Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Impact of Aluminum Sphere On Aluminum Plate At 4 KM/S : Comparison Between Experimental And Simulations With Two Non-Linear Hydrocodes JEROME MESPOULET, PIERRE HEREIL, AURELIEN LACHAUD, Thiot Ingenierie — High velocity impact of 3 mm diameter aluminum sphere against 2.1 mm aluminum target plate have been performed at impact velocity of 4000 m/s with the two stage light gas gun HERMES at THIOT-INGENIERIE laboratory. Impacts at normal and with a 32 $^{\circ}$ angle tilt generated debris clouds that were collected by 1.1 mm aluminum witness plates. The visualization of the debris clouds generated after the impact has been realized by using an ultra high speed camera SIM8 developed by SPECIALISED IMAGING LIMITED. Impact simulations using Smooth Particle Hydrodynamic (SPH) solvers were performed on two commercial codes ANSYS-AUTODYN and LS-DYNA to reproduce debris clouds generation and expansion in the two angle configurations. Comparison between simulations and experimental frames taken with the ultra high speed camera are proposed. The simulated and experimental witness plate debris cloud damages are also analyzed.

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Date submitted: 24 Feb 2009 Electronic form version 1.4