Paper ID: 11599
oral

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

Author: Mr. Don Sauvageau
ATK Launch Systems Inc., United States

Mr. Brian Duffy
ATK Launch Systems Inc., United States

LIBERTY^{TM} LAUNCH SERVICE, AN INTERNATIONAL VENTURE

Abstract

ATK and Astrium are working together to offer commercial crew launch services using the LibertyTM rocket. This new launch vehicle combines two of the world's most reliable propulsion systems, with a collective heritage of nearly 150 successful flights. ATK would supply the human-rated first stage, which it developed under NASA's Space Exploration Program. The five-segment solid rocket first stage is derived from the Space Shuttle's four-segment solid rocket boosters (SRBs) which are built by ATK and have flown 107 successful missions since 1989 (encompassing 214 SRBs). Astrium, the developer and manufacturer of the Ariane 5 launcher, working with Snecma (Safran Group), Europe's leading propulsion company, is providing Liberty's second stage based on the liquid-fueled cryogenic core of the Ariane 5 vehicle powered by the Vulcain 2 engine. The Ariane 5 Launcher, operated by Arianespace, has flown more than 40 consecutive successful missions over nearly eight years and has launched more commercial satellites than any other launch vehicle in the world during that time. The Ariane 5 enjoys the lowest launch insurance rates in the industry due to an unrivaled safety record in the commercial launch services market. Liberty would be a two stage launcher able to deliver 44,500 pounds to the International Space Station orbit, which would give it a launch capability to carry any crew vehicle in development. Both stages were designed for human-rating since inception and would enable unmatched crew safety. Since Liberty uses qualified, proven, and reliable systems, the team has planned an initial flight by the end of 2013, a second test flight in 2014, and operational capability in 2015. The advantages of the Liberty launch system are extensive. It is built on a solid foundation of human-rated launch technology, and leverages billions of dollars of investments by NASA and NATO-allied European Governments in the frame of the European Space Agency. This international effort—which embodies the spirit of global cooperation—will afford a readily available, cost-effective solution for human spaceflight. The per passenger cost for astronauts riding on a Liberty launch vehicle will be below that of any other human spaceflight offering. This paper will discuss in detail the attributes and benefits of the Liberty ^{TM} launch vehicle. Discussion of a launch vehicle with such significant international cooperation is exceptionally appropriate for the International Astronautical Federation audience.