

Lunar Exploration (2)
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POSSIBLE SCENARIOS OF MANNED LUNAR EXPLORATION BY RUSSIAN SPACECRAFT AT
THE INITIAL STAGE AND PROPOSALS ON SPACECRAFT CONCEPTS TO SUPPORT MANNED
MISSIONS AND CONDUCT RESEARCHES ON THE MOON AND FROM THE MOON

Abstract

For effective lunar exploration in the framework of the Russian lunar program the joint work of manned and robotic spacecraft is required. Thus robotic spacecraft would not only carry out their own research program, but also support manned missions. The development of Russian lunar exploration program is based on the principle of determination of baseline list of spacecraft to provide a sustainability of the program if the research priority and a list of scientific and applied tasks change. Baseline range of spacecraft platforms and baseline lunar exploration mission scenarios are being determined providing maximum adjustability of spacecraft characteristics and relevance of these spacecraft to research the Moon as a celestial body and deep space from the lunar surface.

Within the framework of the presented paper advanced Russian lunar exploration spacecraft and possible scenarios of their usage in the context of Russian lunar exploration program are considered. Baseline spacecraft platforms concepts and their preliminary performance to fulfill lunar exploration tasks are proposed. The usage of these unified platforms will allow the time of spacecraft manufacture to be reduced at the cost of serial manufacturing and technical continuity. In addition, such approach would optimize scientific equipment design and the concept of conducting experiments for unified baseline platforms of lunar rovers, orbital spacecraft, landing spacecraft, allowing their resources to be used as a service for the end user (device).