

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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DEVELOPMENT STATUS AND FUTURE UPGRADE PLAN OF THE H-IIB LAUNCH VEHICLE

Abstract

The H-IIB launch vehicle, which is being developed jointly with Japan Exploration Agency (JAXA) and Mitsubishi Heavy Industries, Ltd (MHI), is an upgrade version of the H-IIA launch vehicle and currently in its final development phase. To increase the launch capability to 16.7 metric ton LEO from 12 metric ton LEO of the H-IIA 204 type vehicle, the H-IIB first stage uses two H-IIA's LE-7A main engines with increasing 1.8 times propellant mass by expanding the tank diameter to 5.2 meters from H-IIA's 4 meters diameter. The primary mission of the H-IIB is to launch the H-II transfer vehicle (HTV), which is important as Japan's contribution to the International Space Station program. At the same time, the H-IIB launch vehicle is intended to expand the launch capability of the H-IIA family, maintain the development competence of launch vehicles, and ensure the international competitiveness of the Japanese space program. The development of the H-IIB launch vehicle started with a system study in 2003, and the critical design phase was completed in July 2007. Component and sub-system level development tests have been successfully completed and Test Flight vehicle was fabricated and shipped to the Tanegashima Space Center in February in 2009, and the system level functional tests for the first test vehicle have been started standing on the improved and modified launch facilities. We will perform the first stage engine firing tests and the total vehicle functional test with loaded the propellant to the tank in order to verify the integrity of the total vehicle including the launch facility and operations. After completing the all ground tests, we will launch the test flight vehicle in 2009. In this paper, we describe the outline of the H-IIB launch vehicle and the status of the development tests, and the future upgrade plan.