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STATUS UPDATE FOR THE PLANNED MOON EXPLORATION MISSION IN TAIWAN

Abstract

National Space Organization (NSPO), the space agency of Taiwan, has been planning to conduct outer space exploration mission in the Phase III Space Program, which extends from 2019 to 2028, and attempts to take the Moon exploration using the lunar orbiter as the first step. In 2019, the program team has derived four technical objectives for the lunar mission, and characterized major mission parameters, including the mission orbit, spacecraft dry mass, communications bands, mission life and design life. The team has also evaluated comprehensively on the strategy of arriving at the Moon and opted for the approach of phasing loop transfer from the geosynchronous transfer orbit (GTO) to the lunar mission orbit. For tracking support on both Launch and Early Orbit (LEO) phase, including cis-lunar transfer and lunar orbit insertion, and the normal mission operations phase in the lunar mission orbit, the ground station requirements with two different sizes of antenna are specified. Then the preliminary result of the operational requirements for tracking support in various mission stages, which may consist of critical and non-critical stages, is suggested. In 2020, the academic and research communities in Taiwan have joined the lunar mission and proposed several instruments (payloads, P/Ls) with advanced scientific ideas and plans for the Moon exploration. Totally nine potential P/L developing teams have passed the first level of screening to conduct the feasibility studies. After these studies completed, three to four appropriate scientific payloads will be selected through distinct tiers of review process, and then to be developed to integrate with the spacecraft bus to perform scientific explorations and observations of the Moon and its environment. To promote international cooperation, NSPO also reserves an extra space for the scientific payload from other space agency for exchanging the support of the outer space communication and navigation. In addition, a preliminary mission analysis and systems design as well as the mission planning and navigation strategy analysis have been performed with the help from consultants last year. This paper will describe the updated status of the planned lunar orbiter mission since IAC 2019 conference. The possible scientific payloads and the preliminary result of further studies and analyses will be briefly introduced.