



# EXPLOSIVE DEVELOPMENT FACILITY

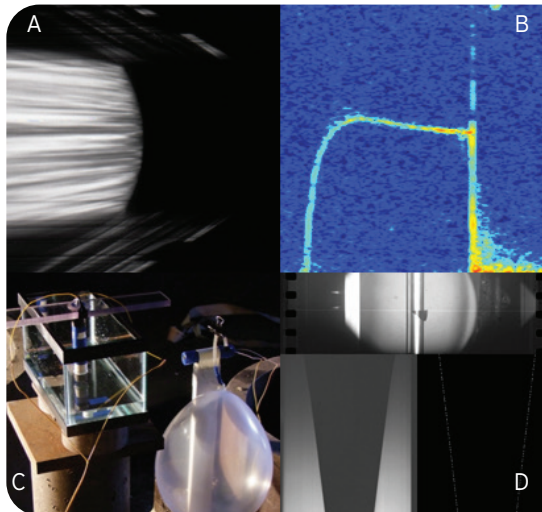
## LABORATORY INFORMATION FACT SHEET

### CONTACT US:

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*The Explosive Development Facility site conducts explosive experimentation for government agencies and private industry through cooperative agreements.*

### TECHNOLOGY/FACILITY DESCRIPTION:

Close ties to other experimental sites allow for diagnostics from small scale laboratory up to full scale range experiments. The Energetics and Warheads Division (EWD) at DEVCOM AC provides a unique environment for explosive and weapon systems testing. EWD has renowned explosive

chemists, physicists, computer modelers and warhead designers, in addition to fabrication facilities for explosives and associated parts. The support available from these groups allows rapid experimental modifications and diagnostics making DEVCOM AC a unique one stop location to answer explosive and warhead questions.

Pictured above: (A) A film-based image of detonation wave curvature captured with the Cordin Model 137 streak camera. (B) The velocity profile of an Exploding Foil Initiator (EFI) measured using a Photonic Doppler Velocimetry (PDV) system. (C) An Aquarium Experiment used to determine the detonation pressure of an energetic material. (D) A MATLAB Analysis of film-based Cylinder Expansion Streak image.

## EQUIPMENT AND EXPERTISE AVAILABLE:

- Flash Radiography
  - (2) Hewlett Packard Model 300 KV systems
    - Four independent channels capable of simultaneous dual head operation
  - Hewlett Packard Model 150 KV system
    - Three independent channels
  - Digital radiographic scanner (phosphor screens)
- Ultra High Speed Photography
  - Cordin Model 131 Digital Streak Camera
  - Cordin Model 137 Film-Based Streak Camera
  - SIMX Digital Framing Camera
    - Up to 1 billion frames/sec
  - Kirana-05M Digital Framing Camera
    - Up to 5 million frames/sec
- High Speed Photography
  - Phantom v7.3 monochrome
  - Phantom v7.3 color
- Laser Interferometry
  - Photonic Doppler Velocimetry (PDV)
    - Single channel and 8-channel systems
- Fiber Bragg Gratings
  - 2-channel modular system
  - 4-channel rack-mounted system
- Environmental Chamber
  - Weber Environmental Chamber
    - -40°F to 285 °F
  - (2) Tenney Jr. Environmental Chambers
    - -103 °F to 392 °F, programmable
- Initiation Control
  - (5) Exploding Bridgewire (EBW) firing units
  - (2) 4-channel time delay systems
  - (2) Portable EBW firing units
- Other Diagnostics
  - Low Voltage blasting cap firing units
  - (2) 1GHz LeCroy 104 MXi Oscilloscopes
  - (2) 600MHz LeCroy 64 Xi Oscilloscopes
  - PCB ICP blast pressure gauges
  - Time of Arrival Pins
  - Fiber optics
- Safety research (TB-700-2 methods)
  - Impact Sensitivity Testing
    - ERL Type 12 Impact
    - BOE Impact
    - mBOM Impact
  - Friction Sensitivity Testing
    - BAM Friction
    - ABL Friction
  - Electrostatic Discharge (ESD) Sensitivity Testing
    - ABL ESD
  - Explosivity of Dust Testing
  - Woods Metal Bath (5 second to explosion) Testing
  - Temperature Conditioning Tests
    - 48 Hour Thermal Stability Test
    - Simulated Bulk Auto Ignition Temperature Apparatus
    - Exudation Characteristics Test
    - Irreversible Growth Test
- Small Scale Burning Test (unconfined)
- Deflagration to Detonation Transition Experiments
- Qualification testing (AOP-7 methods)
  - Gap Testing
    - Small Scale Gap Test (SSGT)
    - Large Scale Gap Test (LSGT)
    - Expanded Large Scale Gap Test (ELSGT)
    - Insensitive High Explosive (IHE) Gap Test
  - Cylinder Expansion
    - 0.5", 1.0", 2.0" diameters
  - Detonation Velocity/Dent Tests (pressure calibrated)
  - Variable Confinement Cook-off Test (VCCT)
  - 1 Liter Cookoff
  - Setback Sensitivity
- Warhead and systems research
  - Detonator and explosive lead simultaneity
  - Validation of warhead, EFP, and shaped charge jet concepts
  - Flash radiographs of explosive body fragmentation
  - High speed warhead spin testing
  - PDV Optical Window
  - Detonation Wave Curvature/Break-out
  - Critical Diameter Testing
- Insensitive Munitions Research
  - Sympathetic detonation
  - Slow Cook-Off
  - Modified Bullet Impact
- Other diagnostics and experimentation individually designed as required