

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

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RESULTS OF A CANADIAN SMALL LAUNCH VEHICLE SYSTEM INTEGRATION AND ENGINE
TEST AT JOHN C. STENNIS SPACE CENTER

Abstract

C6 Launch Systems is a Canadian based dedicated launch provider focused on serving the developing nano satellite market. Unique in this market, C6 Launch Systems utilizes a traditional OEM approach to design, opting to integrate multiple systems through partners rather than a vertical integration approach, thereby reducing investment requirements and development risk. The Hadley engine, developed by Ursa Major Technologies, is the primary engine for the booster stage of the C6 Launch Systems vehicle. The Hadley engine is an Oxygen Rich Staged Combustion Cycle engine with a thrust of 5000lbf and utilizes Liquid Oxygen and Kerosene as the propellant. As part of the vehicle development campaign, a Hadley engine has been integrated with integrated, breadboarded vehicle hardware in order to validate all vehicle systems and performance. Integration and testing of the integrated system was conducted in partnership with the NASA John C. Stennis Space Center and includes a complete burn of the Hadley engine. The detailed procedure for integration into the vehicle subsystems will be outlined as well as test cell designs. Critical vehicle systems which are involved in the testing campaign include the liner-less composite tanks, avionic, and control systems. Details regarding other critical systems will also be presented as well as the differences regarding the flight ready systems and the remaining steps to progress the prototypes to launch ready state. High level results from the test will be presented.