

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 3 (2C)

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CONCEPT OF LUNAR PRODUCTION AND RESEARCH BASE CREATION

Abstract

The Ukraine space scientific and technical potential and experience in development and building of launch vehicles and spacecrafts as well as high practical interest by the Ukraine scientific organizations and institutes enabled to develop the constructive concept of lunar scientific and production base creation. It is suggested to create such base on the Moon in five phases: First - preparatory: establishment of international cooperation for the Moon exploration, lunar exploration using unmanned vehicles, creation of space transportation systems. Second – minimum-configuration base: delivery of the first base modules and construction of take-off and landing area. Third – base extension: equipping of the scientific and production base, the lunar surface exploration. Fourth – change-over to production: creation of self-contained life support system, production base and observatory. Fifth – stationary base: support for human continuous presence and human life support on the Moon. The options are suggested for creation of the lunar space transportation system “Earth-Moon-Earth”, which is of great importance in creation of the lunar base. Much attention is paid to creation of the lunar base infrastructure components, such as accommodations and production rooms modules, lunar transportation vehicles and power-plants complex. The following issues were estimated in creation of the minimum-configuration base: delivery of the first base modules, the lunar base assembly, systems checkout and testing as well as construction of take-off and landing area. In the base extension phase the following estimations are made: creation of the protective shell of moon soil as well as the territory selection and preparation for deployment of the production base and lunar observatory. When the base is transferred to industrial production, the need is determined for creation of self-contained life support system and the following production complexes: rocket propellant; necessary resources for crew life support; building and construction materials; rare-earth mining (including supplies to the Earth).