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# Extension of the operating parameters of the two stage light gas gun to velocities below 2 km/sec.

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## Extension of the operating parameters of the two stage light gas gun to velocities below 2 km/sec.

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The Joint Actinide Shock Physics Experimental Facility (JASPER) located in area 27 at the Nevada Test Site Has been tasked with providing high accuracy information on the Equation Of State (EOS) and other dynamic properties of weapons grade plutonium and other actinides important to the stockpile stewardship program. In the past 5 years this facility has provided dozens of experimental data points for the accurate determination of pressure density relationship for these materials over a broad pressure range. In order to complete this survey it is necessary to extend the low pressure region to include projectile velocities below 2 km/s.

For most gas gun facilities this would present not too great a difficulty, one could simply decrease the amount of propellant along with a decrease in the strength of the petal valve, However JASPER requires that the piston be securely embedded in the Acceleration Reservoir (AR) as part of the containment system. The projectile must remain flat and undistorted. This requirement makes the attainment of slow velocities problematic.

This talk will discuss the JASPER Facility, A finite difference code developed to give predictive capability for two stage gas guns, and a set of experiments performed to demonstrate this capability.

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