

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

Author: Mr. Olivier Bugnet

Centre National d'Etudes Spatiales (CNES), France, olivier.bugnet@cnes.fr

Mr. Pier Domenico Resta

European Space Agency (ESA), France, pier.domenico.resta@esa.int

Mrs. Charline Dutertre

ESA-APT, France, charline.dutertre@esa.int

Mrs. Carole Deremaux

ESA - APT, France, carole.deremaux@esa.int

Mr. Olivier Ryckebosch

Centre National d'Etudes Spatiales (CNES), France, olivier.ryckebosch@cnes.fr

Mr. François DENEU

ArianeGroup, France, francois.deneu@ariane.group

Mr. Patrick BONGUET

ArianeGroup SAS, France, patrick.bonguet@ariane.group

Mr. Frédéric Facchin

ArianeGroup SAS, France, frederic.facchin@ariane.group

Mr. Frédéric Munos

Centre National d'Etudes Spatiales (CNES), France, frederic.munos@cnes.fr

ARIANE 6 LAUNCHER – LAUNCH BASE COMBINED TESTS

Abstract

Ariane 6 has entered into its final phase toward qualification and first flight.

An Ariane 6 launcher mock-up - composed of a central core with form and function representative of a flight specimen assembled with booster mock-ups - will be used for performing a series of tests on its Kourou real launch base in 2022. The purpose of these tests is to validate the end-to-end behavior of the Ariane 6 launch system – the launcher and the ground segment. At the time of the execution of the test, launcher and launch base will have completed their qualification activities for the on-ground life phases.

The first test sequence is the mechanical assembly of the launcher central core and is transfer to the launch pad. Integration with booster mock-ups and electrical connections with the launch complex command and control infrastructure follows until the whole launcher check-out procedures will be tested. Then tanks loading and unloading sequences are tested simulating nominal as well as degraded cases leading to a launch abort with return to safe configuration. Some sequences include Vulcain 2.1 engine ignitions. One sequence is used for a long firing test of the lower liquid propulsive module, testing the whole duration of its operational domain.

This paper will present the main results of these combined tests, last step before first Ariane 6 flight.

These tests – and this paper – are managed with ESA as combined tests principal and launch system architect, CNES as test conductor and launch base design authority, and ArianeGroup as launcher system design authority and future operator.