Integrating OEM Vehicle ROPS to Improve Rollover Injury Probability

Susie Bozzini*, Nick DiNapoli** and Donald Friedman***

*Safety Engineering International Goleta, CA, USA
** Consultant
*** Center for Injury Research Santa Barbara, CA, USA
Figure 1. Patented aftermarket HALO™ ROPS fitted to a Toyota Hilux Dual Cab Truck
Figure 2. RSV ¾ Frontal view
Figure 3. RSV redesign sketch to round roof and enhance pillar support.
Figure 4. Concept “A” - Integrated OEM production modification for improved rollover protection.
Figure 5. Concept “B” Production vehicle approach for integrated ROPS
Figure 6. Concept “B” Sheet metal ROPS component assembly
Figure 7. Original 2012 Mitsubishi Triton Dual Cab
Figure 8. HALO™ ROPS Equipped Mitsubishi Triton Dual Cab
Figure 9. Concept “B” OEM version of Mitsubishi Triton Dual Cab
Figure 10. Original Toyota Hilux Dual Cab
Figure 11. After market HALO™ version of Toyota Hilux Dual Cab
Figure 12. Concept “B” OEM HALO™ version of Toyota Hilux Dual Cab
Figure 13. The probability of injury as a function of residual crush in the front compartment
Figure 14. Cumulative Residual Crush vs Major Radius
Figure 15. Production Vehicle, Vehicle equipped with aftermarket HALO™ and Concept “A” (reduced MR) injury probability bars, respectively.