



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Protective Equipment

Free Falling Heel Support Seat Base Side Mounted Foot and Leg Energy Absorbing Mechanism

US Marine Corps Systems Command Program Manager for the Light Armored Vehicle tasked the US Army Tank Automotive Research Development and Engineering Center (TARDEC) Center for Systems Integration to lead an effort to develop several kits that would improve the light armored vehicle's survivability and buoyancy. During this effort, the Center for Systems Integration team, in collaboration with ARL, developed a new concept breakthrough that has the potential to vastly improve the survivability of vehicles with regard to lower leg injury. The project team developed the Free Falling Heel Support Seat Base Side Mounted Foot and Leg Energy Absorbing Mechanism. Analysis on this concept has shown significant improvements, up to 75 percent lower compressive loading on the leg, over an energy-absorbing pad or typical foot rest. Unique to this design is the ability to allow the foot to slide out to prevent an excessive compressive loading on the leg, but still provide support so that the Service Member is comfortable. Implementing this unique design could significantly reduce Service Member lower leg injuries due to blasts.