Rocketplane Limited Inc. is conducting low-speed aerodynamics tests at the National Institute for Aviation Research in Wichita, Kan., as part of its development of a sub-orbital vehicle that is scheduled for its first space flight for tourists early in 2007.

According to a company official, the Rocketplane XP would use the highly modified fuselage of a Learjet Model 25 business jet, a delta wing, new empennage, two conventional jet engines and a rocket motor built by Orbital Technologies Corp. He says the pressurized cabin would carry 2-4 passengers and a cockpit crew of two. The cost would be about $150,000 per passenger.

The chief purpose of the tests is to reevaluate subsonic data recorded previously at another tunnel facility, says Gary Lantz, an engineer with the Oklahoma City-based company. In addition, Rocketplane also has conducted tests in NIAR’s Aerodynamic Laboratories Flow Visualization Laboratory—a water tunnel measuring 2 X 3 X 5 ft.—to improve understanding of fluid flow characteristics around the vehicle. The 1/20 scale model used in the water tunnel was built by NIAR’s Research Machine Shop. High-speed tunnel tests are planned for this summer at the Marshall Space Flight Center in Huntsville, Ala.

A Rocketplane official says the vehicle will depart from the runway using jet engines and climb to 23,000 ft., at which point the rocket motor will be ignited and accelerate the XP to a speed of Mach 3.5 on a trajectory ending at an altitude of 330,000 ft. Passengers would experience zero gravity for 3-5 min., followed by a ballistic descent reentry and landing using jet engine power. Total flight duration would be 1 hr., with a mission turnaround time of 3-5 days.

The vehicle has completed a preliminary design review and is scheduled to undergo a critical design review at the end of this summer.