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FLIGHT RESULTS OF SOLID PROPULSION SYSTEM FOR EPSILON LAUNCH VEHICLE FROM THE THIRD FLIGHT

Abstract

The Epsilon Launch Vehicle, the newest version of Japan's solid propulsion rocket, has been further developed under the name of "Enhanced Epsilon" since its first flight in 2013. The aims of Enhanced Epsilon's development are the increase of the launch capacity and payload usable volume. In order to realize these improvements, powerful second stage motor (M35 motor) is newly developed and exposed from nose fairing. The second Epsilon, the first application of Enhanced Epsilon, succeeded in launching the satellite Arase, the Exploration of energization and Radiation in Aerospace (ERG), into orbit as planned in December 2016. Epsilon-2 was a "basic" form without PBS (Post Boost Stage) which offers high orbit injection accuracy. In January 2018, the third Epsilon, an "optional" form with PBS, successfully delivered a satellite ASNARO2 into a sun synchronous orbit. The development including the flight demonstration was completed these two flights. The solid propulsion systems, which are the first stage solid motor, the second stage solid motor, the third stage solid motor, spin motors and solid motor side jet (SMSJ), were performed well as planned. This paper describes the detail of development and the third flight results of solid propulsion system for Enhanced Epsilon launch vehicle.