

Rear Impact Assessment of High-Pressure Composite Natural Gas Tank (NGV)

Presented by:

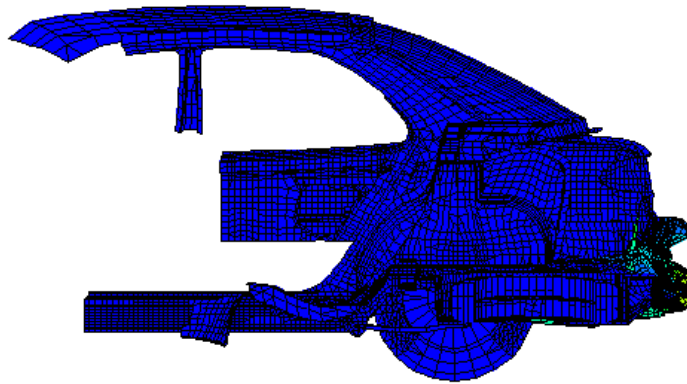
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www.parnell-eng.com

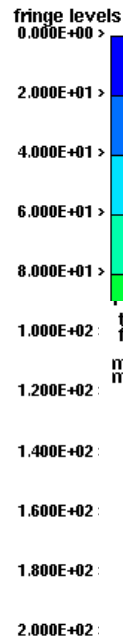
Rear Impact Crush

t=10 msec & t=30 msec

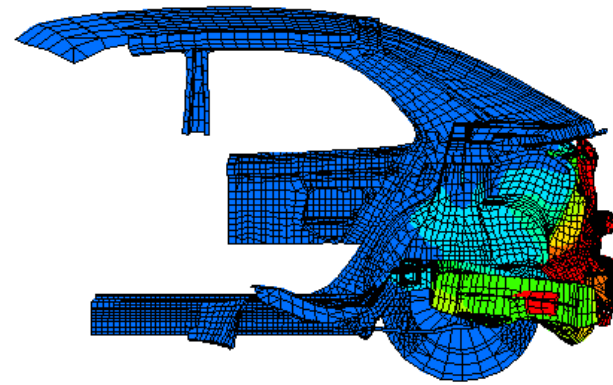
time = 9.99944E+00
fringes of tot. displacement
min= 5.627E-01 in element 41030
max= 1.424E+02 in element 21140



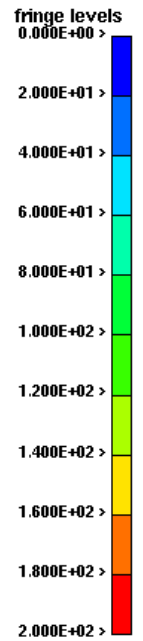
Z
Y X



time = 2.99997E+01
fringes of tot. displacement
min= 2.866E+01 in element 322
max= 4.140E+02 in element 21140



Z
Y X

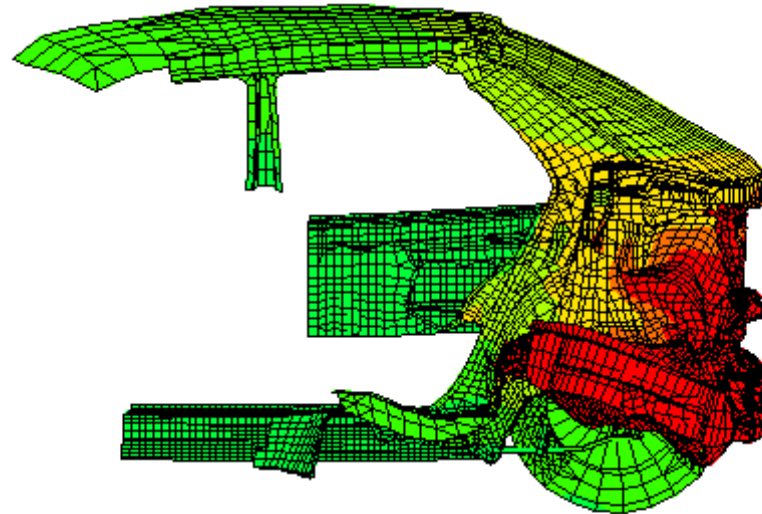


Rear Impact Crush

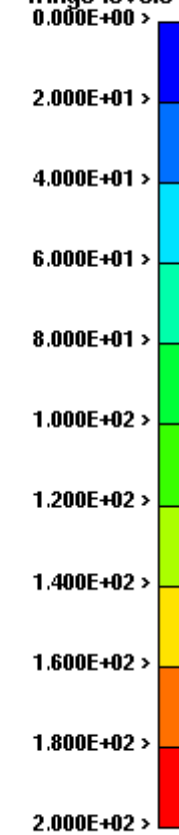
t=50 msec

1.2.2.1 Vehicle Rear Barrier Impact

time = 5.00001E+01
fringes of tot. displacement
min= 9.071E+01 in element 349
max= 6.613E+02 in element 21140

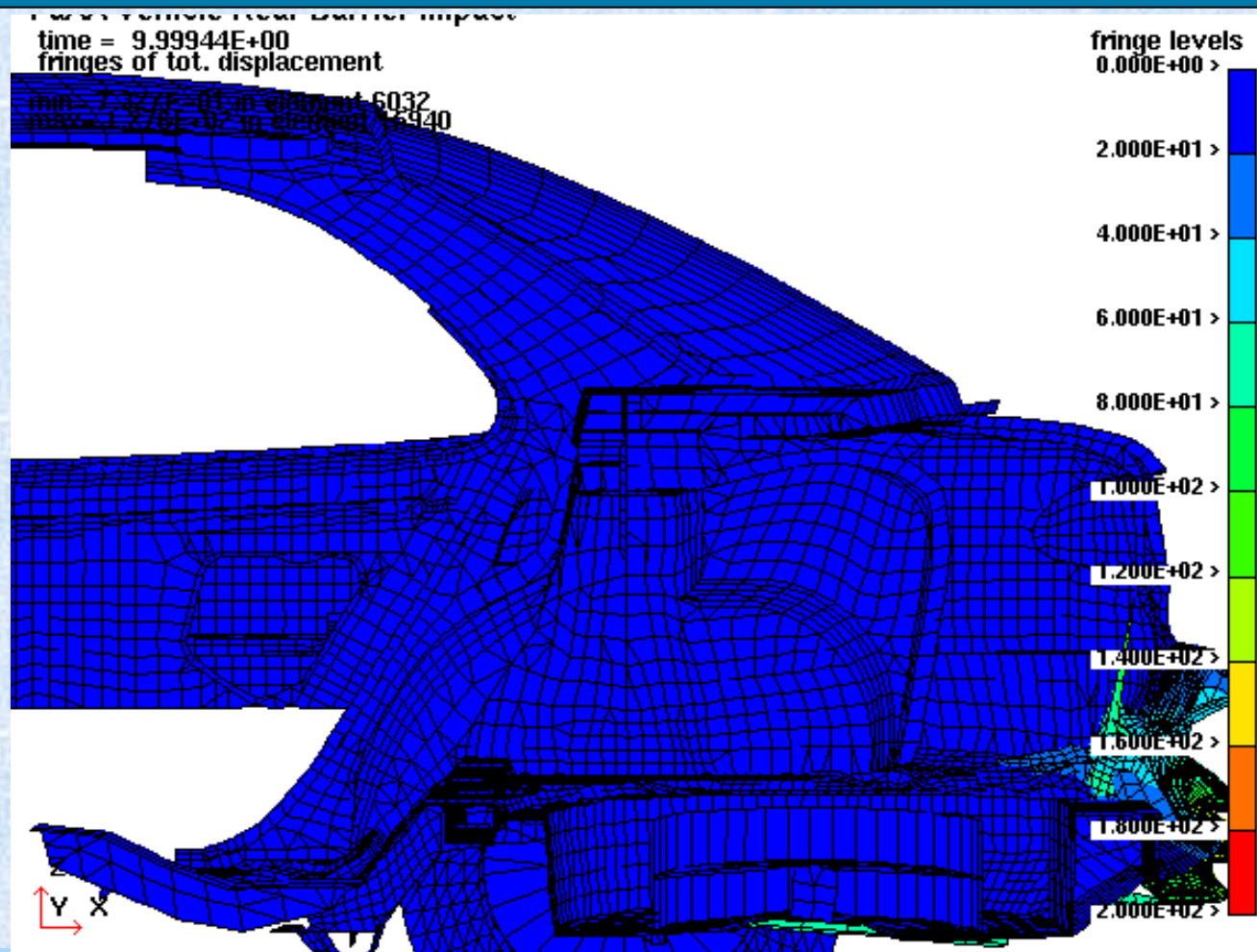


fringe levels



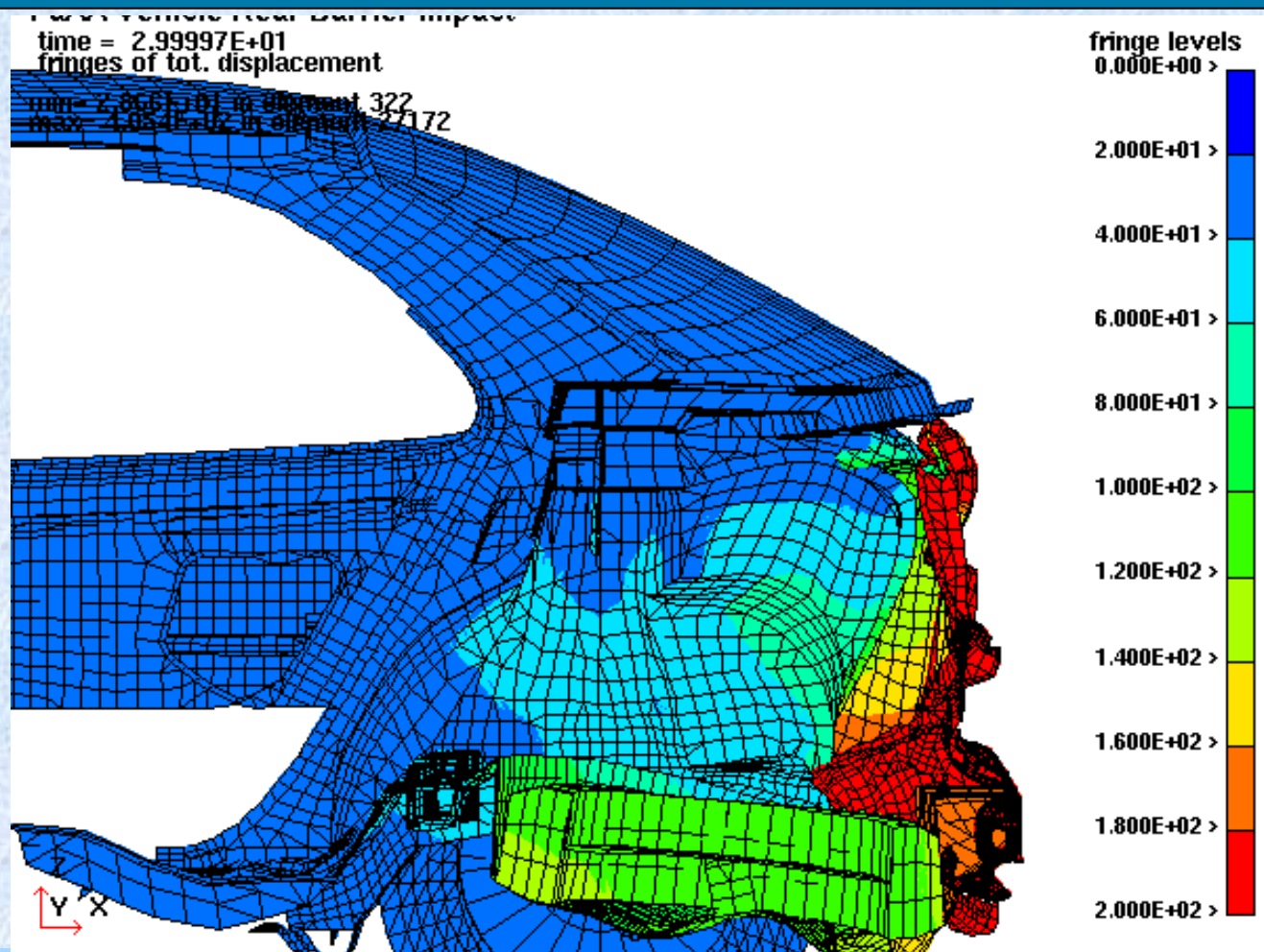
Rear Impact Crush

t=10 msec



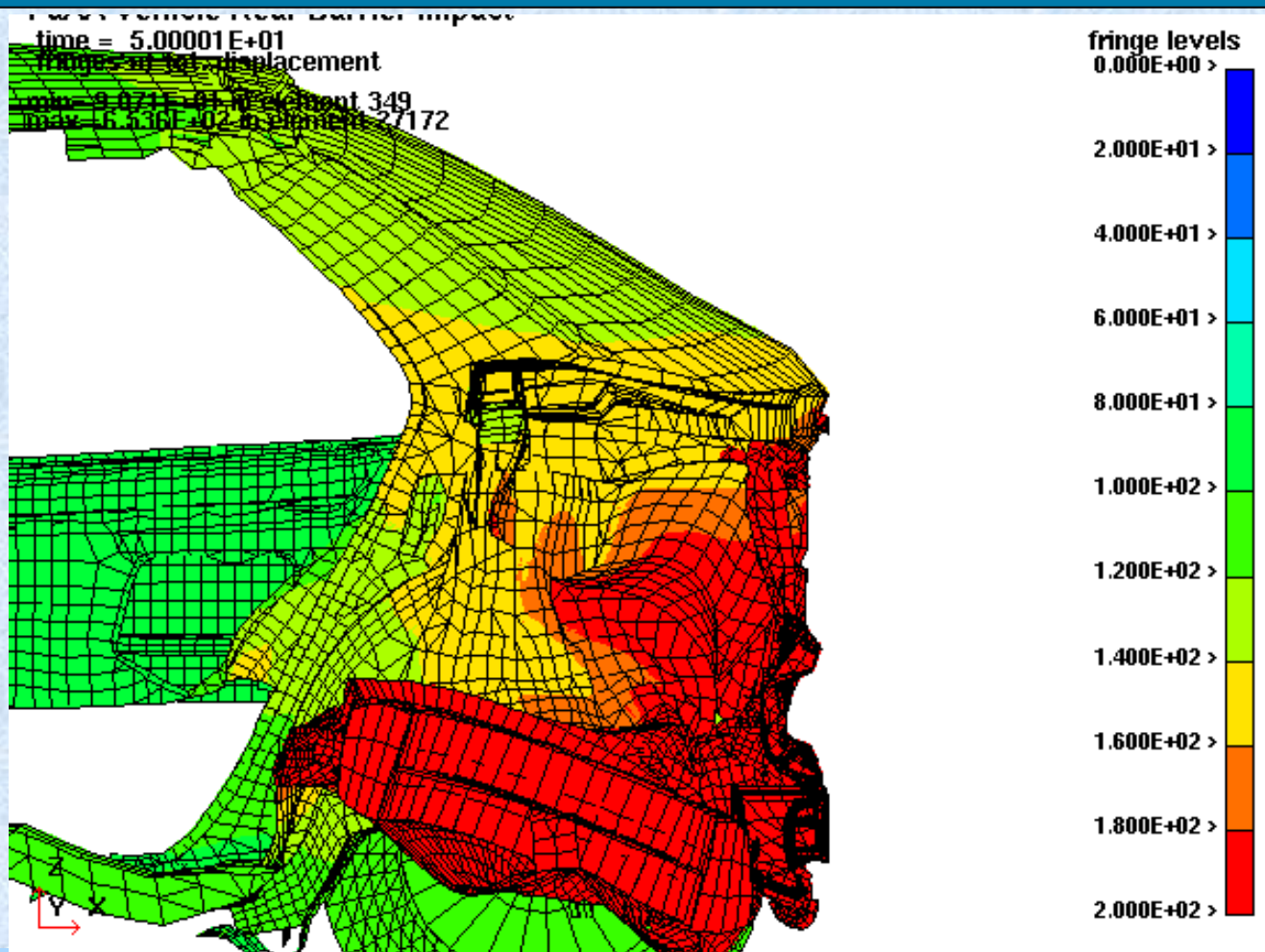
Rear Impact Crush

t=30 msec



Rear Impact Crush

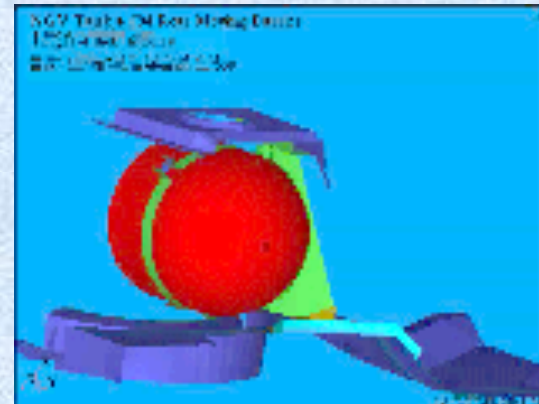
t=50 msec



Animations of the Rear Impact



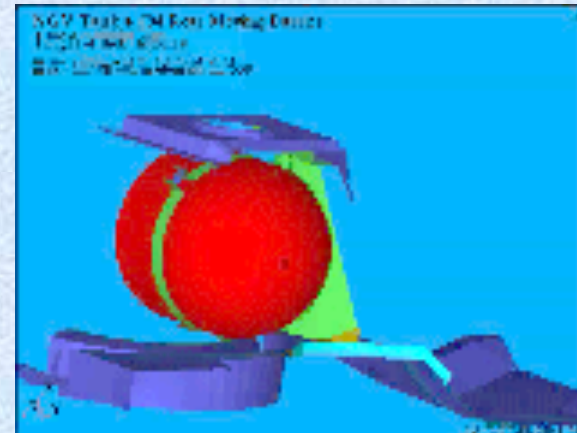
Double Click Figure to Start Animation



Animations of the Rear Impact



Double Click Figure to Start Animation



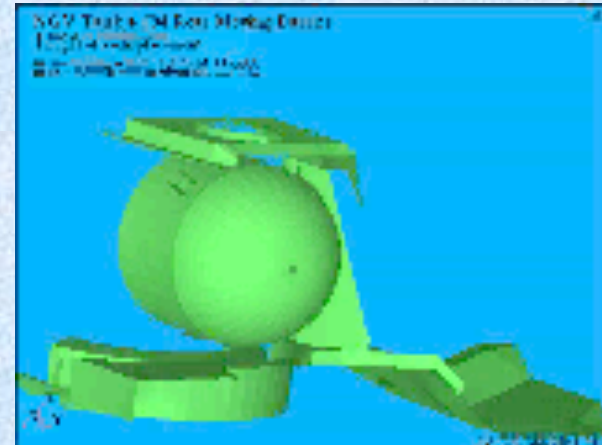
Animations of the Rear Impact



Double Click Figure
to Start Animation



Animations of the Rear Impact



Double Click Figure to Start Animation

Conclusions

- The spare tire stiffens the trunk compartment upon impact
- The NGV tank with internal pressure of 2500 psi is intact after 50 msec
- Testing and analysis are complementary; Both are essential for quality results