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

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ADVANCED SPACECRAFT FOR FUNDAMENTAL AND APPLIED MOON RESEARCH

Abstract

In accordance with the adopted strategy the realization of national moon exploration program by means of unmanned spacecraft until 2025 consists of four main phases.

First phase with a launch at the end of 2018 – beginning of 2019 provides development of small-size landing demonstration mission – Luna-25 with decreased scientific payload on-board. This mission should prove the basic technologies of soft landing on the Moon surface. Then in 2020 an Orbiter named Luna-26 will be send to the Earth satellite. The spacecraft will operate on near-Moon circle polar orbit with a height of 200 km within one year approximately. The main objectives of the Orbiter during this phase will be reception and transmission to the Earth data from Lander as well as remote investigations of the Moon by means of scientific payload. During this year Orbiter will be transferred to the orbit with reduced pericenter – about 50 km twice for several days to perform detailed survey of Moon surface. Further the Orbiter will be transferred to the orbit with the height of 500-700 km. Operation on this orbit helps to perform astrophysical experiment LORD designed to study cosmic rays and neutrinos of ultrahigh energies.

A year after a second Lander will be launched and aimed at South Pole of the Moon. The name of this Lander is Luna-27 (Luna-Resurs) and it will be equipped with cryogenic deep performance drill instrument. The Lander will have high precision and hazard avoidance landing system which significantly improve the accuracy of landing – up to 3 kilometers and thereby enhance opportunities to choose preferred place of scientific research.

Polar area soil samples return to the Earth will be the target for Luna-28 Spacecraft. The realization of this mission is planned closer to 2025.