

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

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POTENTIAL RUSSIAN LANDING AND TAKEOFF ROBOTIC SPACECRAFT USAGE SCENARIOS
TO SUPPORT FUTURE MANNED MISSIONS TO THE MOON**Abstract**

Within the framework of the Russian Federal Space Program, starting from 2021, a number of robotic missions to the Moon are planned that are to start a new stage of its study and exploration. At this stage it is planned to develop and launch "Luna-Glob", "Luna – Resurs-1 (Orbiter)", "Luna – Resurs-1 (Lander)" (primary and back-up), "Luna – Grunt" robotic spacecraft (RS). These RS will have not only to solve scientific problems, but also to test a number of systems and subsystems. Their platforms will serve as a prototype for new RS, which will be used not only to prepare for future manned missions, but also to support them. On the basis of the planned RS "Luna-Resurs-1 (Orbiter)" and "Luna – Grunt" orbital and reusable unmanned landing and takeoff systems can be constructed, that will increase the efficiency of manned missions. International cislunar space station Deep Space Gateway (DSG), that is to become a gateway between the Earth, the Moon and the Mars, may be used as an interface of interaction between manned and robotic missions at the first stage. Within the framework of the presented report, possible scenarios of interaction between manned missions and advanced landing and takeoff robotic spacecraft are considered in order to improve the scientific effectiveness of the tasks to be solved, including scenarios of applied and scientific activities on the lunar surface. The program of Moon study and exploration by robotic spacecraft plays a significant role at this stage.