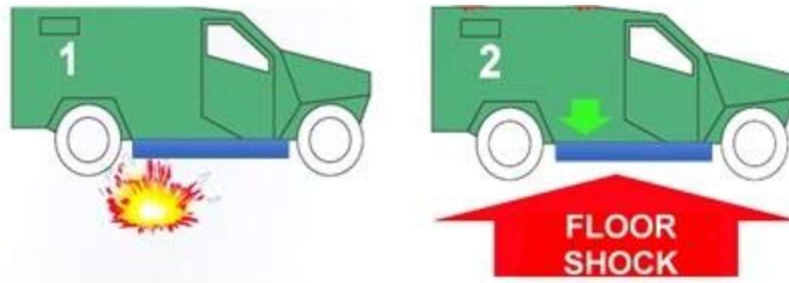


# Advanced Blast & Ballistic Systems Ltd

## Vehicle Active Floor Systems (VAFS™) for Ground Vehicle Protection



### *Leading Edge Technologies for Vehicle Protection from Mines and IED's*



Landmines and IED's present a real and present threat to land vehicles driven both in active and legacy theatres of operation.

The shockwave from an under-belly mine or IED blast travels rapidly through the vehicle structure and occupants can suffer lower-limb injuries resulting from Floor Shock. Any loose items on the floor can also be accelerated rapidly into the cabin space, presenting a serious secondary threat.

#### **The ABBS Solution**

The ABBS Vehicle Active Floor System (VAFS™) uses energetic effectors connected to the floor plate which rapidly pull the floor down so that for the few milliseconds required the occupants' feet are not in contact with the floor.

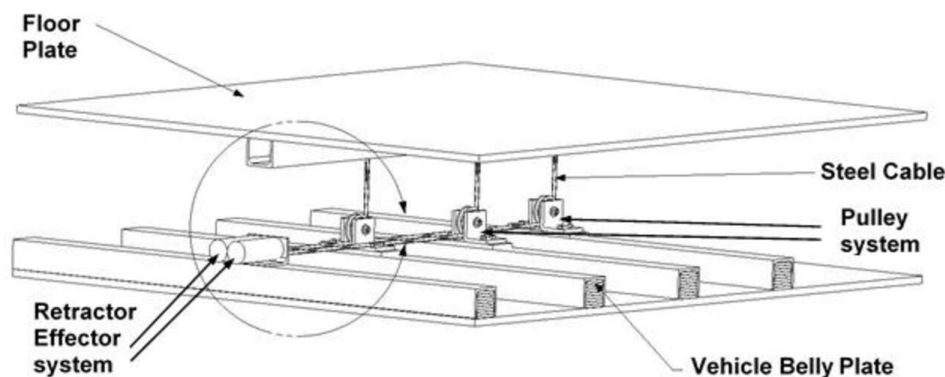
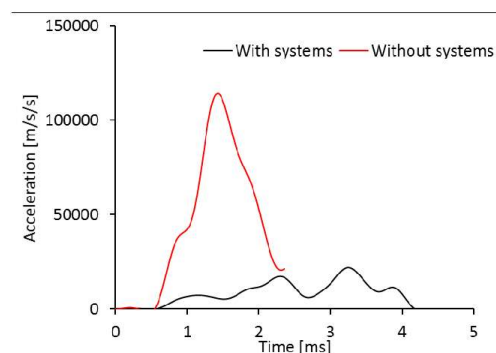
- Following VAFS activation, the floor panel then simply resets to its normal position.
- The VAFS system concept has been demonstrated in full-scale vehicle rig firings in the UK.
- The VGAM safety, control & initiation system can be integrated with the VAFS system to avoid duplication of these elements.
- Compared with reference blast testing of an unmodified vehicle, a VAFS-equipped vehicle rig has a dramatically reduced floor acceleration, and anthropomorphic test dummy (ATD) data show femur & tibia loads significantly below the threshold for injury.

**The technology is judged to be at TRL5.**

Further Options to improve performance and provide protection against larger threats and reduce injury:

- ABBS Shockwave Mitigating, Energy Absorbing Composite Reinforced Sandwich Belly Plate
- ABBS Vehicle Global Acceleration Mitigation (VGAM™)
- ABBS Blast Seats (provided in partnership with a leading blast seat supplier)

Body Region	Limit	Value	Units
Dynamic Response Index (DRIZ)	17.7	6.27	
Femur (L) Compression force (Fz-)	6.9	0.54	kN
Femur (R) Compression force (Fz-)	6.9	0.43	kN
Tibia (L) Compression force (Fz-)	5.4 (HIII)	2.91	kN
Tibia (R) Compression force (Fz-)	5.4 (HIII)	3.06	kN
Chest wall velocity (CWW)	3.6	0.61	m/s



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