



The Impact of Performance

46th Annual Armament Systems: GUN & MISSILE SYSTEMS

Direct Fires & Precise Weapons for the modern battlefield

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2011

General Business Information

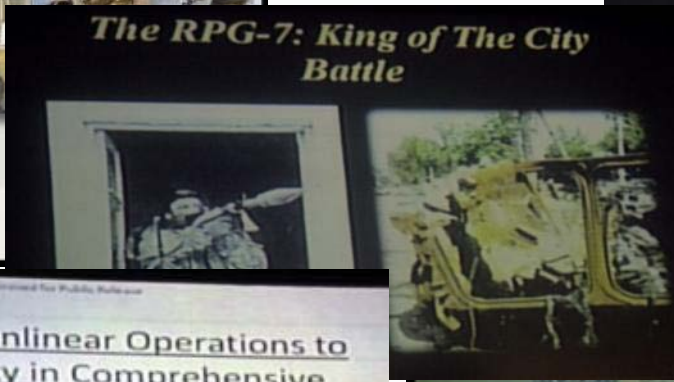
Lessons learned from the battle field



▲ 북한의 공기부양정은 크기가 작고 무장도 허약하지만 후방 기습침투에 사용될 경우 엄청난 위력을 발휘할 수 있다. 서울경제 파블러사이언스 3월호 www.popsci.co.kr



The Institute for Land Warfare Studies, Latrun



Lessons Learned: First Battle For Grozny

- Know your opponent
- Prepare, prepare, prepare
- Choose the right weapons
- Adapt tactics to situation
- Resolve comms problems
- Win the information war—lost confidence of Russian people

Direct and Indirect Fires

- Abrams Main Battle Tank: 120mm gun, 50 cal, 7.62 mm COAX MG
- Bradley Infantry Fighting: 25mm gun, TOW missile
- Marine Light Armored Vehicles: 20mm Chain Gun and M2 MG
- HMMWV: 50 cal and M219
- Army and Marine 155mm Howitzers fired thousands of rounds
- Army and Marine mortars fired thousands of rounds
- Army and Marine rotary wing helicopter support
- Marine, Navy and Air Force fixed wing support
- All indirect fires observed by Forward Observer or Forward Air Controller; most were "danger close"
- Marine and Special Operations Forces Snipers

Simple, understandable Rules of Engagement



공기부양정은 해안지대 또는 늪지대 등 물과 땅이 얽혀있는 곳에서도 빨리 움직일 수 있다는 점 때문에 군용으로 엄청난 잠재력을 보유하고 있다.



대전차미사일 헬파이어를 탑재한 아파치 헬리콥터는 북한의 공기부양정에 대처할수있는 유일한 정격으로 평가되고 있다.

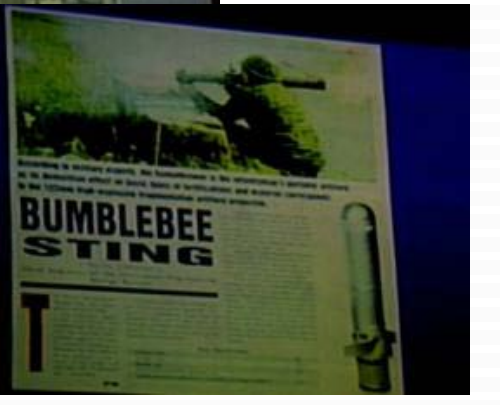
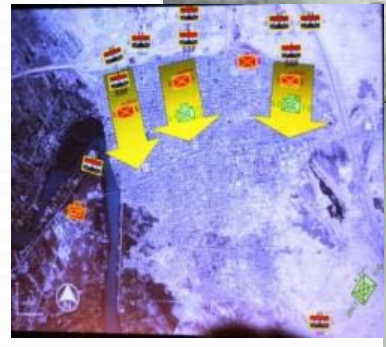
Employing Nonlinear Operations to Control a City in Comprehensive Counter Insurgency Operations

Effectively Synchronize Security, Governance, Development, and Information Operations

OL Wayne W. Grigsby JR. US Army



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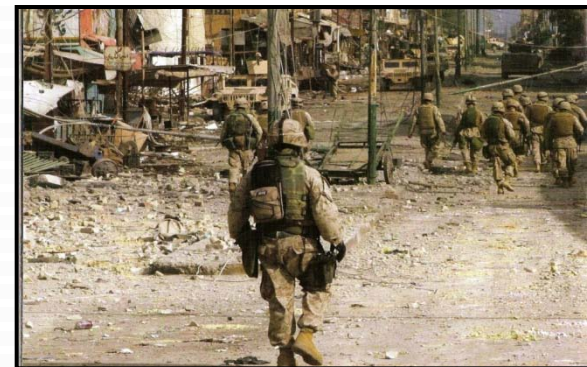


The Battlefield Scenarios

War

Non Limited Conflicts at High Friction (NLCHF) / Major Operations

Limited Conflict at Medium Friction (LCMF) / Routine security operations



Challenges (Typical targets) Vs. scenarios

	Dismounted Infantry (Short / long range A.T Teams...)	Tanks	Assault Helicopter	IFV's	Military infra-structures (Bunkers, field fortifications ...)	Mines / IED's	Buildings	Snipers	Tracks / Cars
1) WAR	+	+	+	+	+	+	+	+	+
2) NLCHF	+			+	+	+	+	+	+
3) LCMF	+					+	+	+	+

NLCHF = Major Operations including MOUT

LCMF = Routine security operations

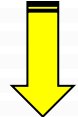
Direct Fires & Precise Weapons for the modern battlefield





The Impact of Performance

120mm Guided Mortar Munitions (GMM)



Indirect Fire

System Requirements

120mm mortar bomb which provides combat teams with organic, rapid response, and all weather indirect fire capability

The Requirements:

- Precision
- First round on the target
- Increased lethality
- Minimized collateral damage
- Reduced logistical support
- Leveraged joint fire networking



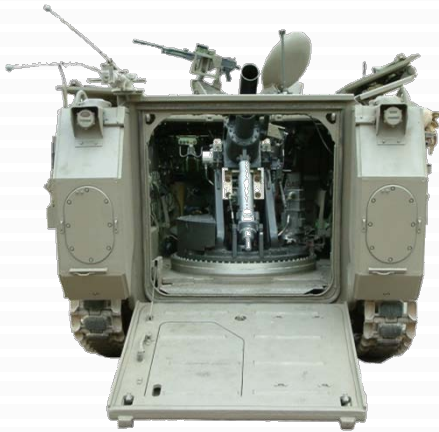
Performance Goals

- Ballistic Range : 7.2 Km (K6-charge 5)
- Gliding range : \approx 10 Km (K6-charge 5)
- GPS guidance, CEP (Circular Error Probable) < 10. m
- Laser guidance, CEP (Circular Error Probable) < 1.5 m



Operational Sequence

- The bomb could be fire from existing platforms
- The bomb operation procedures are like regular bombs except loading of mission data



120 GMM

Guided Mortar Munition



Video Clip



The Impact of Performance

“HORNET” 120-mm Light Mobile Mortar System



IMI's Hornet System

An Organic, light, highly mobile and Helicopter carried Weapon System, that consists on off-the-shelf military components.

The solution

To generate accurate and effective fire to support the Operational forces (Activities of infantry) in an independent and fast fire networking for immediate response.

Two 4X4 All Terrain Vehicles (ATV)

Command Control Communication & Computer (C4) Systems



Light Mortar

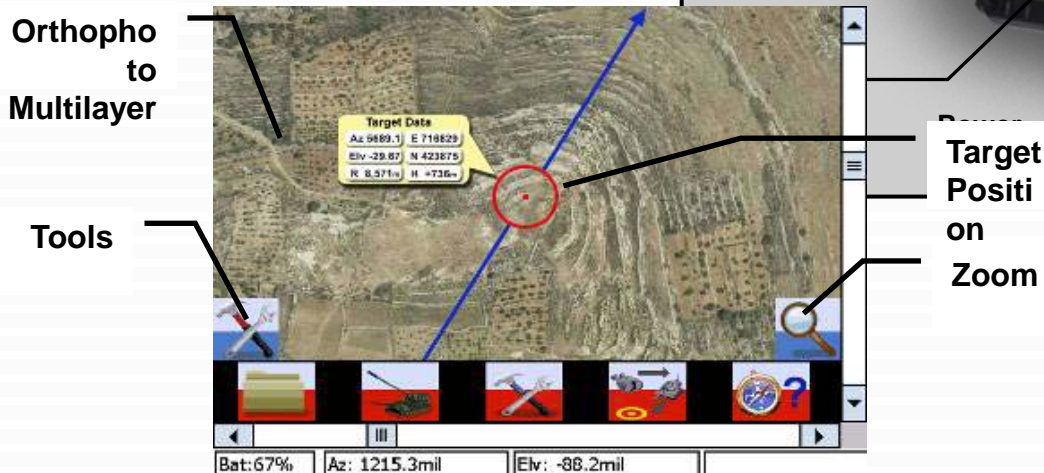
Munitions



Passive Target Acquisition Goniometer System



Target Screen



Light 120 mm mortar

Mortar's Positioning & Orientation Sensor Box (POSB)

GPS Compass
(x,y,z, AZ)

Inclinometer
(Pitch, Roll)

Gyro
(Yaw, Pitch,
Roll)

Main
processor
board

Digital Serial
output



Mortar

Mortar Fire Control
System (MFCS)

System Advantages

Optimal and most cost-effective solution for the user's Elite Units or Special forces:

- High Mobility
- First Round on Target - capability with low collateral – damage when firing the 120mm GMM.
- Can be carried by helicopters.
- Capable of firing wide-rang of mortar ammo. (GMM, Smoke, Illumination etc.) for various operational-tasks.
- Increasing the lethality and survivability of the fighting-forces.





The Impact of Performance

120 mm HE-MP-T, M339

Multi-Purpose Tank Cartridge



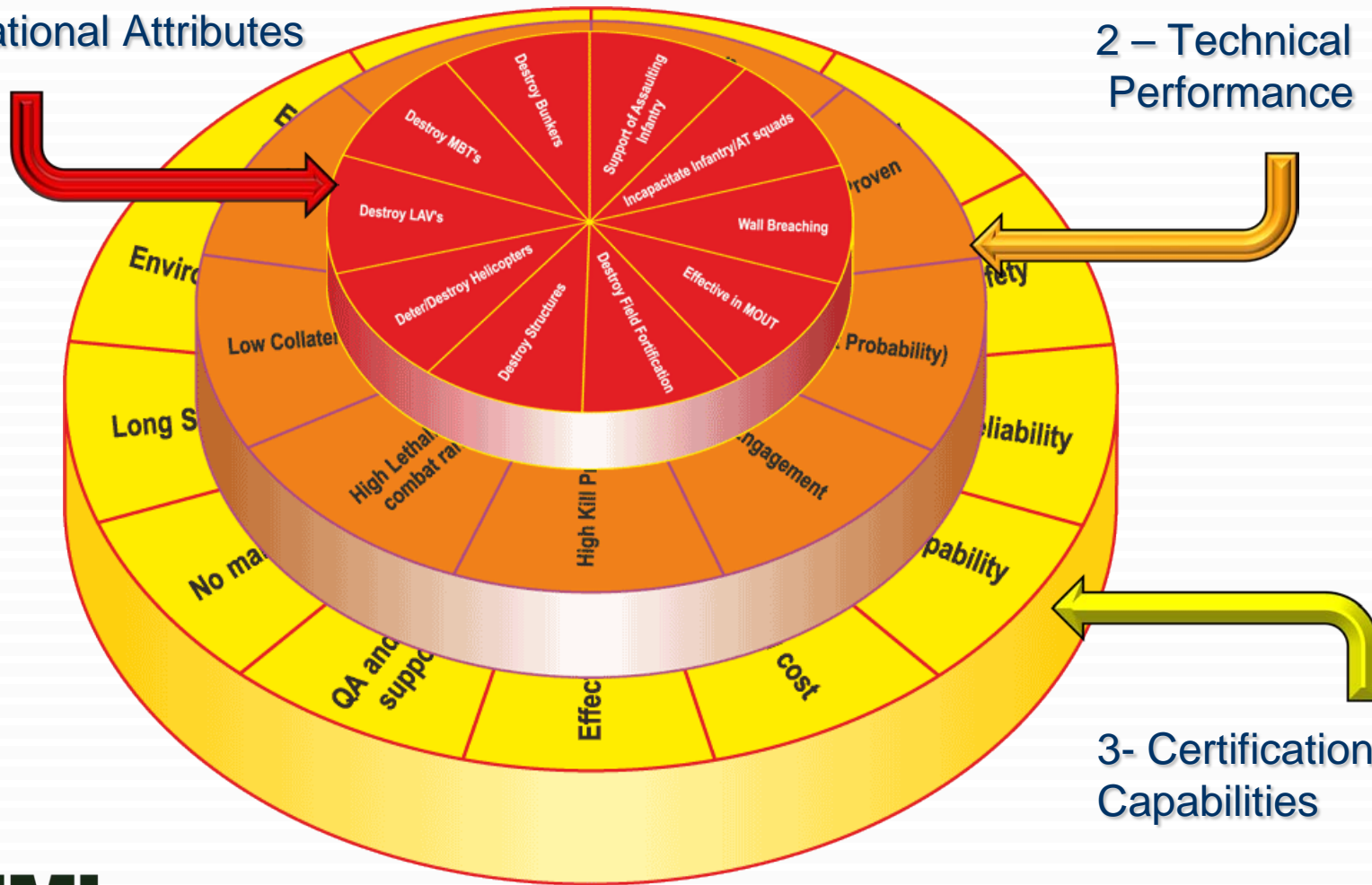
Direct Fire

2011

The Main Requirement of The Armor Corps - Analysis

1 – Mission Statement / Operational Attributes

2 – Technical and Performance



3- Certification and Capabilities



Urban Terrain



Structures



Field Fortification



Armored Vehicle



Anti-tank Squad



Helicopter



Tanks



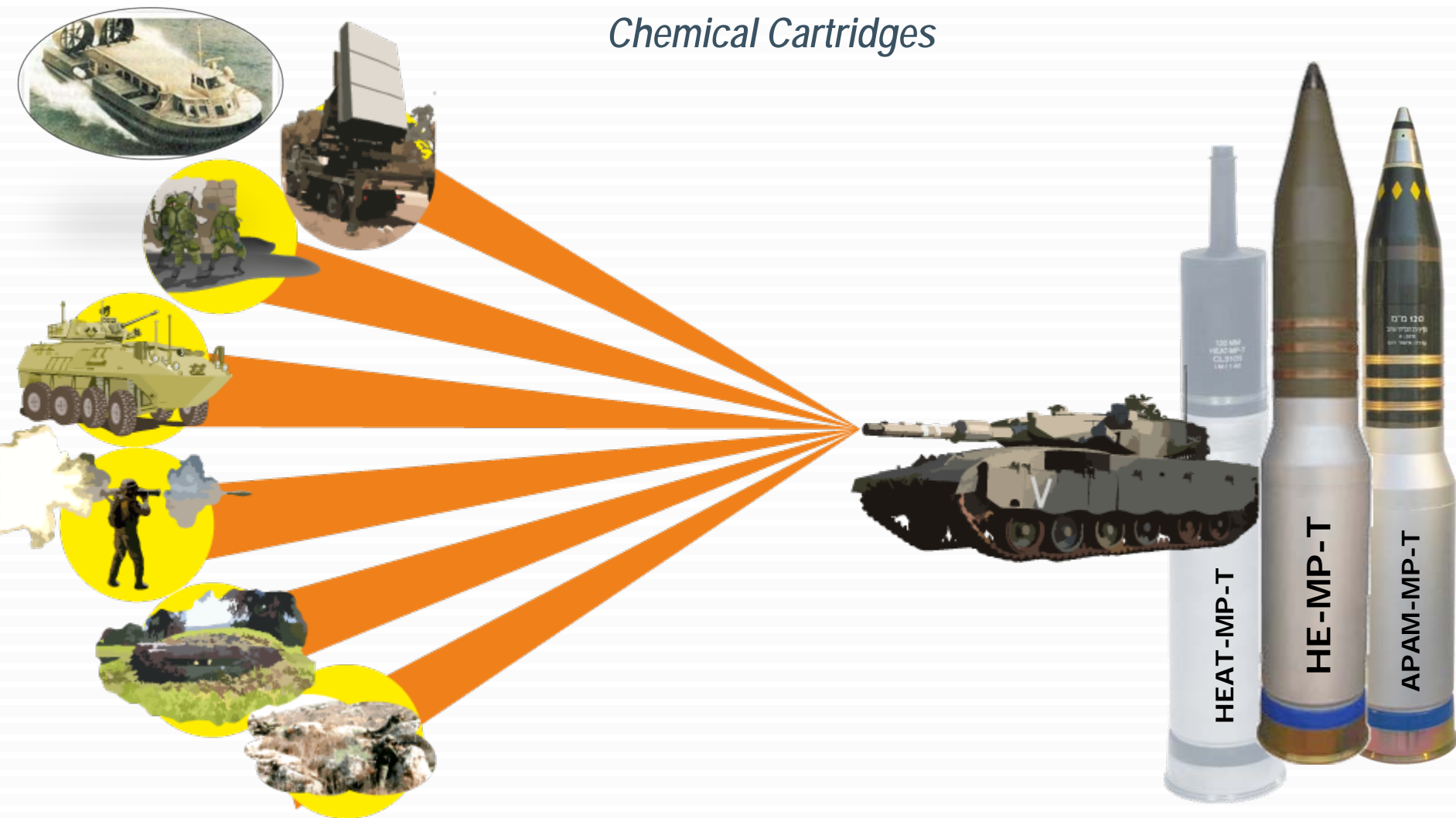
Chemical Cartridge



Kinetic-Energy Cartridge

Destroy Multi Threats

Chemical Cartridges



HE-MP-T 120, M339 - Introduction

- ❖ **Multi-Purpose Tank Cartridge**
- ❖ **Can be fired with 120mm smooth bore guns L44/L55**
- ❖ **Developed and qualified according NATO STANAG 4385 and IDF requirements**
- ❖ **Complies with:**
 - ❖ **STANAG 4493**
 - ❖ **STANAG 4369 & AOP 22**
 - ❖ **STANAG 4157**
 - ❖ **MIL-STD-810, ITOP and others**
- ❖ **IM round includes –**
 - ❖ **HE (CLX663) – Qualified by the IDF**
 - ❖ **LOVA propellant (optionally) – Qualified by the IDF**



HE-MP-T 120, M339

Electronic

Device (*)

Warhead

» Projectile

Combustible
Cartridge Case

Electric Primer

» Propelling
System

Propellant (M26)

Stub Case



Cartridge length

984 mm

Cartridge weight

27 Kg

Projectile weight

17 Kg

HE weight (TNT/IM-CLX663)

2.7/3 Kg

Muzzle velocity

900 m/sec

Chamber pressure

3,300 bar

Accuracy (SD)

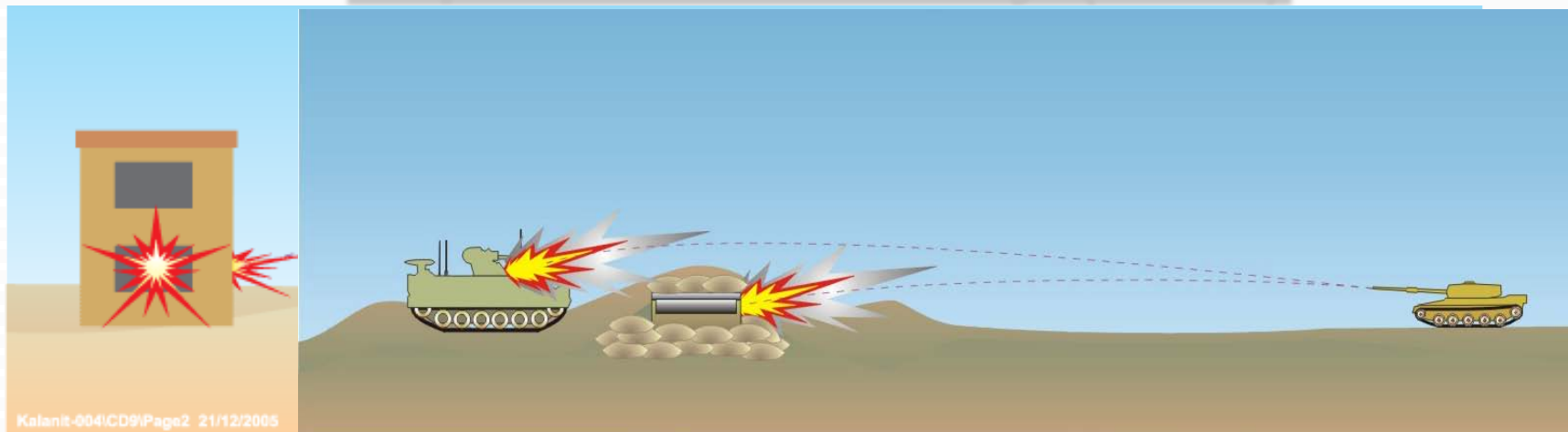
0.3 mil

Data Link



(*) – Programmable Electronic Base Fuze

Impact - with Delay (PDD)



Kalanit-004/CD9/1Page2 21/12/2005



Typical penetration
(Ø 40~60 cm)



Lethality Behind Wall

Penetrate at least, 200mm double reinforced concrete wall

Impact - with Delay (PDD)

Before

After

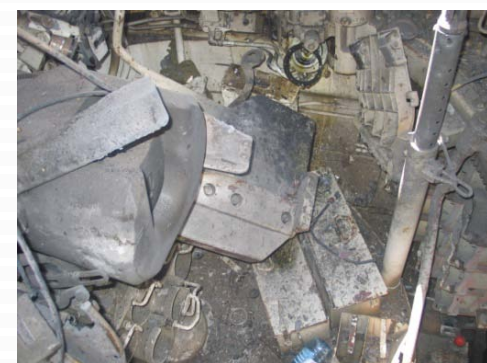


Impact - with Delay (PDD)

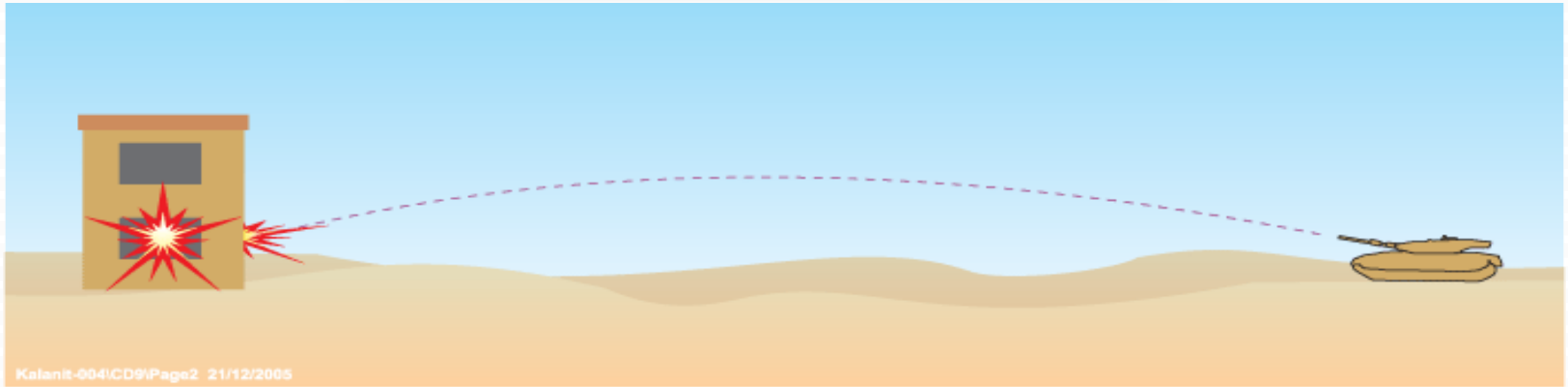
Before



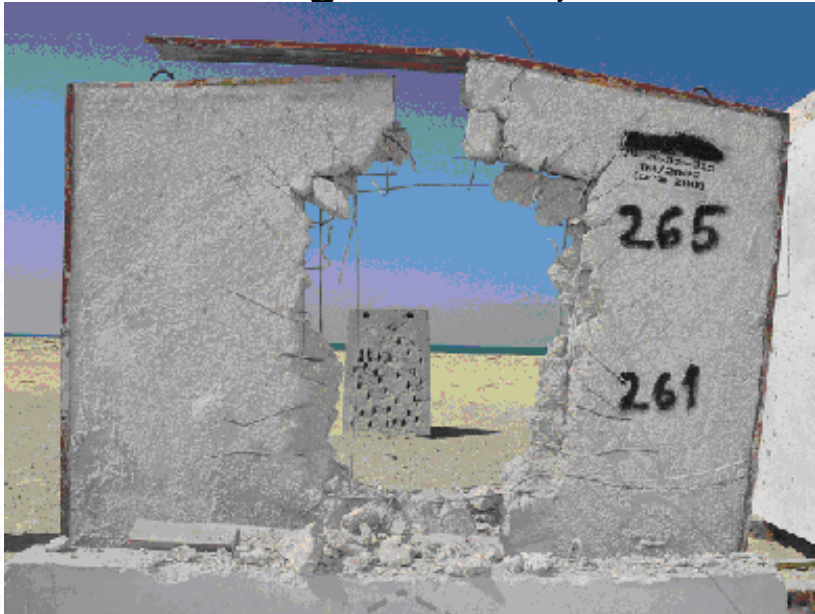
After



Impact - Super Quick



Range = 300 m, T= 200mm, 30MPa, Hole = 120x180 cm

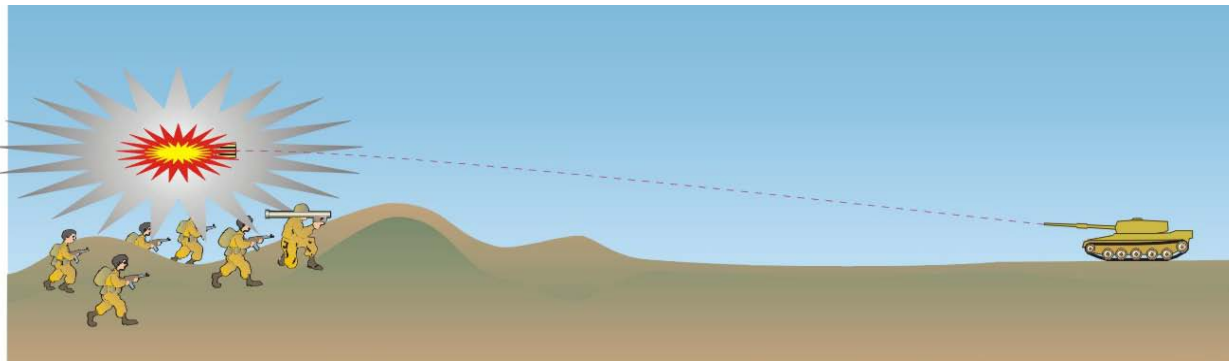


Line of site



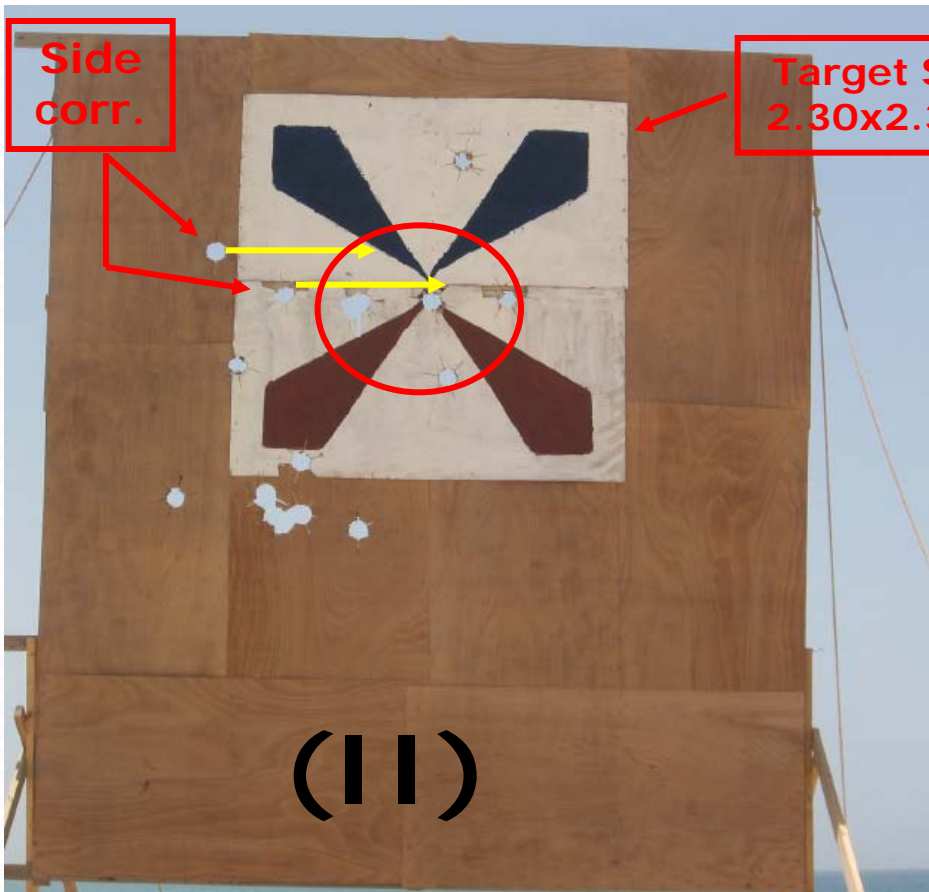
Breach wall for infantry pass by using 2 rounds

Air Burst



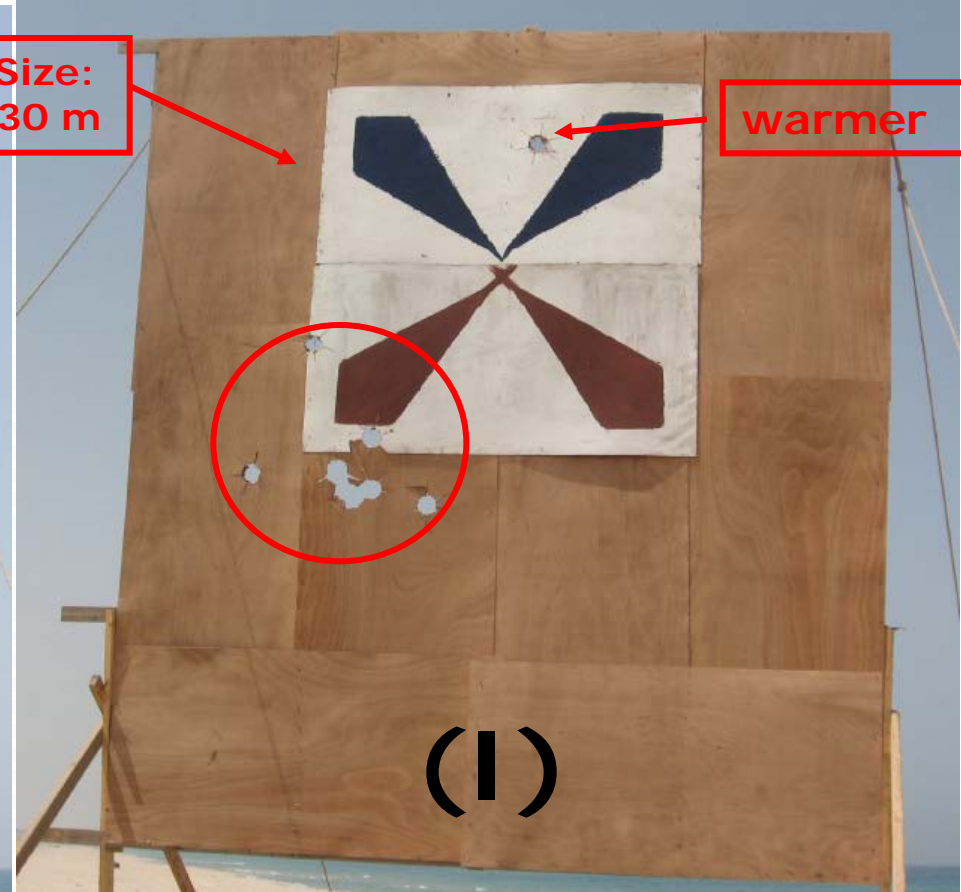
Air Burst operation – view from the tank

HE-MP-T 120 – Accuracy Test (2,000 m)



7 Rounds









0.12x0.19 mils



7 Rounds

0.18x0.19 mils

IM Reaction Levels (with CLX663)

IM Stimulus	Cond.	Reaction Level	Results
Liquid Fuel Fire (Fast Cook-Off)	N	5	
Slow Heating (Slow Cook-Off)	N	5	
Bullet Impact	N	4	X3 In Fuze 
	P	5	X3 In Primer 
Fragment Impact	N	5	In Fuze 
	P	5	In Primer 
Sympathetic Reaction	N	4	
Shaped Charge Jet Impact	N	1	

1 – Detonation; 2 – Partial Detonation; 3 – Explosion; 4 – Deflagration; 5 - Burning

N – Without Package; P – In Package

Video Clip – Demonstration test



Every one could sling at a hairbreadth and not miss

Judges 20/16



MPRS

More Than an Assault Rifle



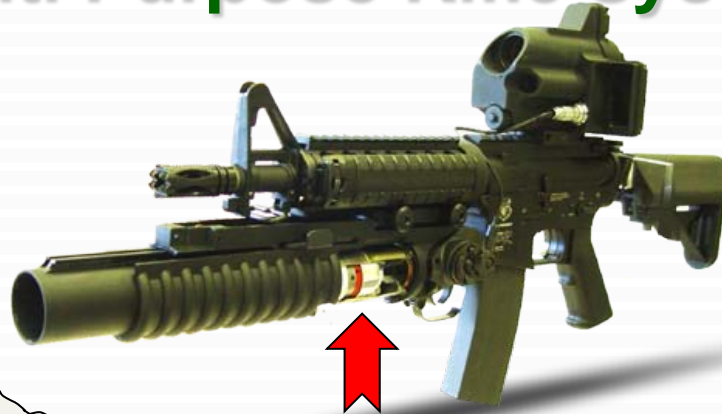
Direct Fire



MPRS - Multi Purpose Rifle System



•Unique multipurpose 40mm grenades



- Launcher breechblock inductive coil
- Bi directional data link



Orion



•Data I/O interface to C4I systems



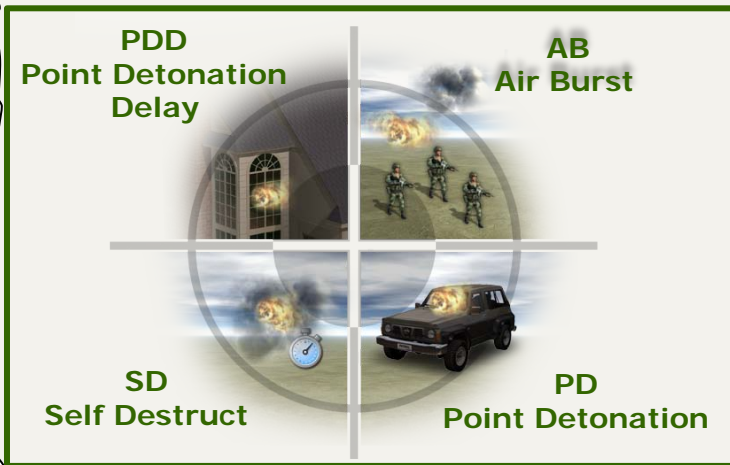
Orion



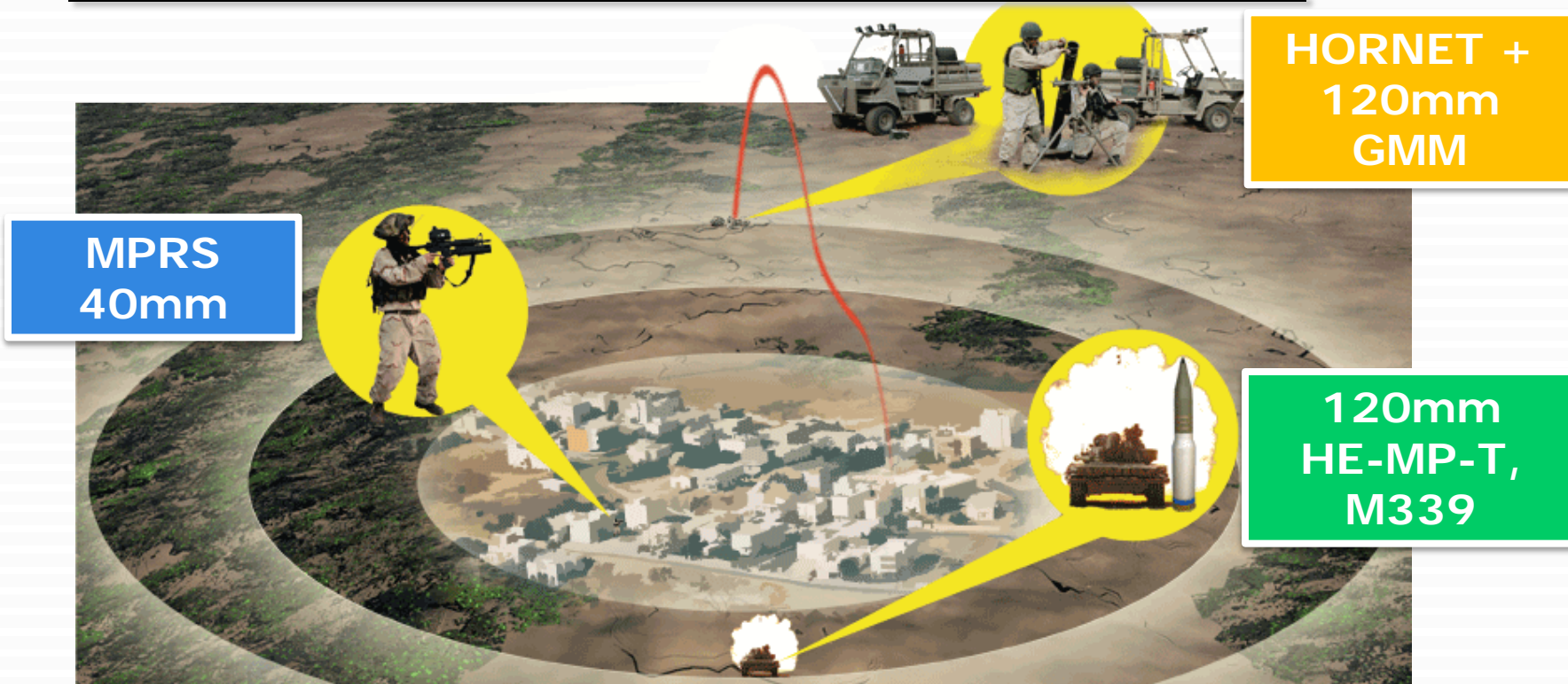
- Internal LRF , eye-safe invisible
- Ballistic computer - FCS
- Direct view optics
- Sensors (inclinometer etc.)



•Keypad (x2)



IMI's solution for the modern battlefield



	Dismounted Infantry (Short / long range A.T Teams...)	Tanks	Assault Helicopter	IFV's	Military infra-structures (Bunkers, field fortifications ...)	Mines / IED's	Buildings	Snipers	Tracks / Cars
NLCHF	✓			✓	✓	✓	✓	✓	✓

Thank you for your attention !

QUESTIONS ?

*The Technology is Proven and
In the Market*