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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Upper Stages, Space Transfer, Entry and Landing Systems (3)

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MISSION CONCEPT AND TECHNICAL SUBJECTS OF HTV-R (HTV-RETURN)

Abstract

JAXA has developed the H-II Transfer Vehicle (HTV) as a cargo transfer vehicle for the International Space Station (ISS). The 3rd HTV mission was successfully completed on September 14, 2012. As the next step, JAXA is studying the feasibility of developing the return vehicle with the HTV modification named HTV-R. HTV-R aims to retrieve cargo from the ISS to the earth. HTV-R return capsule contains new technologies for reentry, such as thermal protection system with low-density ablator, high accuracy guidance control system, reaction control system by low-toxic propellant thruster and large parachutes clustered system. Because the HTV-R return flight profile is similar to the one for human space flight, JAXA is considering that HTV-R is not only as a cargo recovery system but also as the pathfinder of a human transportation system or crew vehicle. This paper presents a conceptual study of HTV-R mission concept, system configuration and technical subjects to realize the Japanese return missions from the ISS.