Using the SIMD8 Ultra High Speed Framing Camera to record high explosive detonation

IMAGING PARAMETERS

A 80-200 mm Nikon zoom lens was used with the SIMD-8 Framing camera to give a field of view of 30.5cm (L) X 25.4cm (H). The camera working distance was 3m. Trigger timing and detonation firing was synchronized by use of an external delay generator.

EQUIPMENT PARAMETERS

The SIMD-8 was programmed to take an 8 frame sequence with initial delay of 15µs, with equally spaced interframe times of 10 µs (at 100,000 fps). Exposure time for all frames was programmed for 20ns. Gain was set at 2 out of 8 steps, on all channels. Light is supplied by self luminosity of the event.

OVERVIEW OF EXPERIMENT

Eight ounces of high explosive was suspended from the ceiling of a blast containment chamber. The camera was sited 3m away looking through a polycarbonate viewing port to protect the lens. The purpose of the experiment was a proof of principle to show that the SIMD-8 camera could image the extreme brightness of the explosive fireball with no crosstalk from later frames into earlier frames, with minimal or no phosphor lag. As shown in the image - no cross talk or ghosting is present in either the early or later frames. The image also shows 12-bit dynamic range throughout the event.