project can be implemented after 2050.