

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

Author: Mr. BHUSHAN THOMABRE
SRM Institute of Science and Technology, India, bhushanthombare10121999@gmail.com

Mr. Saumya Shekhar
SRM Institute of Science and Technology, India, sr5183@srmist.edu.in

A CASE STUDY OF A CREWED MARS MISSION BY STARSHIP

Abstract

The last successful manned journey to the Moon was over 50 years ago. The colonisation of Mars is the next stage, not just for those governments who are investing in space exploration, but also for the entire human species. Mars is the most Earth-like planet, implying that it has the potential to become a new home for humanity. On Mars' surface, all of the materials required to sustain life are readily available. The quest for life on other worlds, the need to perform fundamental science research to understand more about the formation and history of the solar system, and applied research on how to use Martian resources to enhance life-sustaining systems are all motivations for establishing a human presence on Mars. With the expansion of space exploration endeavours, it is becoming increasingly important to build research colonies for crucial space exploration missions. A mission is proposed to send a crew of 6 people to Mars using a low energy interplanetary transfer orbit and provide them with a safe and reliable environment both during their journey to and from the planet as well as their extended stay on Mars using one of Earth's most powerful rockets, the Starship manufactured by Space X. Direct paths for both the minimal delta V and the least hyperbolic excess square are examined for the years 2024 through 2036. This first manned expedition will forge a permanent link between Mars and Earth. In-situ research will be conducted with the goal of locating aquatic ecosystems and traces of past and contemporary life. The development of infrastructure for long-term human habitation on Mars will be recommended. This mission's general design includes all of the space aspects involved.