

GENERAL DYNAMICS

Ordnance and Tactical Systems

30mm Airburst Development

Translating Lessons Learned into System Requirements

40th Annual Guns and Ammunition Conference

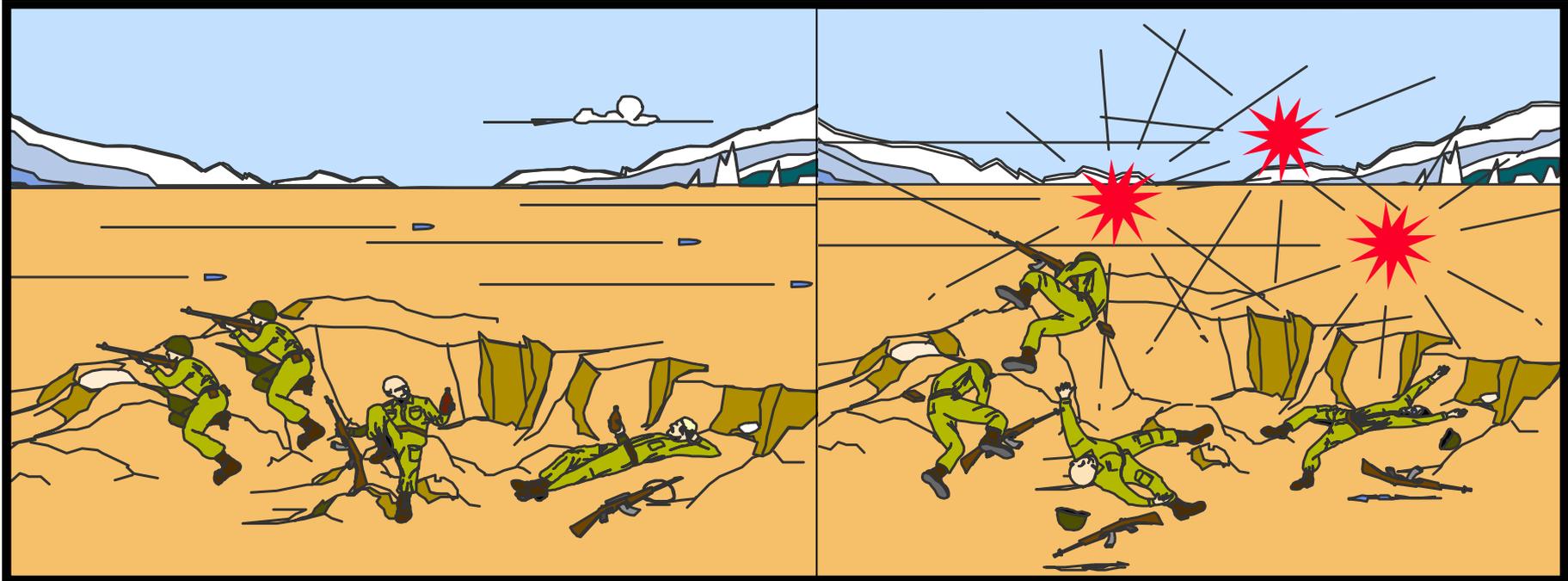
25-28 April 2005

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

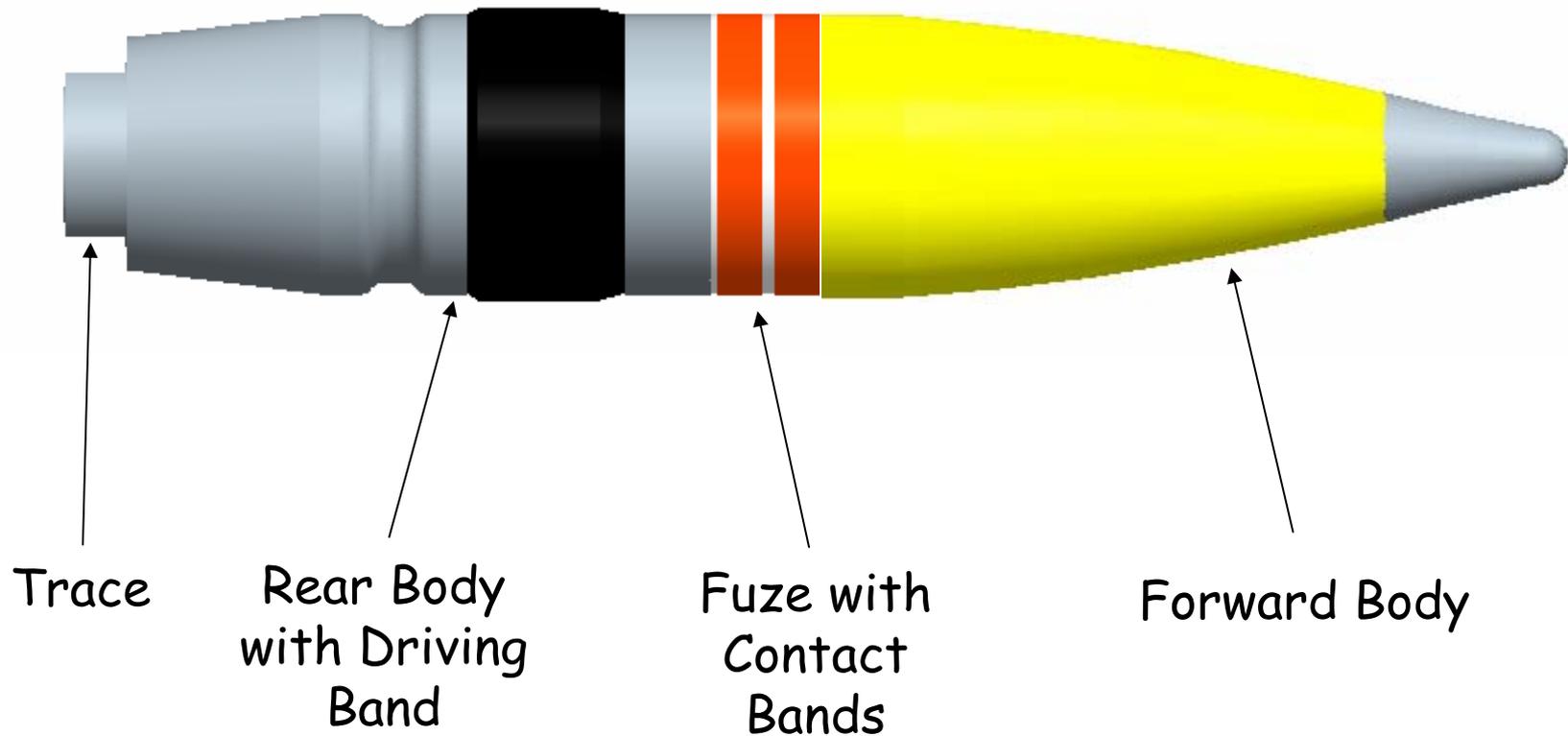
- Troop Personnel
- ATGM Sites
- Light Armored Vehicles
- Unarmored Vehicles
- Urban Structures
- Bunkers
- Watercraft



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A 30mm Airburst Solution



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30mm Air Burst Fuzing Approach

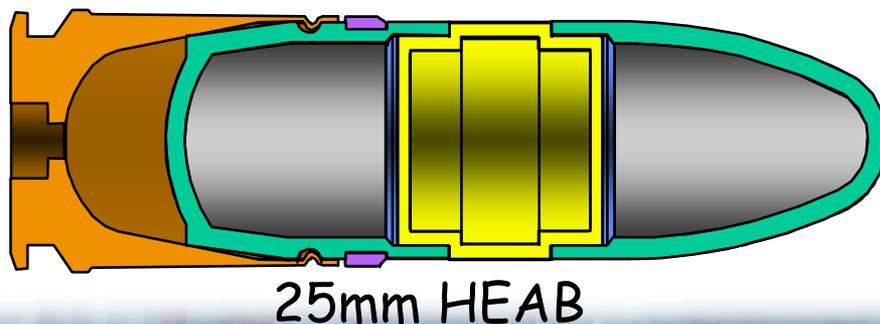
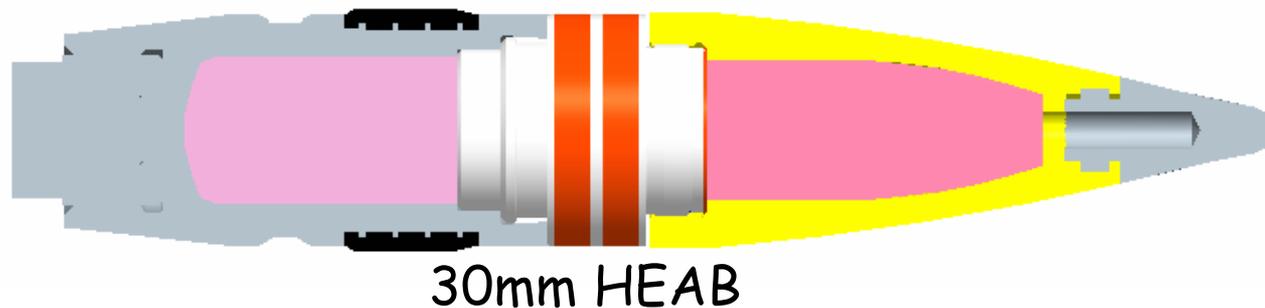
- Remote settable electronic time fuze
- Independent point detonating backup with super quick or delay
- Independent sterilization
- Precision air burst function
- Fuze powered and set in weapon feed system
- Fuze re-set each time a target is lased
- Contact communication system similar to that being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

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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



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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



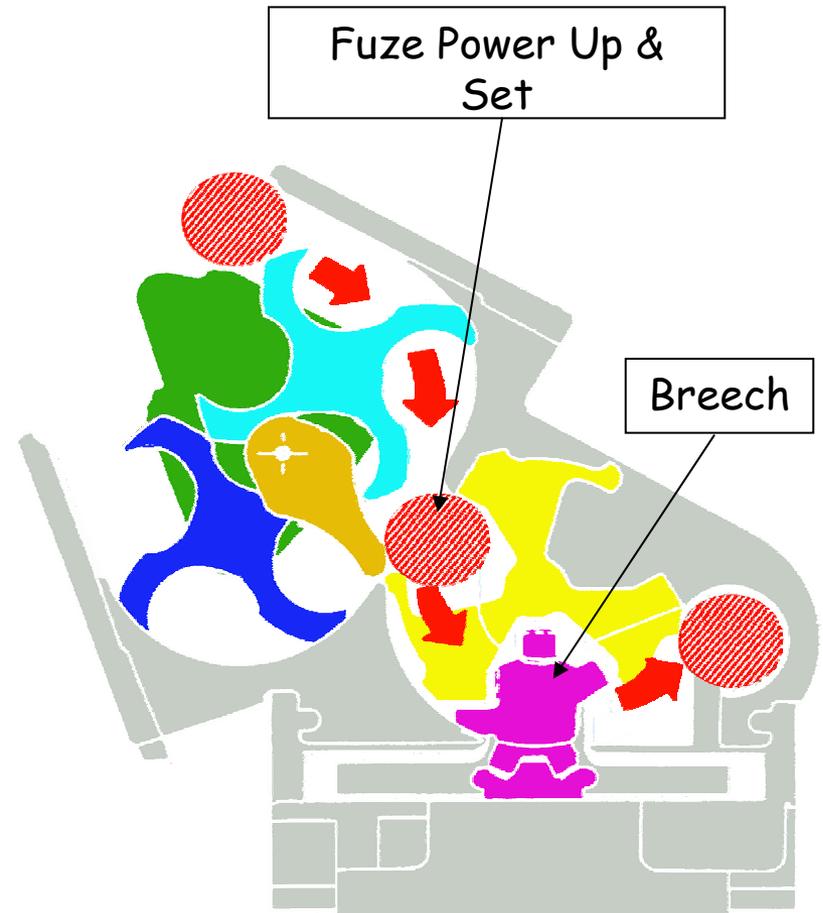
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30mm Airburst Lessons Learned

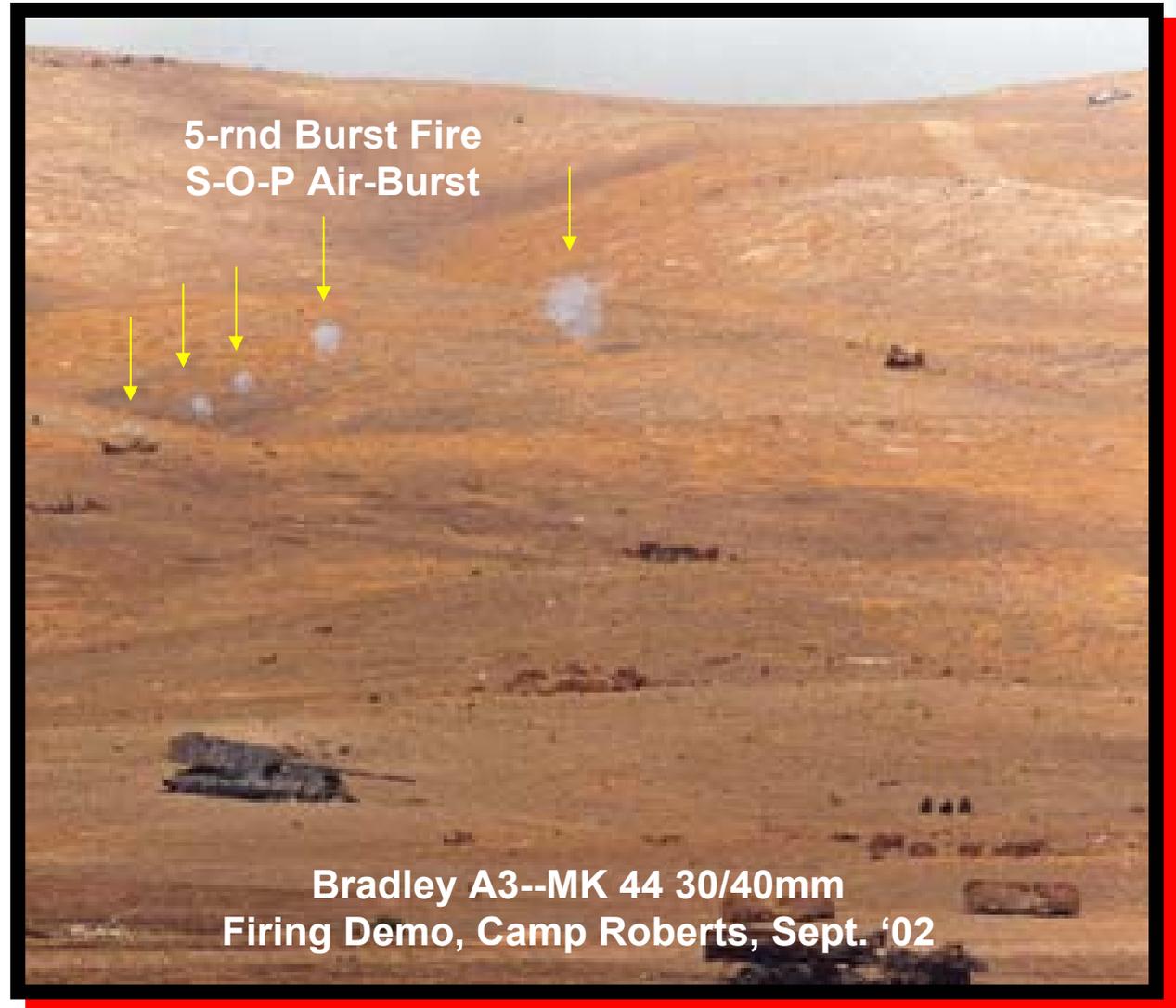
FUZE SETTING FLEXIBILITY:

- 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



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30mm Airburst Lessons Learned

Demonstration of 30/40mm Air Burst

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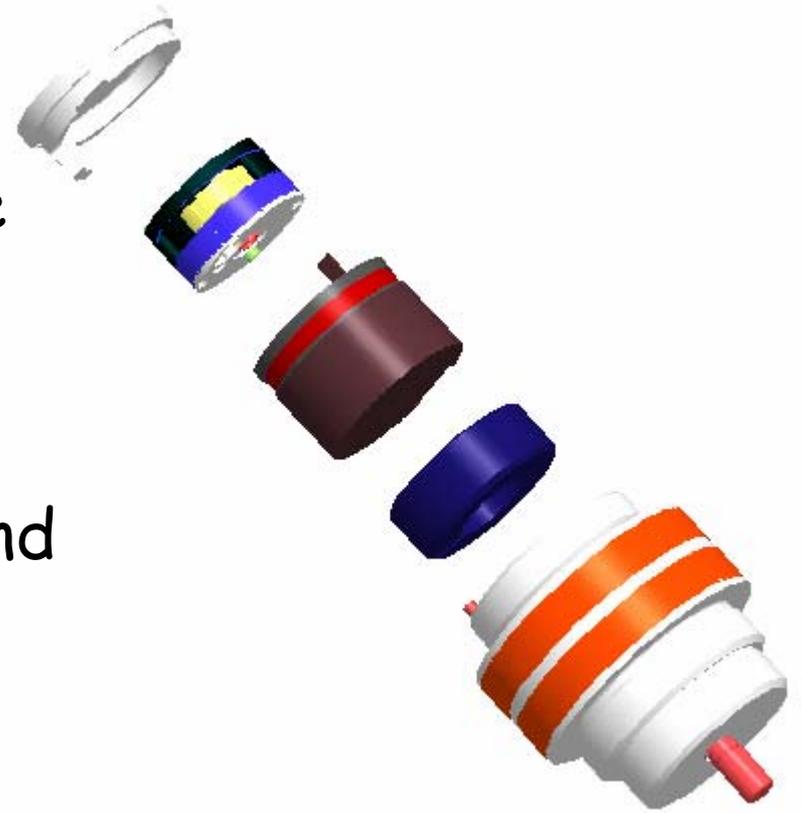
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30mm Airburst Lessons Learned

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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.

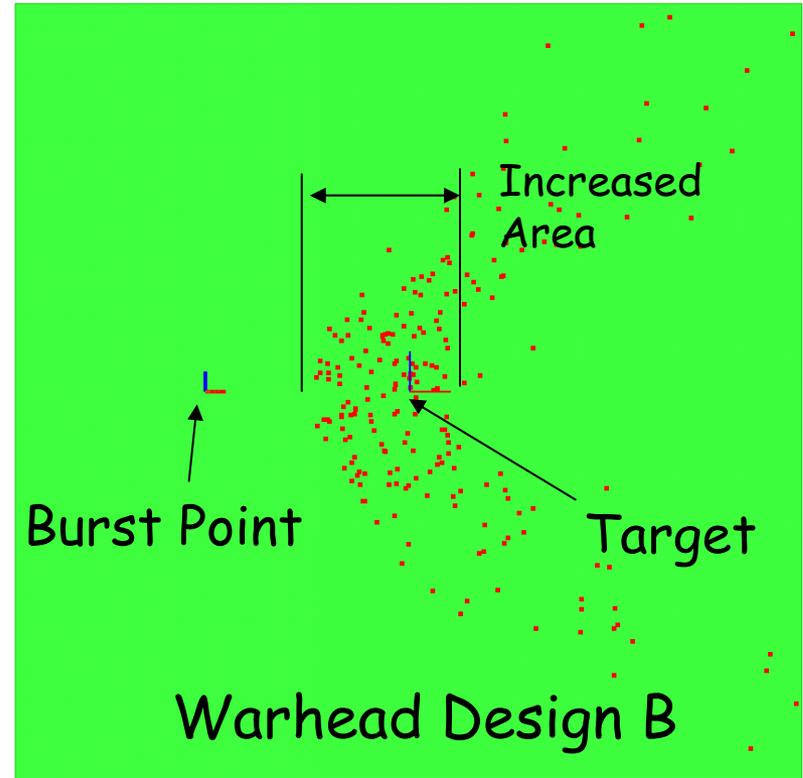
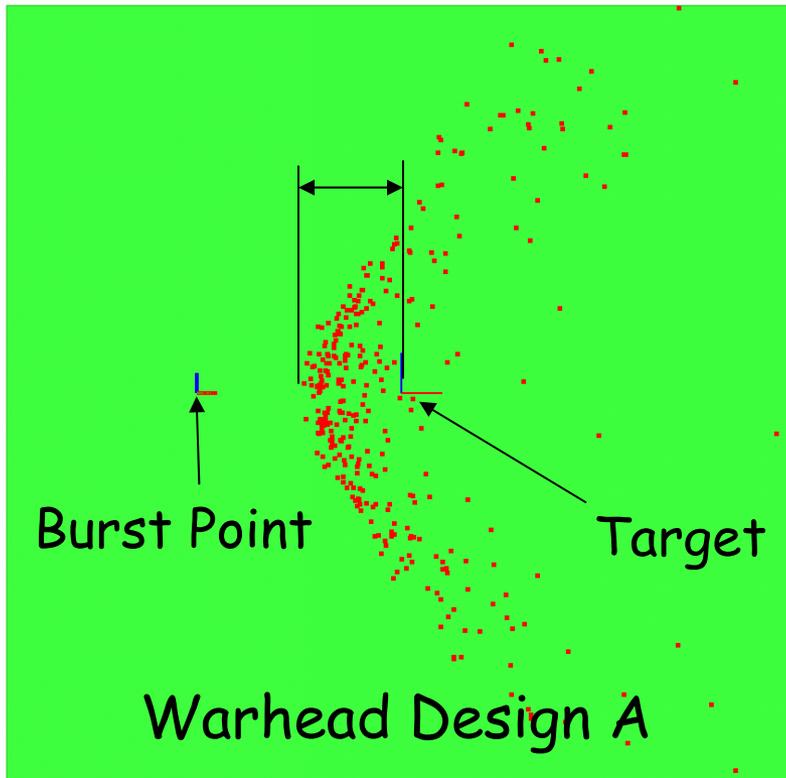


30mm Airburst Lessons Learned

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"

30mm Airburst Patterns on Target at 1000m Simulated Warhead Designs



Warheads can be designed per user requirements using the same fuze configuration. Further increasing fuze commonality advantages.

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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.