

Lunar Exploration (3)

Lunar Concepts (3)

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## LUNAR INDUSTRY&RESEARCH BASE CONCEPT

### Abstract

Currently, all main space industry players, such as Europe, USA, Russia, China, etc., are looking back again at an idea of Moon exploration building there a manned lunar base. Alongside with other world spacefaring nations, Yuzhnoye State Design Office with its long-time development experience, technological and intellectual potential, organized its own conceptual work on development of Lunar Industry&Research Base. In the frames of this project, a part of work is already finished: lunar base development strategy, lunar trajectories and flight schemes, super heavy launch vehicle concept, lunar modules design, etc. Main phases of lunar base development are identified. Phase #1 Preparation (10 years): establishment of international cooperation, Moon exploration by means of unmanned spacecraft, development of Earth-Moon-Earth space transportation system, lunar base infrastructure components, and take-off/landing pad. Phase #2 Minimal configuration base (2 years): delivery of first lunar base modules and power plant; minimal configuration lunar base assembly, systems check-out and testing. Phase #3 Expansion of lunar base (10 years): lunar base additional equipping, lunar surface exploration, selection and preparation of territories for production base and lunar observatory. Phase #4 Transition to production (20 years): development of closed-cycle life-support system, production base and lunar observatory. Phase #5 Permanent base: human constant presence and life activity on the Moon, development of space tourism center. Besides the fact that the Moon is the closest available place for humanity to colonize it, the Moon and its reach resources are the key to reducing costs for interplanetary missions. Lunar resources will allow producing rocket propellant, constructional materials and necessary resources for crew life support and base on the whole – all of this will provide a stimulus in development of space activities of mankind in the near and outer space. Lunar industry&research base is a platform for testing of space equipment and technologies necessary for lunar exploration and interplanetary manned missions, and a springboard to the development of the next manned bases on Mars and its moons, as well as to exploration of asteroids, etc.