

# **Development of a Sabot-Launched Non-Lethal Payload Delivery System for Mortar Systems**

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# Requirements:

- **Functions in an Urban Terrain**
- **Fires into and out of defilade**
- **Provides a stand-Off Capability**
- **Uses a currently fielded launching platform**
- **Requires minimal training to effectively employ**
- **Delivers Payload in a reliable, repeatable, and safe manner**

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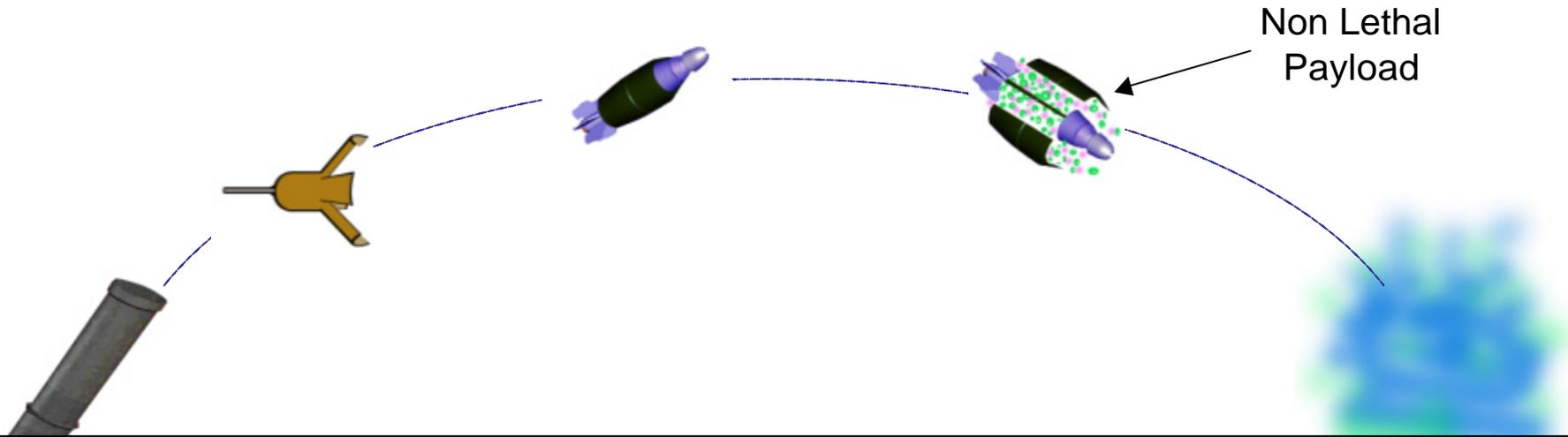
# What Armtec Proposes:

- **Develop a method for successful launch of NL payload carrier from 81 mm mortar system.**
- **High angle of fire weapon system optimal for MOUT operations.**
- **Establish payload capability for this system.**
- **Establish the circular error of probability (CEP) for payload carrier.**
- **Work with ARDEC in follow-on development of payload and deployment system.**

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**Launch Phase**

Interior Ballistics  
 Discard Mechanism  
 Material Selection  
 (Use 81 mm Mortar  
 Igniter Charge)

**Payload Carrier**

Carrier Design  
 Aerodynamics  
 Exterior Ballistics  
 Establish:  
 Range  
 Payload Capability

**Payload  
 Deployment**

(Need to Define)  
 Expulsion Charge

**Payload  
 Delivery**

Establish:  
 CEP

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# Armtec Evaluation of Launch Feasibility

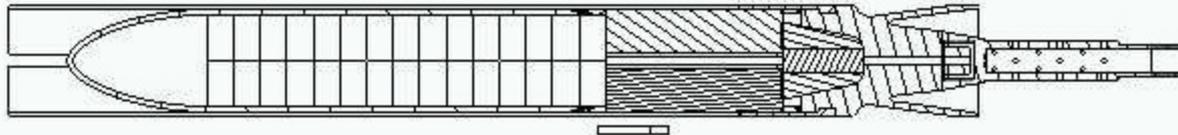
- **The sabot concept allows for a molded fiber carrier to survive the launch from standard M252 mortar system.**
- **The mass of the whole round is 10.84 lb (4.93 kg), close to the 4.14 kg weight of the M879 Full Range Training Round. The mass of the loaded carrier totals 5.61 lb (2.55 kg).**
- **4.7 lb (2.14 kg) of payload is contained inside the carrier and configured as 60 pie slice type sub-munitions.**
- **Structural Analysis of the carrier/sabot combination has indicated that stresses in the payload carrier wall are acceptable for the setback forces experienced.**
- **Using a drag coefficient of .15, the estimated range at optimal elevation for the molded-fiber payload carrier was determined. At a muzzle velocity of 166m/s (zone1) the range is in excess of the objective of 1.5 km.**

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# 81 mm Mortar Non-lethal Payload Delivery System (Cross-section)

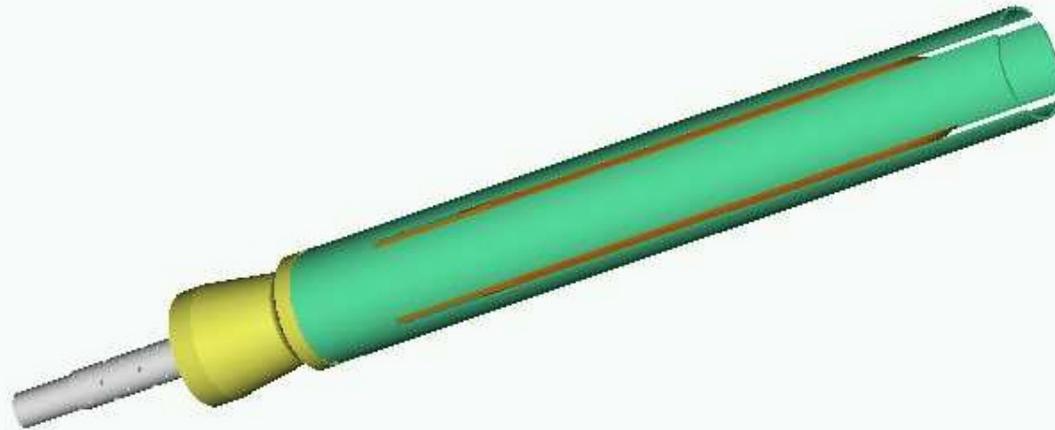


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# 81 mm Mortar Non Lethal Payload Delivery System



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# ARMTEC ENVISIONS A MULTI- PHASE PROGRAM

## Phase I (Funded)

**Demonstrate feasibility of a sabot launch system and molded-fiber NL payload carrier. Establish payload capability, range, and CEP.**

**Target date for completion is October 2002.**

### Team Members

**Armtec  
ARDEC  
Arrow-Tech Associates  
NTS**

## Phase II

**Investigate potential NL payloads.**

**Initiate Development of payload deployment system.**

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