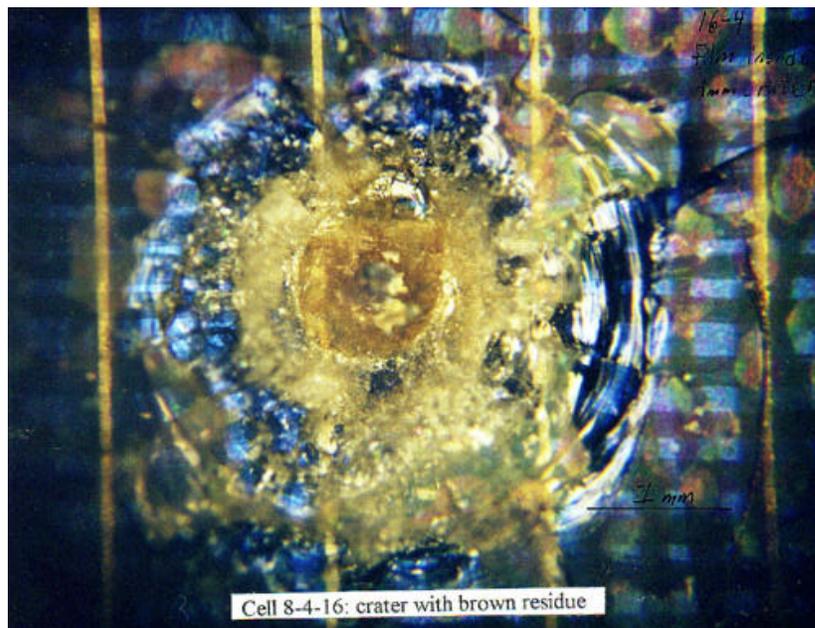




## New Techniques for Achieving Impact Velocities Greater than 10 Km/sec

E7



### Objective

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Collisions of orbital debris with spacecraft are most likely to occur with impact velocities near 11 km/sec. Current test capabilities with particles having diameters of several millimeters or more and known conditions of shape, mass, and state are limited to impact velocities of about 7.5 km/sec. The ballistic limit curves used to guide the design of the spacecraft shielding systems from debris fragments traveling at velocities near or above 11 km/sec must be verified in order to provide protection from the damage of impact.

### Why Needed

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This task will develop a new technique for the launch of small projectiles of known shape, mass and state to velocities of 10 km/sec and higher. The task will include refined preliminary hardware designs, fabrication and testing of critical hardware components and preliminary testing of components. The second part of the task will evaluate the design of the launcher, evaluate new projectile materials, vary initial test conditions for test repeatability, and evaluate the performance of debris shields subjected to the impact of aluminum projectiles traveling at velocities of 10 to 12 km/sec.

### Point of Contact

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### Sponsor

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NASA Space Environments and Effects (SEE) Program