

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Services, Missions, Operations, and Facilities (2)

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LAUNCH OPERATION OF TEST LAUNCH VEHICLE OF KSLV-II, THE NEW KOREAN LAUNCH
VEHICLE

Abstract

The Test Launch Vehicle 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 KSLV-II. The verification of launch operation procedures is also one of the objectives of this launch since it adopts similar procedures of launch operation and launch facilities to main KSLV-II vehicle which has three stage configuration. The launch operation basically proceeds for two days. Of course, it is not concerned that the assembly, pre-inspection, preparation and inspection of vehicle and launch facilities which called launch preparation operations. The launch preparation operations should be completed before start launch operation. Another three reserve day also should be concerned including two day of re-launch operation due to problems during launch operation. The launch operation begins with the roll-out and transport of launch vehicle from the assembly facility to the launch facility. The KSLV-II is assembled horizontally using the same assembly facility 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 newly developing Vehicle Holding Device and Umbilical Connection Device 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, supplying propellant is stopped and the erection equipment with transportation means of vehicle should be switched horizontally. About 10 minutes before the launch, the automatic parallel sequence which called Pre-Launch Operation is executed. On November 28, the countdown was started at 3:50 p.m with an automatic sequence and was launched at 4 p.m. 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 firing, 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.