

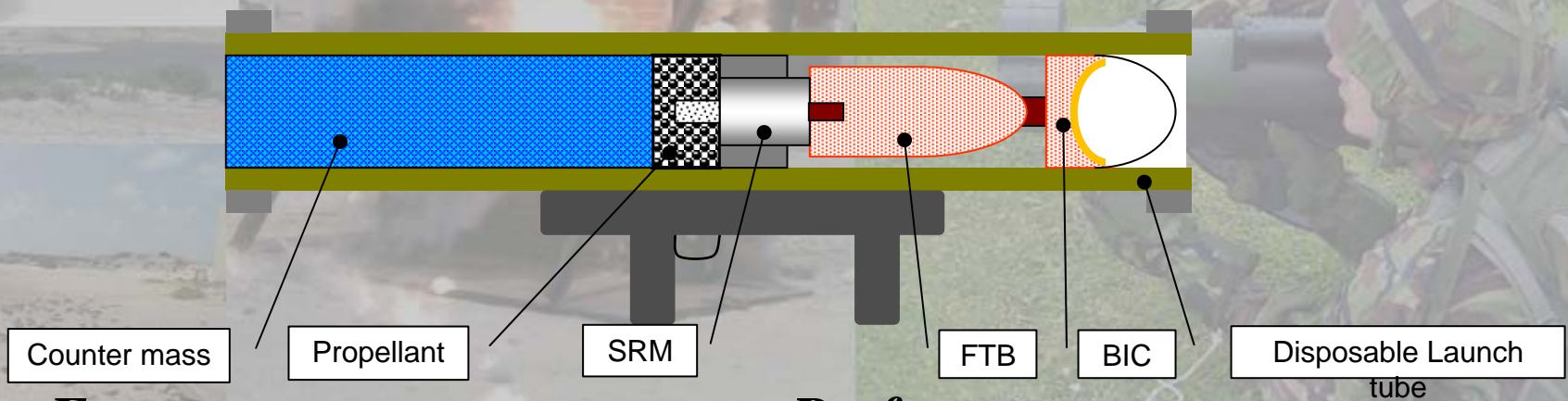
Anti Structure Shoulder Launched System

Insensitive Munition Program

Outline

- System description
- IM Process Plan
- High Explosive selection and qualification
- Sub-System preliminary tests
- AUR Tests
- Summary

System description



Main Features

- Multi target defeat capability using a tandem warhead
- Enhanced blast explosive
- Fully disposable
- Fire from enclosed capability
- Davis gun launcher
- Weight: 10kg; Length: 1 meter

Performance

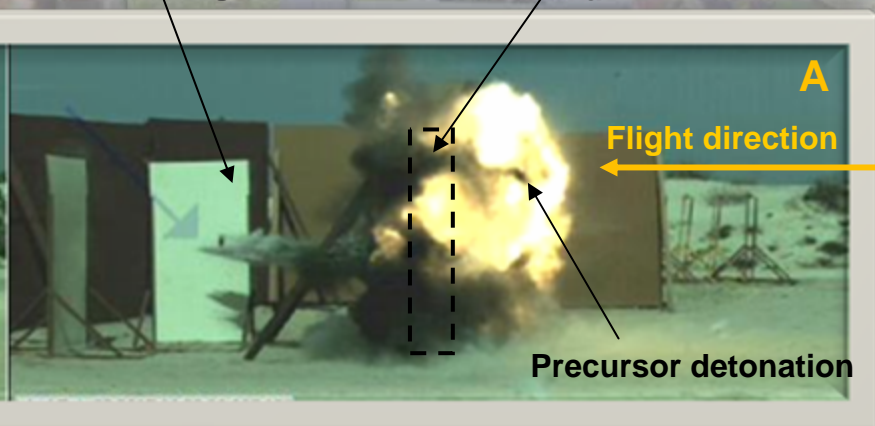
- Behind wall incapacitation
- Bunker (ETB) defeat
- Light armor defeat
- Mouse Holing
- Effective range: 400m
- Effective hit angles up to 60°

An effective multi purpose weapon

FTB detonation



Follow Through Bomb



Behind wall incapacitation capability



Mouse Holing



RHA perforation



Fortified position defeat

IM Features

- Lightly confined warheads
- Cure cast explosives
- Davis-Gun Launcher with liquid countermass



IM Process Plan

- IM activities began at day one.
- Design relied on existing technologies and knowledge from legacy munition.
- THA was conducted to identify relevant threats
- IM activities planned ahead in a gradual manner:
 - Explosive qualification
 - Sub components tests
 - AUR tests

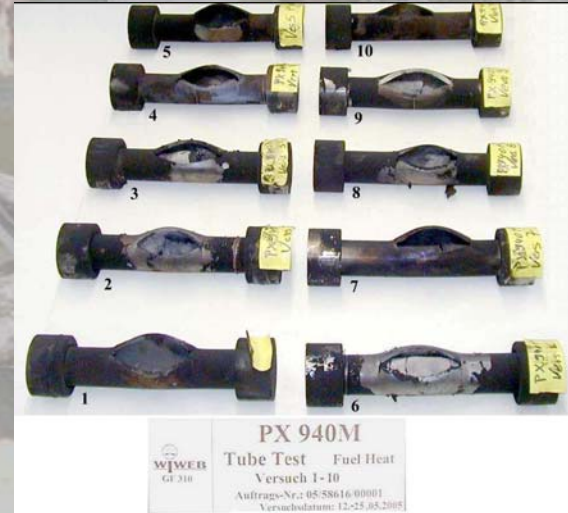
Explosive selection

Performance:

- Plate acceleration
- Open field firing
- Closed chamber firing

Safety:

- STANAG/ UN tests
- EMATP Tube tests



Sub-System tests

Test Type Test Item	FI	BI	SCO	FCO
BIC	Unpackaged Packaged	Unpackaged	Unpackaged	
FTB	Unpackaged Packaged	Unpackaged	Unpackaged	
SRM			Packaged Propulsion sub system	Packaged Propulsion sub system
GG				

Bullet Attack

- Test Item - Bare Warheads
- 1 0.5 AP round fired.
- Result – No reaction – Type V

Pre test

Post test

FTB



BIC



Fragment Attack (modified)

- 1830 m/ sec EFP fragment
- Test Item Bare and Packaged warheads
- Result – Packaged – Type V



Bare - Type V, I

Pre test

Post test

BIC (Bare)



FTB
(Packaged)



Slow / Fast Heating

- Graduated “ignition sequence” - Focus on the propulsion system
- Liquid countermass :
 - Countermass evacuation prior to ignition

Pre test

Post test

BIC



Propulsion system



AUR IM tests - Fragment Attack

- STANAG Fragment - 2500m/sec
- Point of aim identified at preliminary tests
- Unpackaged weapon - Type I, Type V
- Packaged weapon - Type V



Packaging contribution

AUR IM Tests - Slow Heating

- Test item - Packed AUR
- Ignition temperature $\sim 145^{\circ}\text{C}$ (internal temperature $\sim 130^{\circ}\text{C}$)
- Reaction - Type V



Packaging contribution



AUR IM Tests- Fast Heating

- Test item - Packed and unpacked AUR
- Explosive burn and expulsion out of the hearth
- Reaction - Type IV

Packaged
AUR



Unpackaged
AUR



AUR IM Tests- Sympathetic Reaction

- Donor weapon - FTB initiation
- Donor and 4 acceptors were colored for easy post test identification
- Reaction - Type V

Donor

Acceptors



Summary

IM Singniture

	FI	BI	SCO	FCO	SR
Unpackaged	I	V	V	IV	NA
Packaged	V	V	V	IV	V

Conclusions

- IM issues should be delt with from the begining :
 - THA for identifying credible threats
 - IM features (explosive selection countermass design) implementation.
 - Gradual test plan (components, sub system, AUR tests).
 - Whole body of evidence (not just Go/No-go trials)
- Packaged / Unpackaged configuration must be selected at the THA stage
- The AS is now a qualified weapon system in active service



Thank You