

Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
 - Crater overpredicted penetration of tile coating significantly
 - Initial penetration to described by normal velocity
 - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. In)
 - Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating
 - Test results do show that it is possible at sufficient mass and velocity
 - Conversely, once tile is penetrated SOFI can cause significant damage
 - Minor variations in total energy (above penetration level) can cause significant tile damage
 - Flight Condition is significantly outside of test database
 - Volume of ramp is 1920cu in vs 3 cu in for test