30mm Airburst Development
Translating Lessons Learned into System Requirements
40th Annual Guns and Ammunition Conference
25-28 April 2005
New Orleans, LA
Paul Reynolds
Why Do We Need Air Bursting Munitions

KE Ammunition Can Only Suppress Personnel In Defilade
Air Burst Ammunition Kills
Why Do We Need Air Bursting Munitions

Emerging Threats
- Troop Personnel
- ATGM Sites
- Light Armored Vehicles
- Unarmored Vehicles
- Urban Structures
- Bunkers
- Watercraft

GENERAL DYNAMICS
Ordnance and Tactical Systems
A 30mm Airburst Solution

- Trace
- Rear Body with Driving Band
- Fuze with Contact Bands
- Forward Body
30mm Air Burst Fuzing Approach

- Remote settable electronic time fuze
- Independent point detonating backup with super quick or delay
- Independent sterilization
- Precision air burst function
- Fuze powered and set in weapon feed system
- Fuze re-set each time a target is lased
- Contact communication system similar to that being qualified for 25mm Advanced Crew Served Weapon (ACSW)
- 25mm ACSW / 30mm Air Burst Commonality
30mm Air Burst Fuzing Approach

- Simple communication through contact bands eliminate the need for exotic materials.
- Significant development cost savings are realized by adapting the ACSW design to 30mm / 40mm HEAB munitions.
30mm Air Burst Fuzing Approach

- Early in the ACSW program, the time of flight and direct contact communication was selected as the best choice
- Through testing we have developed confidence that this system will meet the needs for 30mm HEAB applications
30mm Airburst Lessons Learned

FUZE SETTING FLEXABILITY:

- Fuze can be set and reset multiple times before commitment by pulling the trigger. This enables the user to change targets as needed.
- Manual override is an additional capability in the event a range finder cannot lock on a target. The solution is a progressive or regressive string of pearls that can cover the target.
30mm Airburst Lessons Learned

String of Pearls Demonstration

Bradley A3-MK 44 30/40mm Firing Demo, Camp Roberts, Sept. '02
30mm Airburst Lessons Learned

Demonstration of 30/40mm Air Burst
30mm Airburst Lessons Learned
FUZE COMMONALITY:

Many fuze components are common with the ACSW configuration. This allows for lower cost, higher producibility, reliability, and availability as a result of higher manufacturing volumes.
30mm Airburst Lessons Learned

Based on Feedback from the user community the HEAB must contain a point detonating (PD) function to:

• Increase capability of the ammunition and eliminate the need for HEI PD ammunition

• Defeat materiel targets

• Have a functional round in the unlikely event that a airburst communication signal fails

• Provide round “Sterilization”
Warheads can be designed per user requirements using the same fuze configuration. Further increasing fuze commonality advantages.
30mm Airburst Lessons Learned

Summary

• A lethal 30mm air burst munitions exists today.

• The munitions has been successfully demonstrated out of the Mk44 cannon in both single and burst mode (200spm) at multiple ranges.

• The munitions have been demonstrated against mannequins in standing, prone, and behind sandbag barriers. Fragment patterns have been scored by the Eglin Vulcan System.

• Work continues on bringing ACSW advantages into 30mm.