

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Virtual Presentations - IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS
SYMPOSIUM (VP)

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INTRODUCING LAUNCH OPERATIONS OF KOREA NEW LAUNCH VEHICLE BASED ON TEST
LAUNCH VEHICLE FLIGHT TEST

Abstract

The Test Launch Vehicle (TLV) is a single stage launch vehicle whose main purpose is to verify the flight performance of new 75-ton liquid rocket engine as the main engine of a Korea's new launch vehicle (KSLV-II). The launch operation procedure is also verified in this launch since the TLV has very similar launch procedures and launch facilities to the KSLV-II. The launch operation of KSLV-II is basically proceeded for two days. The first day starts with the roll-out and transportation of launch vehicle from the assembly facility to the launch facility. The KSLV-II is assembled horizontally similiary as the KSLV-I and it is transported along the road of NARO Space Center premises using special vehicles and transport equipment (which called Transporter-Erector). The vehicle with transport equipment are placed on an erection device (which called Erector) after transferring and they are erected vertically using hydraulic equipment. The vehicle is fixed and connected to the Launch Pad using Vehicle Holding Device and Umbilical Connection Device which were newly developed in accordance with the requirements of the KSLV-II. On the day of launch, the launch operation is started from the electrical and mechanical inspection of the vehicle. Propellant, kerosene and liquid oxygen, and helium gas are supplied according to the prescribed sequence. About one hour before the launch, main propellant filling is stopped and the erection equipment with transportation means, service flatform should be switched initial position. About 10 minutes before the launch, the automatic parallel sequence is executed. The vehicle holding device release vehicle when lift-off commission from the flight computer and vehicle starts flight simultaneously. On November 28, the countdown of TLV was started at 15:50 with an automatic sequence and was launched at 16:00. Following the launch, it was confirmed that about 525 seconds, or 430 kilometers, were dropped into the expected falling area after normal flight, following the prescribed flight procedures and routes. Through the test launch, the launch operation procedures were implemented and verified to be suitable for KSLV-II. It was also properly used for practice and verification of launch facilities and operational personnel involved in launch operations.