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A GATEWAY SUPPLY MISSION SCENARIO AND FLIGHT PLAN WITH UPGRADED H3 AND
HTV-X

Abstract

The lunar orbital platform Gateway is led to be constructed by NASA and Gateway will be constructed to support the Artemis program in 2020s. JAXA and MHI are studying how to contribute its program by using H3 and HTV-X. Both H3 and HTV-X are currently being developed. H3 is based on the heritage of H-IIA/H-IIB. The maiden flight of H3 will be JFY2020. H3 intends to be more customer friendly launch vehicle by increasing reliability and launch capability while decreasing its price. On the other hand, HTV-X is an advanced version of H-II Transfer Vehicle (HTV) to increase supply cargo capability for ISS and provide an on-orbit demonstration opportunity for future exploration mission, like Gateway. For Gateway, HTV-X is studied to be further advanced. To achieve this mission, MHI and JAXA are considering to utilize H3 and HTV-X to transfer cargo to Gateway. The flight path is optimized considering needed delta-v to Gateway and flight time and so on. H3 will have additional function to bring cargo to Gateway. H3 and HTV-X will interact each other for optimizing resources of H3 and HTV-X. This paper reports the study of mission scenario and utilization of H3 and HTV-X.