

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS (D2)
Launch services, Missions, Operations and Facilities (2)

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OPERATIONAL PROCESS FOR THE SYSTEM INTEGRATION OF KSLV-I UPPER STAGE

Abstract

At present, KARI(Korea Aerospace Research Institute) has been developing KSLV(Korea Space Launch Vehicle)-I from previous 2002, which is the launch vehicle to carry small satellite into a low earth orbit. In particular, the development of KSLV-I has been progressing by international collaboration between South Korea and Russia. In this paper, the overall operational processes to assemble and integrate Upper stage of which KARI is taking charge are described. The head office of KARI is located in DaeJeon and Naro space center of KARI to launch KSLV-I into space is a long way from KARI head office southward. The distance between head office of KARI and Naro space center is about 340km. Most subsystems of KSLV-I Upper stage are assembled as the unit of subsystem and tested in KARI head office of Daejeon with development plan. In accordance with launch campaign, all subsystems of Upper stage are transported to Naro space center by land. Especially subsystem including electronic components is very sensitive to external load like acceleration or shock induced by land transportation. Therefore a special transportation device is used not to expose to excessive external environment during transportation. After all of subsystems related to Upper stage is entered into Assembly complex of Naro space center, AIT(Assembly Integration Test) work to make the whole upper stage is started. Basically AIT work is performed based on the predefined AIT sequence diagram for KSLV-I Upper stage. Upper stage completed throughout several tens of detailed procedures is moved to execute the stage mating between Upper stage and 1st stage. Mechanical stage mating is performed horizontally by assembly tool made specially. After this, pneumatic and electrical interface components located at stage separation plane are attached by turns. After the final check between Upper stage and 1st stage is completed at Assembly complex, KSLV-I is transported from Assembly complex to Launch complex by specially made transportation vehicle called Bogie.