MINING ON PHOBOS & DEIMOS. Ashish H. Mistry, 3-b Deep Nagar Society, At: Po: Bardoli -394 601, Dist: Surat, State: Gujarat, Country: India. E-mail: ashu_aerospace@yahoo.co.in

Introduction: Resource utilization would play an important role in the establishment and support of a permanently Manned Base on any Planet, Scientific Knowledge & Future Exploration Preparation. Phobos and Deimos are the two satellites of Mars. Both are believed to be captured asteroids. We can considered them Asteroids of large size. Phobos is a dark body that appears to be composed of carbonaceous surface materials. It is similar to the C-type asteroids. Phobos' density is too low to be pure rock, however, and it is known to have significant porosity. These results led to the suggestion that Phobos might contain a substantial reservoir of ice. Phobos is covered with a layer of fine-grained regolith at least 100 metres thick; it is believed to have been created by impacts from other bodies.

The machinery will likely be solar powered, to reduce the need for fuel that would have to be hauled to the Phobos & Deimos by spacecraft. The equipment will also have to be lightweight to transport it to the moons of Mars. Using robotic equipment to limit the personnel needed to carry out the mining project. This would reduce the amount of supplies, like food, required for a manned mission. Miners on moons of Mars would use techniques similar to those used on Earth. The most likely method would be to scrape desired material off and tunnel into veins of specific substances. Scraping, or strip mining, will pull out valuable ore that will float off the moons. Because much of the ore will fly off, a large canopy might be used to collect it. Phobos & Deimos have nearly no gravity, so the mining equipment, and the astronaut-miners who operate it, will have to use grapples to anchor themselves to the ground. However, the lack of gravity is an advantage in moving mined material around without having to use much power. Once a load of material is ready to be sent to either Earth or a space colony, rocket fuel for a ferrying spacecraft could be produced by breaking down water from the asteroid into hydrogen and oxygen. Thus Mining of Mars Moon Resources plays an important role in Future Mining Missions & Utilizations of resources of Mars & on other planets.

References:


Figure 1: Strip-mining equipment extracts raw materials from Moons of Mars. In the foreground, a mining cart transports the materials to a processing plant.