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Selectable Effects Warhead Technology Demonstration

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Eric Volkmann
ATK
4700 Nathan Lane
Plymouth, MN 55442
763-744-5110
Eric.Volkmann@atk.com

Thomas Burky
Battelle
505 King Avenue
Columbus, OH 43201
614-424-3813
Burky@battelle.org

Selectable Effects Background

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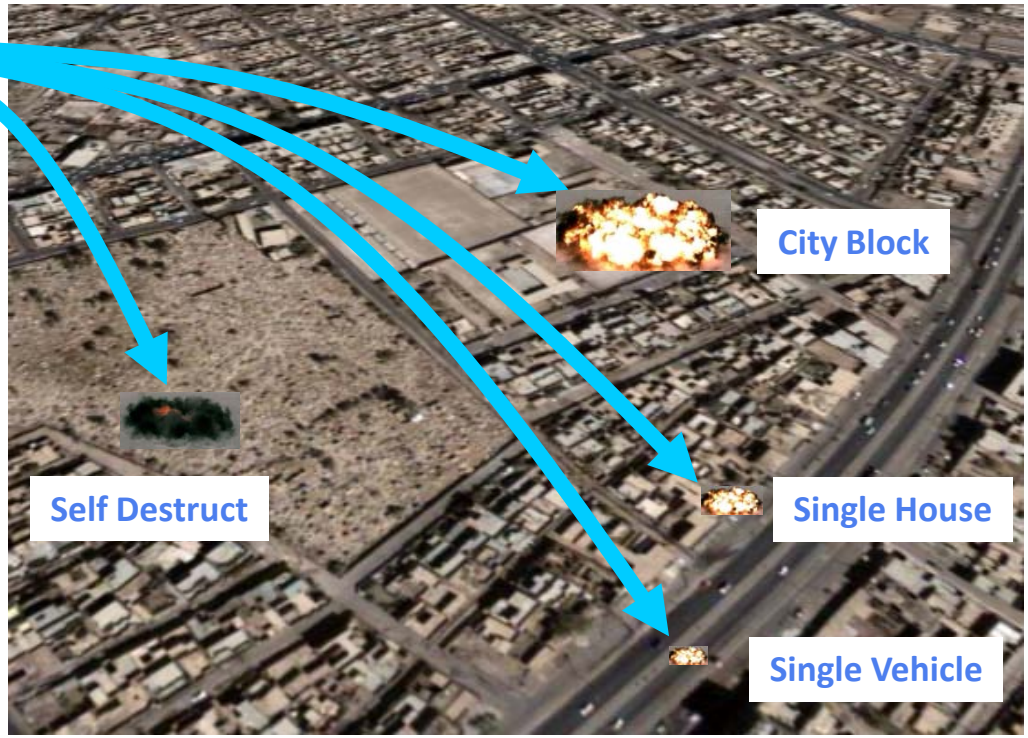
High output bombs/missiles cannot be used on ROE-restricted missions or near friendly troops

Current DoD solution: separate weapon for low collateral damage mission

- Focused Lethality Munition for Small Diameter Bomb
- BLU-126 Low Collateral Damage 500-lb Bomb

Better Solution = Single "Dial-A-Yield" Warhead

- ✓Flexible
  - One bomb, many missions
- ✓Adaptable
  - In-flight re-targeting option
- ✓Safe
  - No hazardous duds



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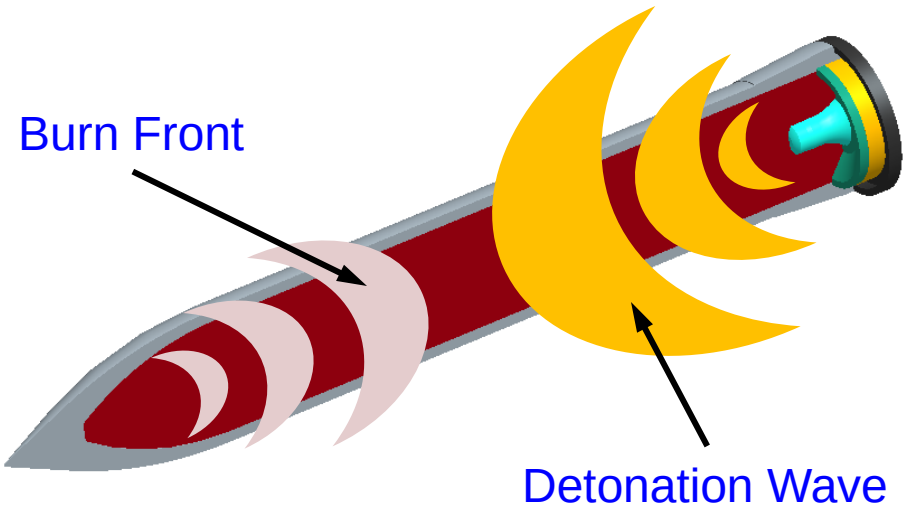
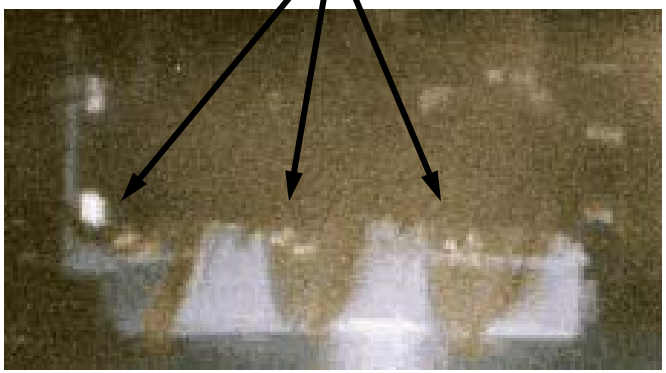
Dial-A-Yield Bi-Modal Warhead Concept

- **Initiation Based - Partially burn/Partially detonate explosive charge**
  - **Time delay between burning initiation & detonation initiation**
- **Compatible with MIL-STD-1316 approved fuzing systems**
- **Cockpit or in-flight selectable with data link**



Initiators Set @
3 Timing Delays



High Speed Video

Scalable to 105mm and Greater Size Munitions

Initiator Timing Control Demo

Preliminary Lethality Analysis

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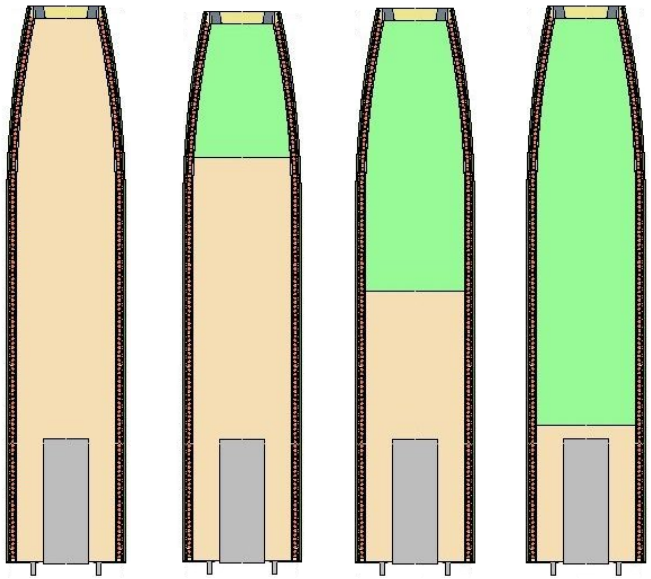
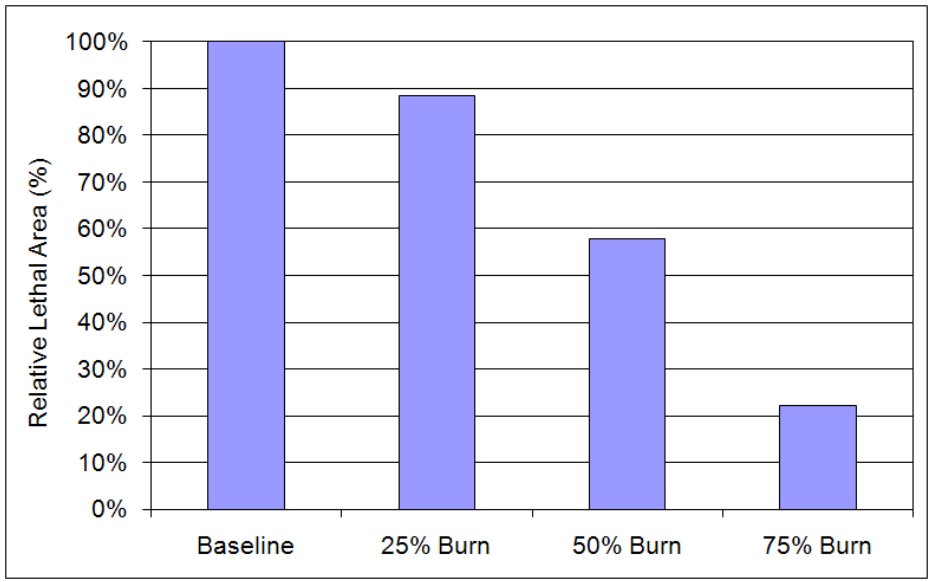
CTH Simulations of generic warhead shape to estimate fragmentation

JMEM software to calculate relative lethal area





More burned explosive = lower collateral damage

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March 2009 ATK IR&D Demo Test Setup

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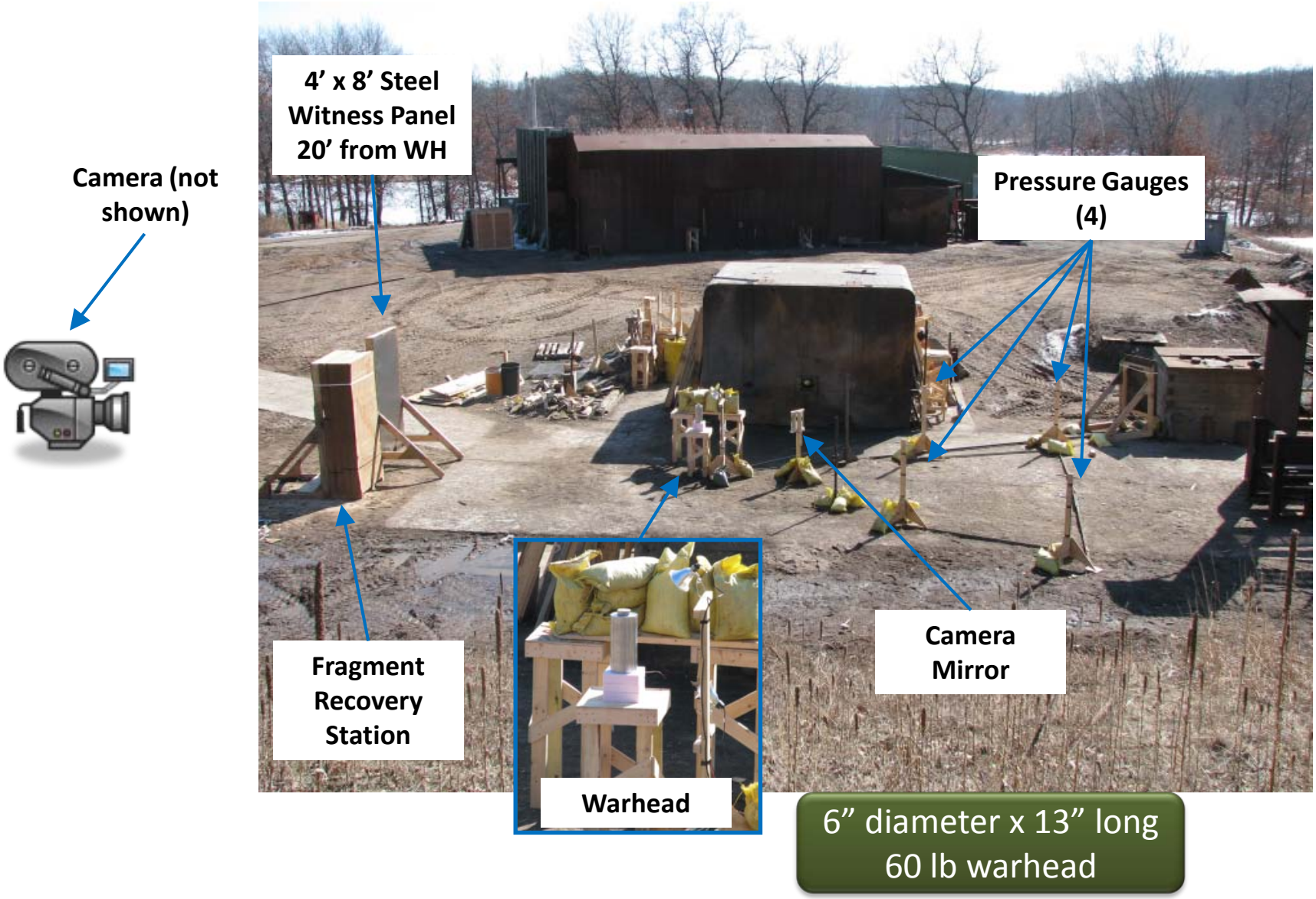

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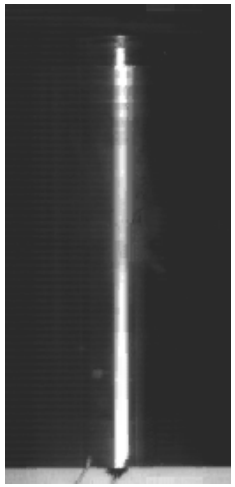
High Speed Videos

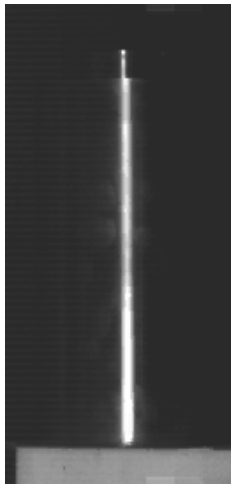
Three Warhead Tests

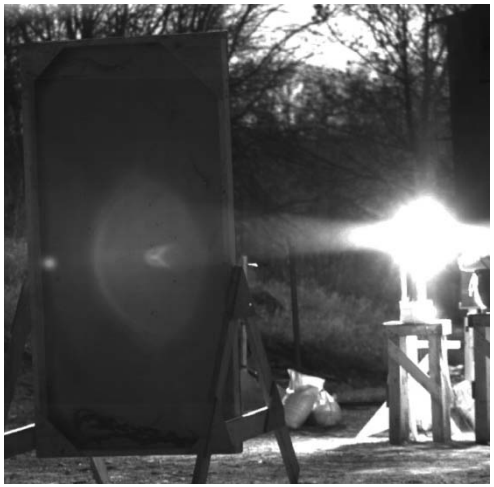
- ✓Full Output Baseline
- ✓Bi-modal low collateral damage
- ✓Deflagration-only self destruct

Baseline

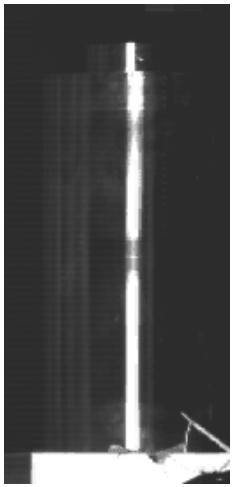


Bi-Modal





Deflagration



Test Results

Test	Relative Fragment Velocity	# Witness Panel Holes
Baseline	100%	30
Bi-modal	68%	20
Deflagration	9%	0

← > 40% Reduction In Lethal Area

← Didn't break a mirror 5 ft away

Back-Lit Witness Panels

Baseline

Bi-Modal

Deflagration

Technology Ready for System Integration

Summary

ATK Team Selectable Effects (Dial A Yield) capability

- Initiation-based
- Adaptable to any warhead system

ATK Demo Test Series

- Successfully demonstrated initiator timing control
- Successfully demonstrated the bi-modal technology
  - Full output mode
  - Low collateral damage mode
  - Self-destruct mode

Ready for DoD system integration