

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

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STEPPING STONE TO THE FIRST KOREAN SPACE LAUNCH VEHICLE

Abstract

Korean Aerospace Research Institute(KARI) launched the first Korean Space Launch Vehicle, KSLV-I, on 25th August, 2009 according to the national long-term plan for space development but could not accomplish its mission to insert the scientific satellite of 100 kg into an elliptical orbit of 300 by 1500 km due to the abnormal separation of the PLF(payload fairing). The investigation board carried out its job for almost six months to examine the causes of the abnormal separation of the PLF and recommended the corrective actions and measures. In this paper I am going to study how the role of the investigation board would affect the development of the first Korean space launch vehicle and whether it would be a stepping stone to the development of KSLV-I by reviewing the processes of the investigation board and the result of the second test flight of KSLV-I which is expected to take place in the first half of 2010.

The investigation board and its TFT(task force team) reviewed PLF(PayLoad Fairing) separation mechanisms in detail, inspected history data of the components and parts of PLF separation system in manufacturing and testing, analyzed telemetry data relating to the abnormal separation of PLF, and examined a corresponding fault tree established by KARI(Korea Aerospace Research Institute) from 28th August, 2009 to 29th January, 2010. The investigation board recommended several corrective actions and measures which should be incorporated into the redesign for the second flight model of KSLV-I upper stage and the preparation of the 2nd flight test.

On 25th February, 2010 KARI carried out the experiment of the separation of a new PLF of the flight model for the 2nd flight test with all those recommendations applied into the PLF system. The experiment was successful on the ground. But the first Korean space launch vehicle is still under the preparation for the second flight test and we have to wait until the successful flight test in order to prove the recommendations from the investigation board to be correct.

No matter what the result of the 2nd flight test of KSLV-I would be, all those processes would be stepping stones to the development of the first Korean space launch vehicle, KSLV-I and to the peaceful use of the related technology for the mankind on our lovely planet.