

Precise Indirect Fires

Mr. Bart Barcellos

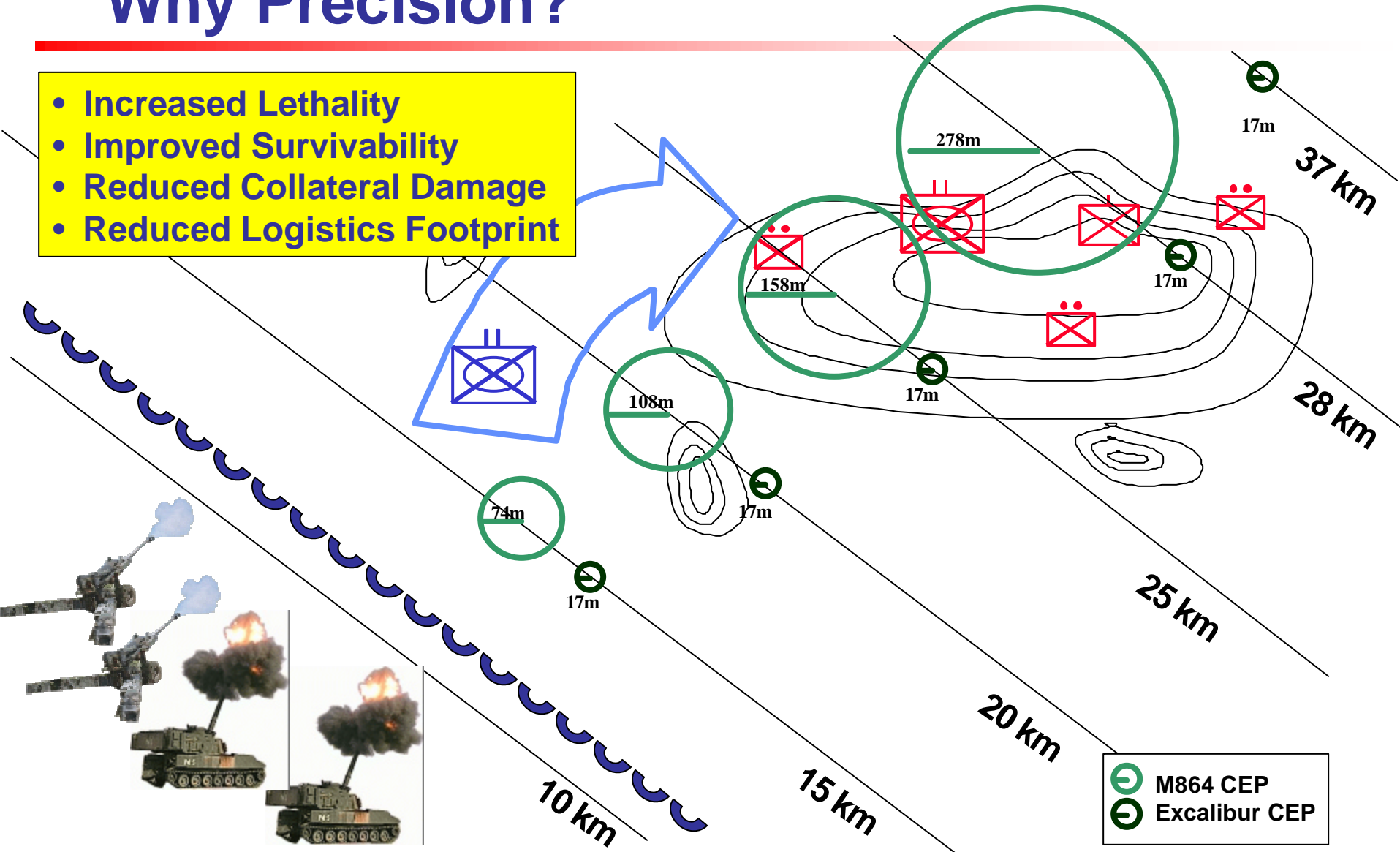
Raytheon

DOD Operational Goals for Transformation

- **Protecting Critical Bases of Operations**
- **Assuring Information Systems in the Face of Attack and Conducting Effective Information Operations**
- **Projecting and Sustaining U.S. Forces in Distant Anti-Access or Area-Denial Environments**
- **Denying Enemies Sanctuary by Providing Persistent Surveillance, Tracking and Rapid Engagement With *High-Volume Precision Strike Through a Combination of Complimentary Air and Ground Capabilities . . . At Various Ranges and in All Weather Conditions***
- **Enhancing the Capability and Survivability of Space Systems**
- **Leveraging Information Technology**

Why Precision?

- Increased Lethality
- Improved Survivability
- Reduced Collateral Damage
- Reduced Logistics Footprint



The Benefits of Accuracy

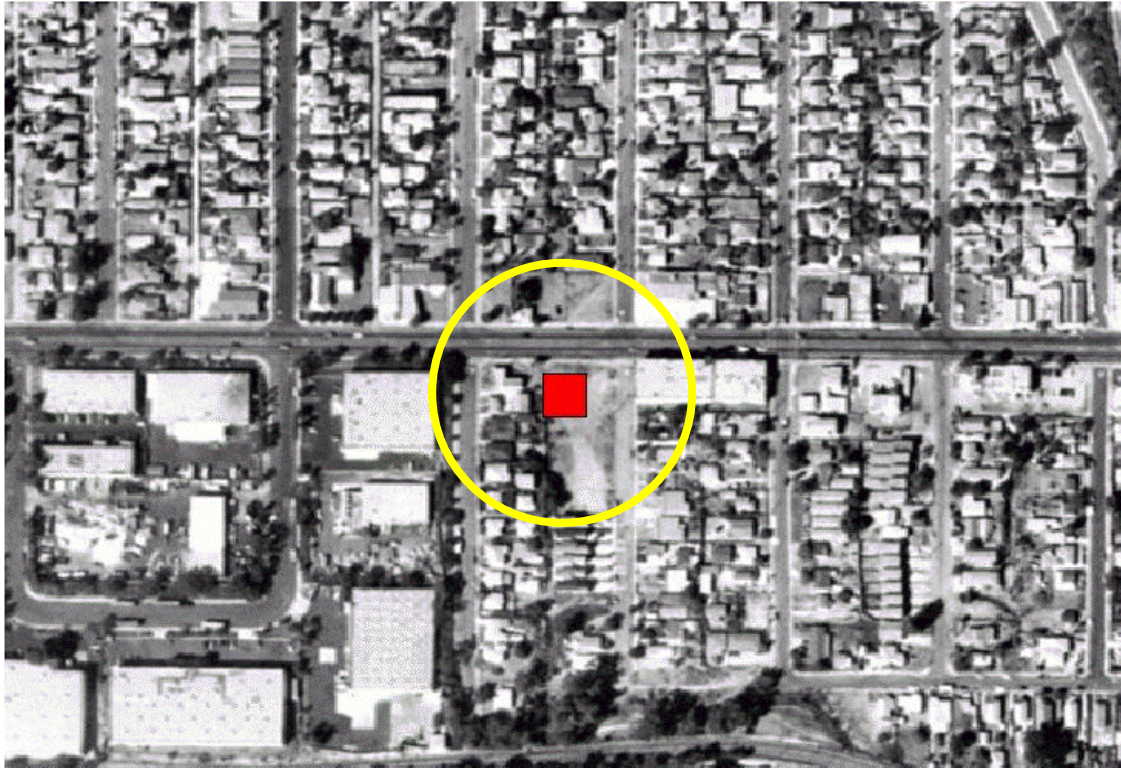
✓ **Increased Lethality**

Improved Survivability

Reduced Collateral Damage

Reduced Logistics Footprint

Indirect Fire Support in Urban/Complex Terrain

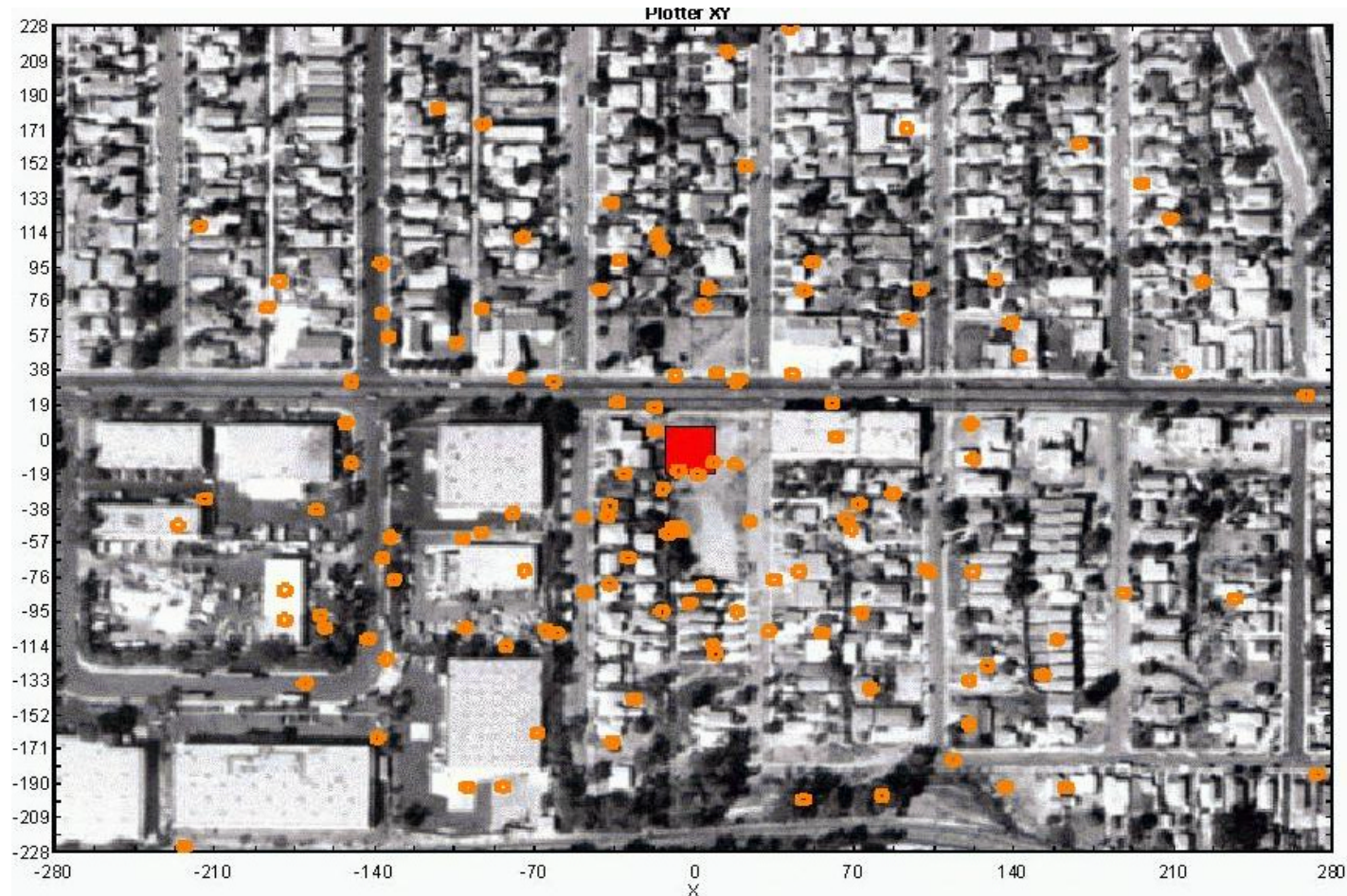


**A command post
in an urban environment.**

A 20m X 20m structure.

10m Target Location Error

Indirect Fire Support in Urban/Complex Terrain



Current M549 vs 20X20 structure: 147 rounds

Indirect Fire Support in Urban/Complex Terrain



XM982 vs 20X20 structure: 3 rounds

The Benefits of Accuracy

Increased Lethality

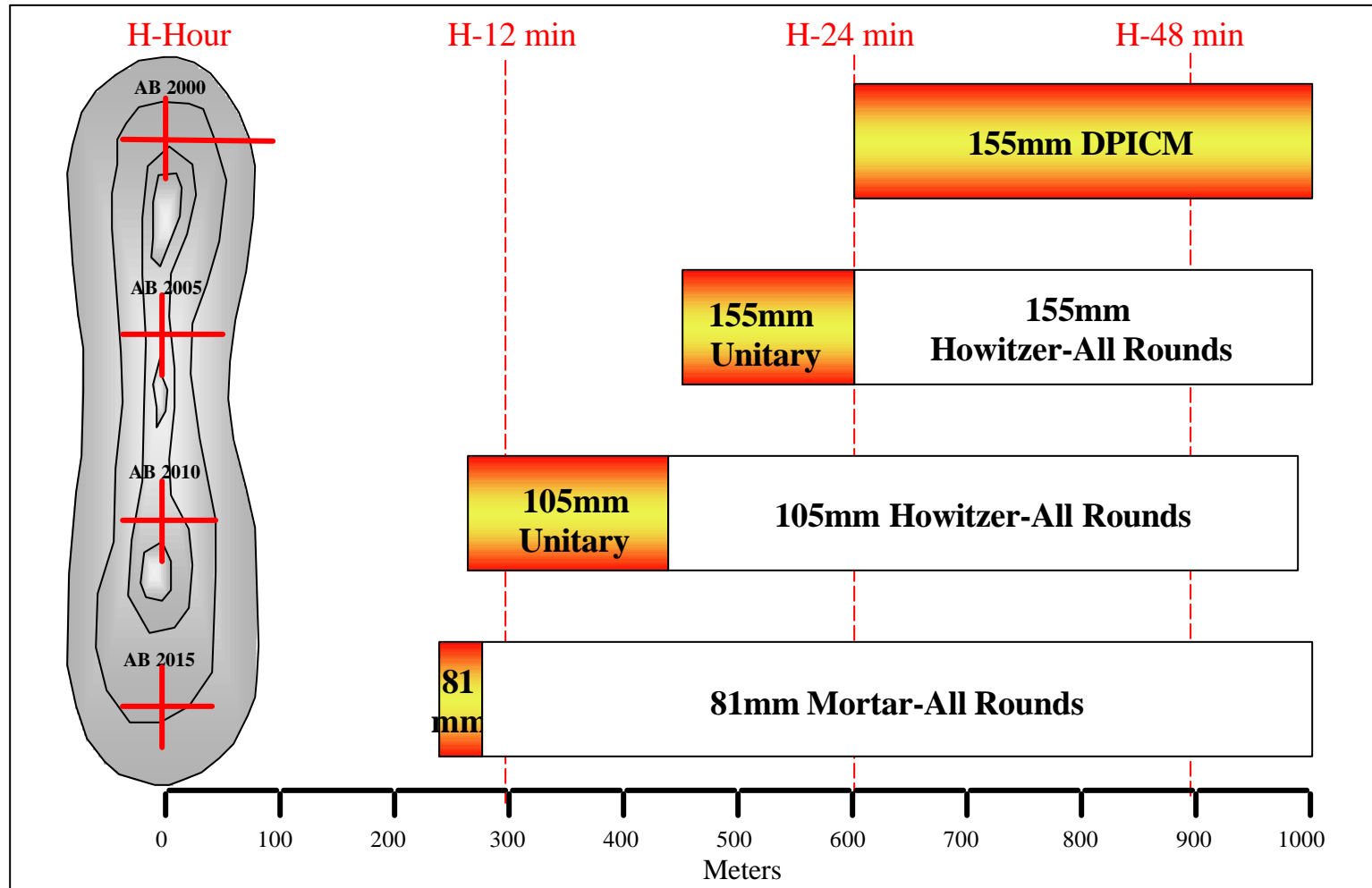
✓ **Improved Survivability**

Reduced Collateral Damage

Reduced Logistics Footprint

Guided Projectiles And The Close Fight

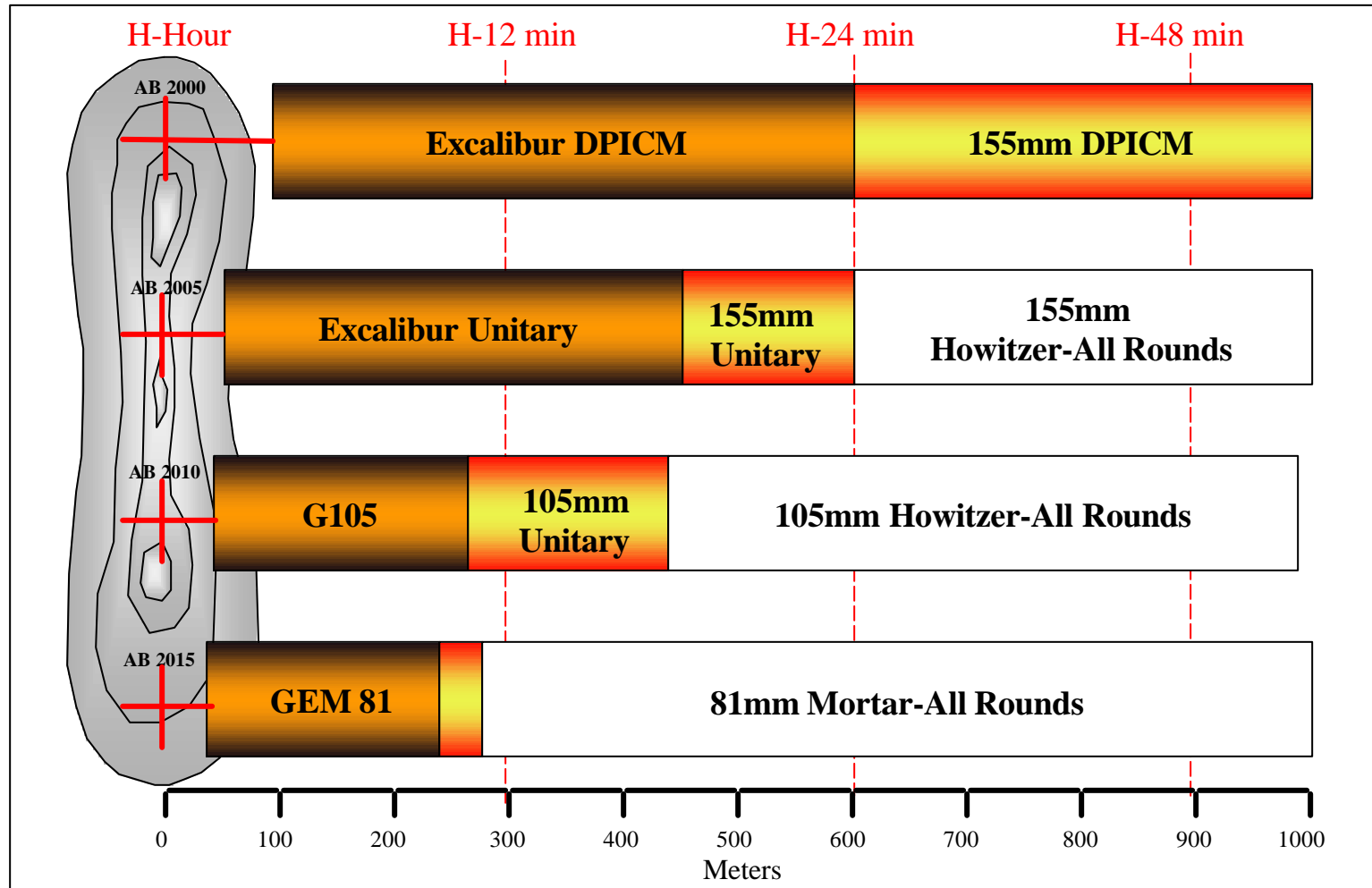
Echelon Fires for the Light Infantry Attack/Defense*



* Close Fire Support (RED, 0.1% PI, Max Range)

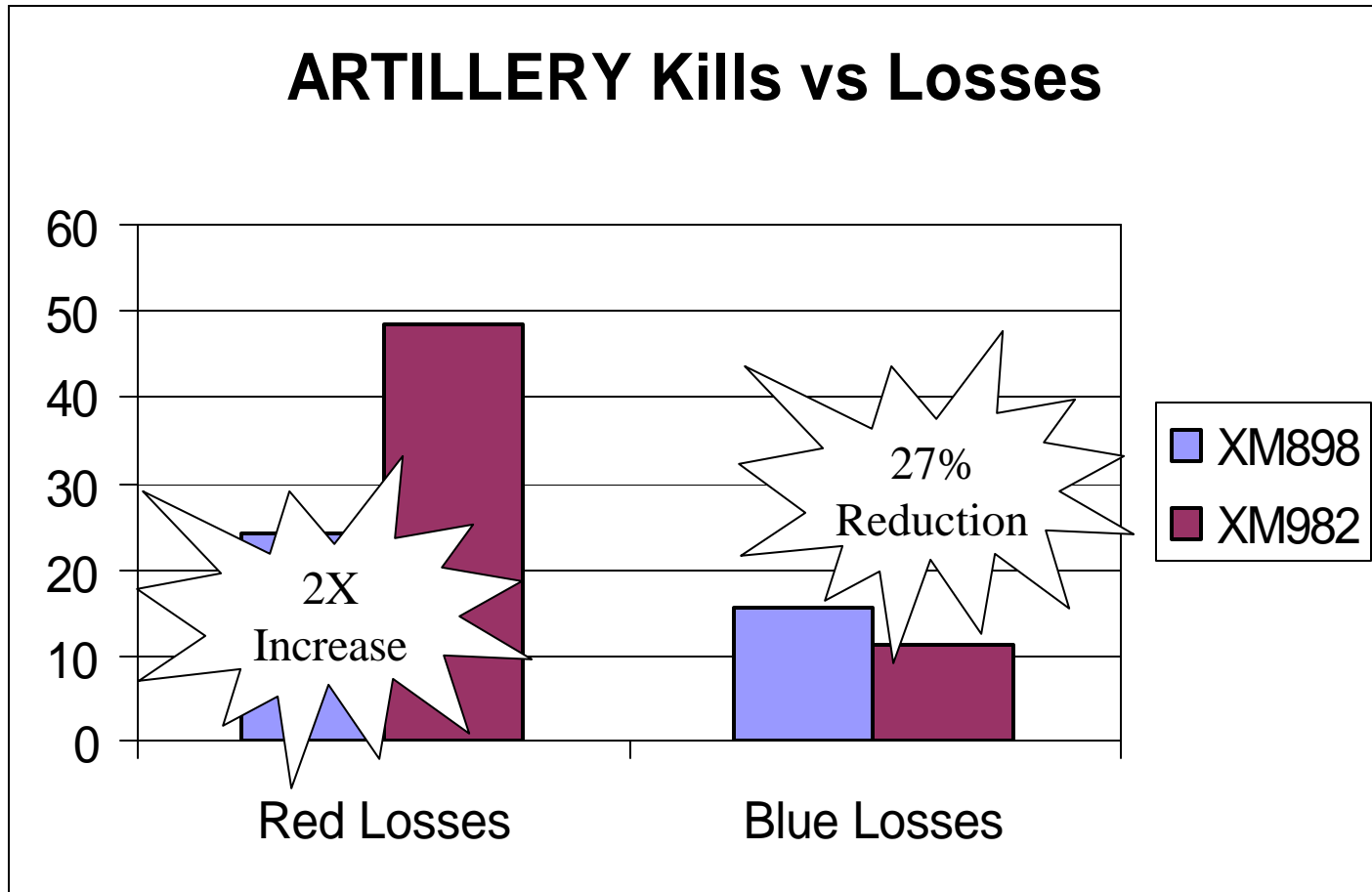
Guided Projectiles And The Close Fight

Echelon Fires for the Light Infantry Attack/Defense*



* Close Fire Support (RED, 0.1% PI, Max Range)

FIRESIM Analysis



Results From 17 Hrs of Combat, NEA, Modeled in FIRESIM

The Benefits of Accuracy

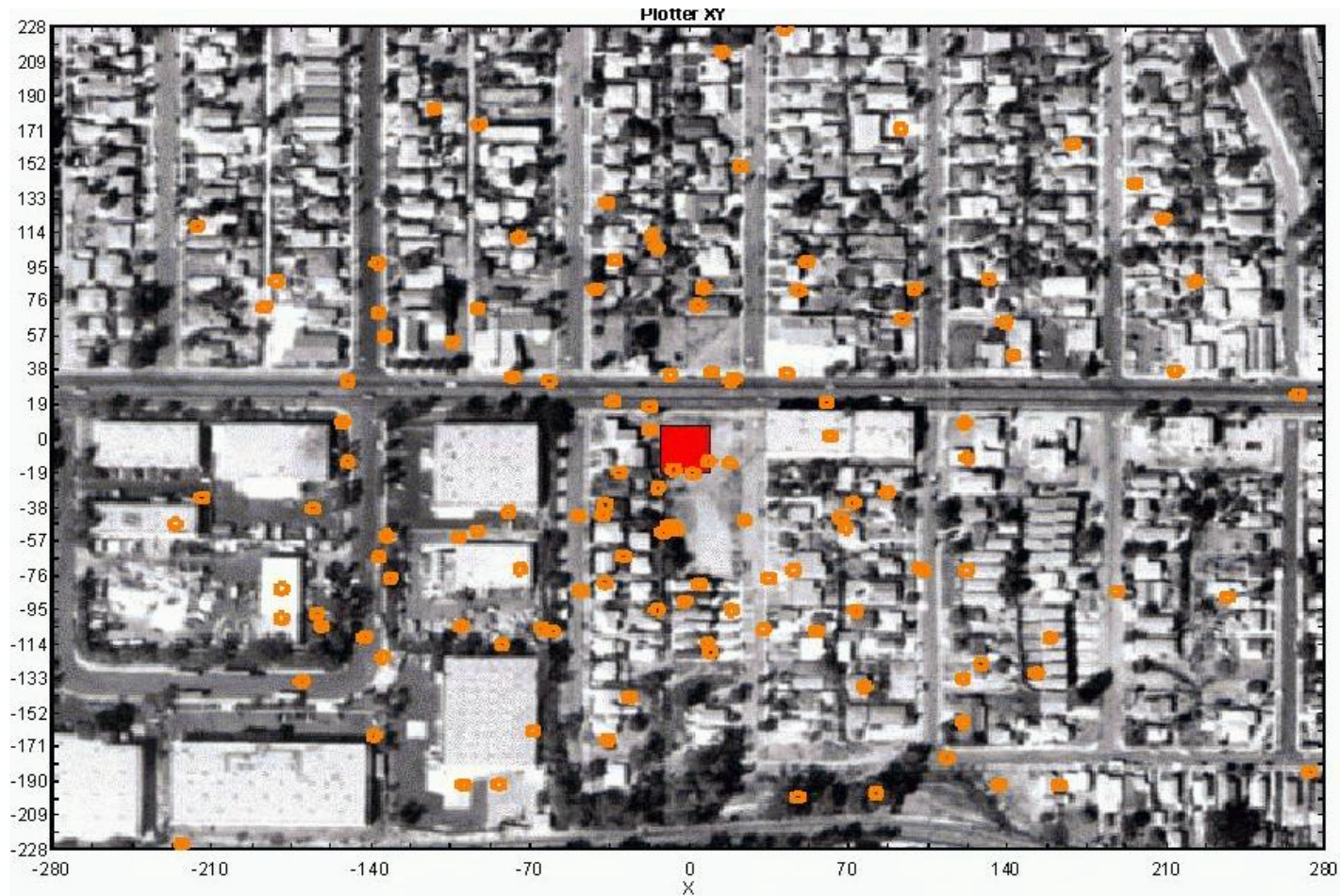
Increased Lethality

Improved Survivability

✓ Reduced Collateral Damage

Reduced Logistics Footprint

Indirect Fire Support in Urban/Complex Terrain



Current M549 vs 20X20 structure: 147 rounds

The Benefits of Accuracy

Increased Lethality

Improved Survivability

Reduced Collateral Damage

✓ Reduced Logistics Footprint

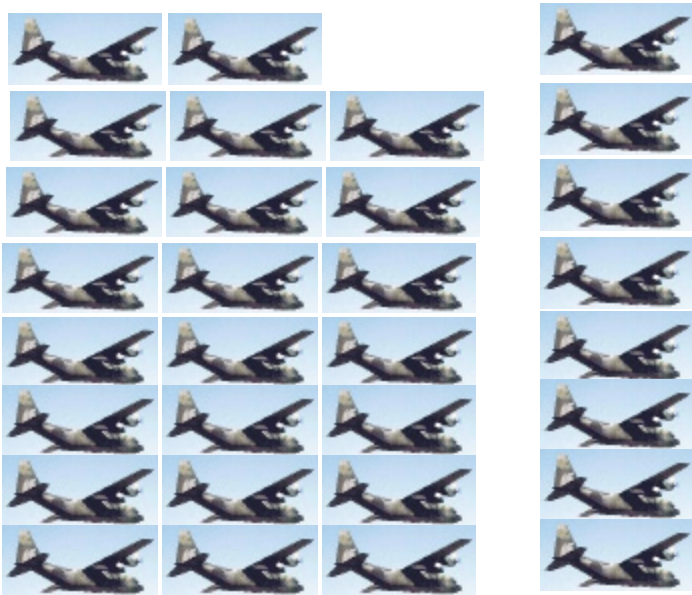
C-130J Sorties Required

Scenario

17 hrs of combat in SWA

124 DPICM Missions fired at 18 km+

To Achieve 20 % EFD



M864

Excalibur

To Achieve 30 % EFD



M864

Excalibur

Why Precision?

- ✓ **Increased Lethality**
- ✓ **Improved Survivability**
- ✓ **Reduced Collateral Damage**
- ✓ **Reduced Logistics Footprint**
- ✓ **Key to DOD Operational Goals for Transformation and Success of Army Objective Force**

Benefits Seem Clear, but

The Challenges

- **Competing Munitions**
 - “Dumb” Rounds vs Smart Rounds
- **Competing Delivery Systems**
 - Cannons vs Rockets vs Missiles
- **Accurate Target Location**
 - Single System Target Locations Errors (TLE) vs Joint Reconnaissance, Surveillance and Target Acquisition Capabilities
- **Cost**
 - AUPC vs Total System Costs

**The Army Needs a Mix of Capabilities;
We Must Help Them Achieve That Objective**