Transforming Army Indirect Fires

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Transforming Army Indirect Fires

- Robust **mix** of fire support systems is required to address the full spectrum of requirements and mitigate against surprise
- **Volume, precision, responsiveness** (24/7, all weather, all terrain), and **range** remain critical attributes of a fire support system
- Networked and precision fires offer opportunity to disrupt/destroy enemy capabilities at extended ranges and with greater precision

To achieve **Destructive, Suppressive** and **Protective** effects while minimizing collateral damage and taking advantage of emerging technology

**Networked through battle command**
- Fully interoperable with Joint systems
- Mobile (strategic and tactical)
- Fully integrated with maneuver
- Lethal (through precision and volume)
- Precise effects with area options
- Reduced logistics
- Ability to mass effects
- 24/7, all weather, all terrain

**Army Brief to DEPSECDEF – Sep 02**
Looking at Precision Needs

**Precision Effects:** Capability to rapidly and accurately locate and attack targets with the required operational responsiveness matched to desired effects (lethal and non-lethal) and the greatest efficiency.

To achieve precision effects Field Artillery needs:
- Accurate target location and size
- Accurate delivery system location and direction
- Timely and accurate meteorological data
- Accurate computational procedures
- Weapon and ammo information
Current Operational Need

2. . . . ONS succinctly identifies an urgent need for improved munitions in IBCTs . . . Recent XVIII Airborne Corps experience in both Afghanistan and Iraq indicates that **GWOT operations requires indirect fire munitions with greater lethality, increased range, and a precision guided capability that limits collateral damage.**

XVIII ABC ONS for Improved 105mm Artillery Projectiles
21 Nov 05
Joint Fires Capabilities

Create the Thunder

Long Range Precision Strike

Shaping Fires

Destructive Fires at Extended Ranges

Fires to Isolate

Close Supporting Indirect Fires

Close Fight

Range

>300km
300km
150-180km
100km (LAM)
70km
60km (PAM)
30-40km
10-15km

Air Interdiction

TLAM

ATACMS

UAS

Naval Gunfire

Close Air Support

Attack AVN

GMLRS

Cannon

PAM/LAM

Mortar

Close

Supporting

Indirect

Fires
## Army Munitions Attributes

<table>
<thead>
<tr>
<th>Non-Precision (Area) Munition</th>
<th>Precision Munition</th>
<th>Precision Guided Munition</th>
<th>Precision Smart Munition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Munition/ submunitions subject to all ballistic conditions on the way to the AIMPOINT.</td>
<td>Munition corrects for ballistic conditions using guidance and control up to the AIMPOINT or submunitions dispense <em>with terminal accuracy less than the lethal radius of effects.</em> Submunitions subject to ballistic conditions to AIMPOINT.</td>
<td>Munition senses <em>energy reflected from a target</em> and uses <em>guidance and control</em> to the TARGET. Requires a <em>laser designator</em> in the loop for target designation.</td>
<td>Munition/ submunitions autonomously searches, detects, classifies, selects, and engages TARGET(s). Has a limited target discrimination capability.</td>
</tr>
</tbody>
</table>
Available or Programmed

M982 HE

PGK

INC 1

NLOS-LS with PAM

< 10M CEP GPS

< 1M CEP with SAL

HIMARS with GMLRS-U

< 10M CEP IMU

< 10M CEP IMU

M270A1 with ATACMS QRU

Area Munitions with CEPs > 150M at 2/3 range

50M CEP

< 10M CEP GPS

< 10M CEP

< 1M CEP

Distant target in theater today for indirect fires

Create the Thunder
Looking at Responsiveness

Of the 141 mission profiles:
- 40 required less than 2 minutes
- 13 required more than 2 but less than 10 minutes
- 3 required more than 10 but less than 60 minutes
- 85 required more than 60 minutes

For an FCS-equipped BCT to execute its concept, high payoff targets and most dangerous targets required very responsive fires:
- 28% of the mission profiles required 2-minute responsiveness and 38% required a response within 10 minutes
- 68% of the targets that required a response within 2 minutes were in the range band of 0-15km

<table>
<thead>
<tr>
<th>Range to Target</th>
<th>2</th>
<th>10</th>
<th>60</th>
<th>&gt;60</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 15 Km</td>
<td>27</td>
<td>8</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>15 – 40 Km</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>40 – 60 Km</td>
<td></td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>60+ Km</td>
<td>9</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total Mission Profiles</td>
<td>40</td>
<td>13</td>
<td>3</td>
<td>85</td>
</tr>
</tbody>
</table>

Required Responsiveness (minutes)
Where We Were . . .

- High probability of collateral damage
- Low probability of achieving desired effects on target
- Large expenditure of ammunition to have high fractional damage

. . . no precision targeting with area munitions
Where We Are . . . .

- Probability of collateral damage precludes use in most urban engagements
- Larger munition expenditures required to achieve desired effects

. . . precision targeting with area munitions
Looking at Aiming Points

Area Target – Aim point selection

Conventional Aiming:
Accounts for delivery errors (PER & PED) to ensure target coverage

Precision Aiming:
Reduced # of aim points & munitions

Less rounds for desired effect

Enable precision targeting

Target Element – Aim point pairing
Where We’re Headed . . .

• Reduces CEP to enable more engagements in most urban environments
• Reduces expenditures required to achieve desired effects

. . . precision targeting with Precision Guidance Kit

• <50M CEP Initial
• <30M CEP Threshold
• <10M CEP Objective
• Both 155mm and 105mm
Where We Need to Be . . .

- Preferred choice when collateral damage must be minimized
- Vertical trajectory desired
- Need scaleable lethality
- Ability to discriminate without designation
- Significantly fewer rounds expended to achieve desired effects

. . . precision targeting with precision munitions
Other Requirements

Common:
- Location
- Direction
- Elevation

Improved Positioning and Azimuth Determining System

• Meteorological data on demand
• < 30 minutes staleness
• Target area met capability

Profiler

• Routine digital operations
• All members of the team
Precision Munitions Mix Analysis

• The FY08 HBCT forces and the FY14 HBCT and FCS BCT forces will be able to accomplish their missions with a subset of the Army’s collection of precision munitions programs.

• Employing a subset of Army precision munitions (APM) can cause a greater reliance on joint capabilities.

• APM can be layered into 4 tiers based upon PMMA findings, Threat and operational considerations:

  — Tier 1: those central to any mix, capable of engaging multiple likely mission profiles and that clearly dominate mix lethality.

  — Tier 2: those that best augment Tier 1 to engage the most likely Threat behaviors or dispositions.

  — Tier 3: those that mitigate risk to the force in case of less likely Threat behaviors or dispositions.

  — Tier 4: those that provide a marginal capability to the force under prevailing conditions.

• APM mixes reduced the overall logistics burden.
Enhanced Delivery

- Remains a great system
- Challenge is to ensure keep it operationally viable for many years to come
- Probably the system in Fire Brigades for at least 30 more years

Paladin

- Prototype delivery begins in FY 08
- Challenge is to maintain commonality with other MGV
- Migrate to Stryker BCT at some point

FCS NLOS Cannon

- Fewer types of systems
- Enhanced deployability
- Enhanced sustainability
PSS-SOF Targeting
Airspace Geometries

THIS IS THE VOLUME OF AIRSPACE WE WANT CLEARED WITH THE MISSILE/PROJECTILE FLIGHT PATH. Aircraft would essentially be commanded to stay out of this airspace until “rounds complete”.

Civil Airway

• In this scenario there is no need to clear civil air traffic because the MFP is calculated and sent to TAIS.
• The MFP does not conflict with the airway.
• Potential conflicts with civil traffic are greatly reduced using this method.