

**THE LIQUID PROJECTILE WEAPON  
A NEW LIMITED EFFECTS ANTI-PERSONNEL  
BALLISTIC IMPACT WEAPON**



***Presented by:***

***UTD INCORPORATED  
A TECHNOLOGY DEVELOPMENT COMPANY***

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With question to viability of ballistic devices:

***“Serious injury or death could result if fired at close range and directly at the individual(s).”***

Operational limitation for ballistic devices listed in the 1995 SOCOM/DARPA “Survey of Limited Effect Weapons, Munitions, and Devices”

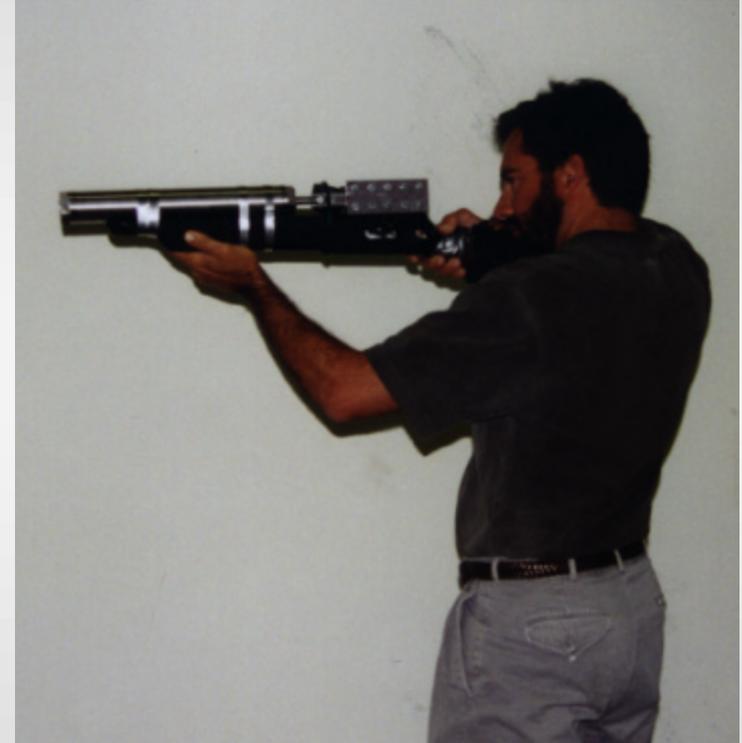
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**UTD approach: Leverage historical success of the water cannon, miniaturize and focus its effectiveness.**

# The UTD Liquid Projectile Weapon



- **Shoulder or vehicle mounted rifle type of weapon**
- **Compressed gas powered auto cycling (cartridge options- 4 shots – 8lb unit, 30 shots in a 30 lb unit)**
- **Water based viscous liquid projectile**
- **Simple piston-cylinder, valve construction**





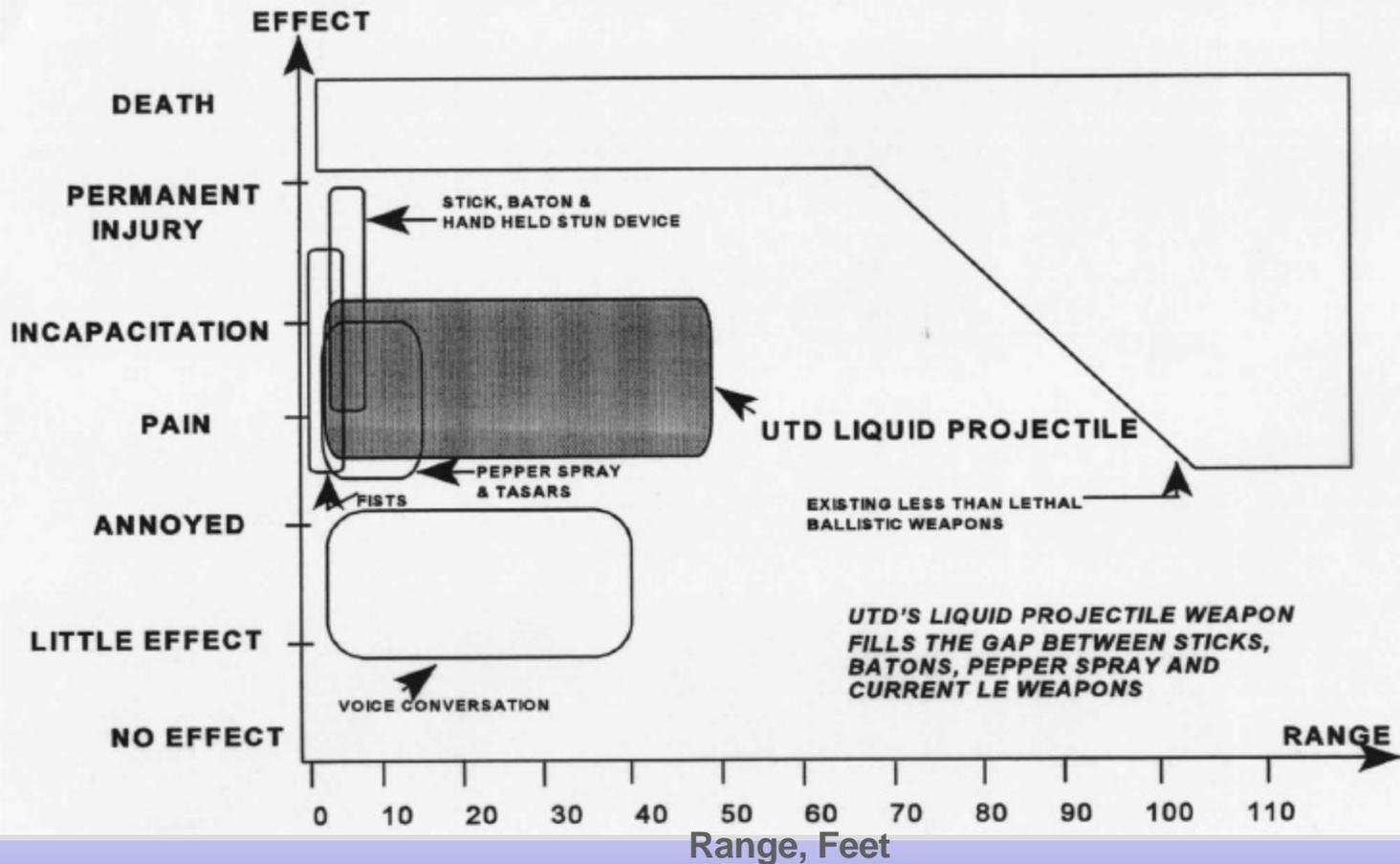
**Proof of principle hardware shown disassembled:**

- **GN2 cylinders used for convenience of testing**
- **Cylinder, piston, nozzle and seals**

# LIMITED EFFECT WEAPONS COMPARISON

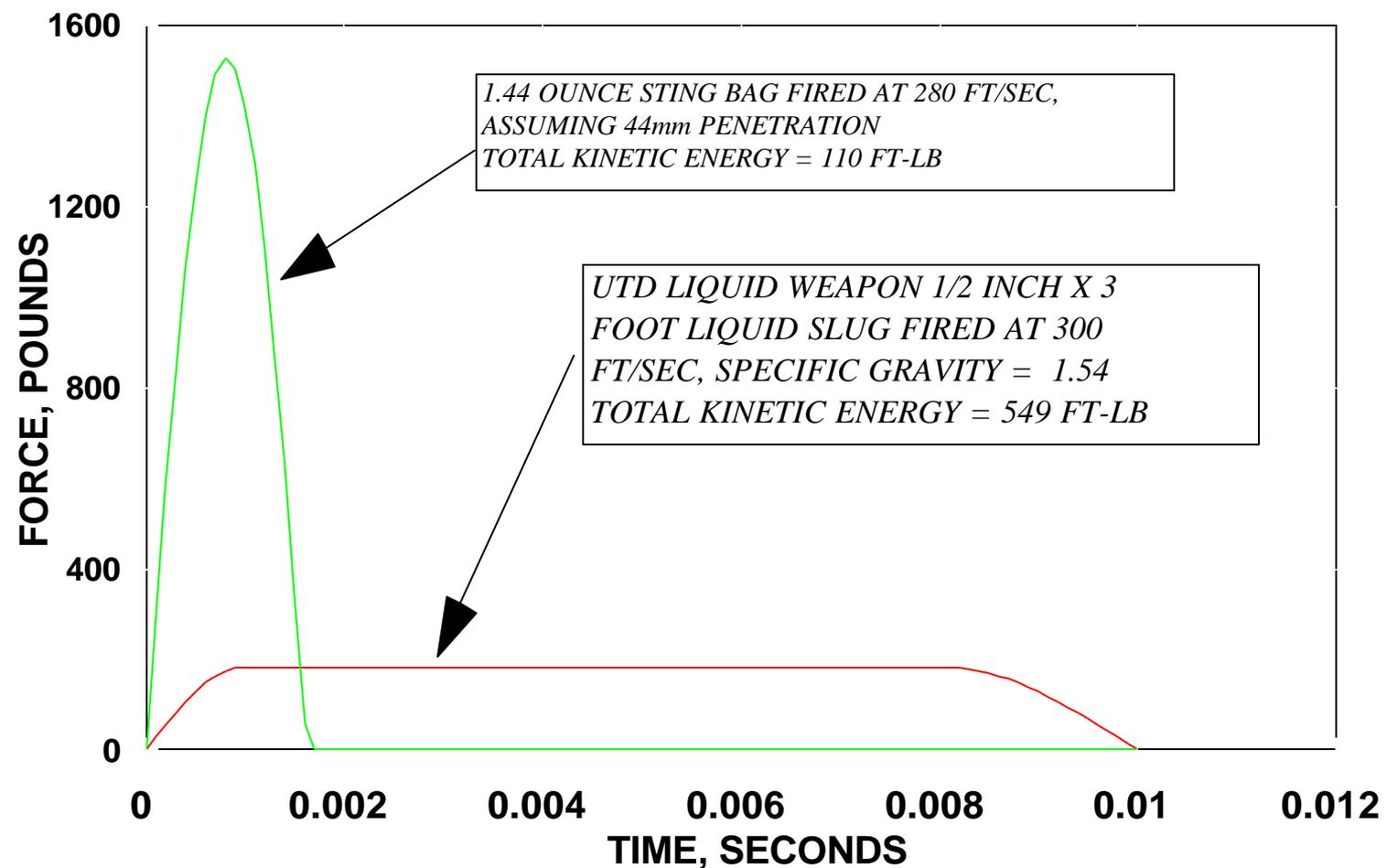


## THE CONTINUUM OF FORCE

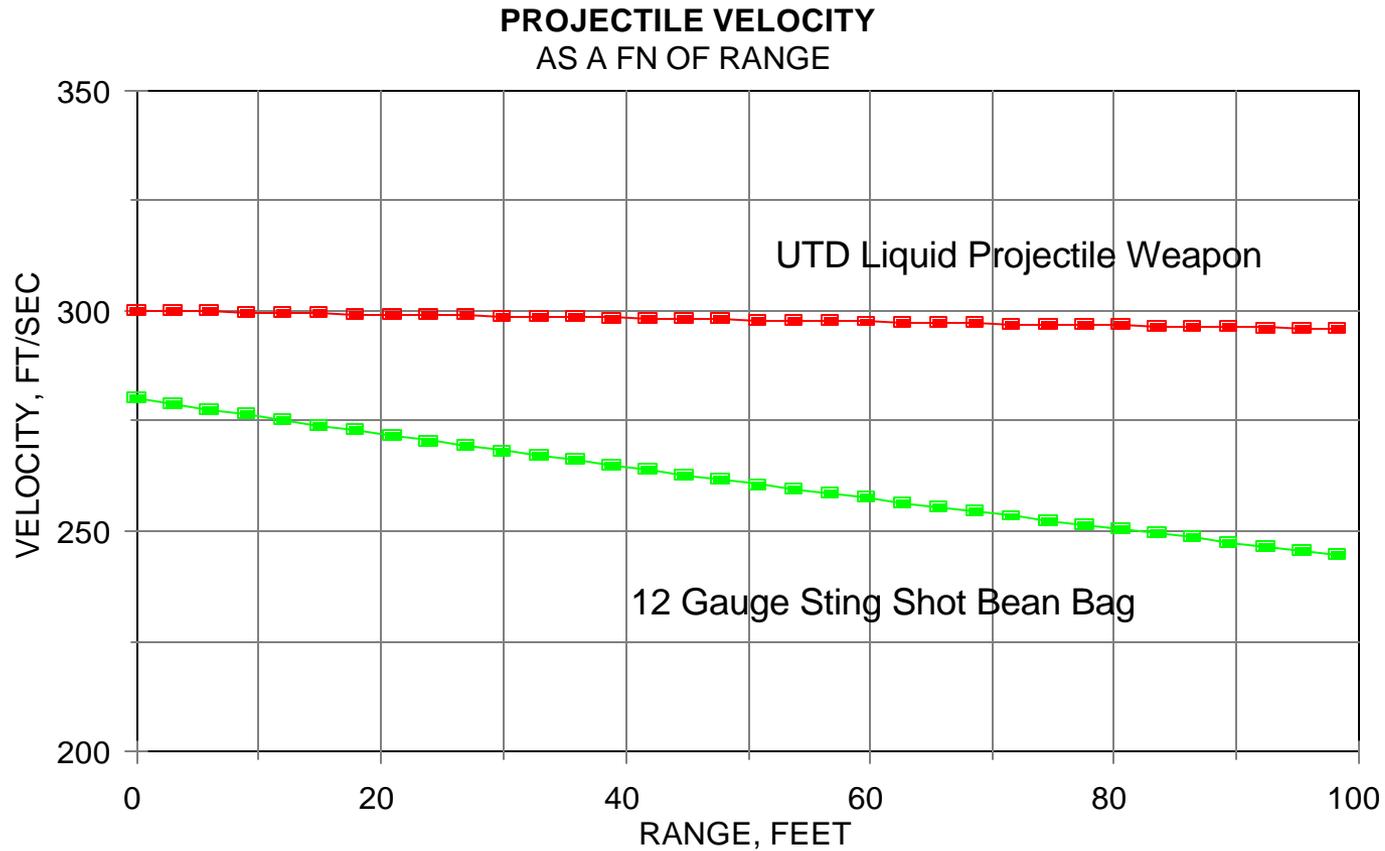


# LIQUID PROJECTILE vs. STING BAG IMPACT

**ESTIMATED STING BAG AND LIQUID WEAPON CONTACT FORCE AS A FUNCTION OF TIME**



# RANGE COMPARISON



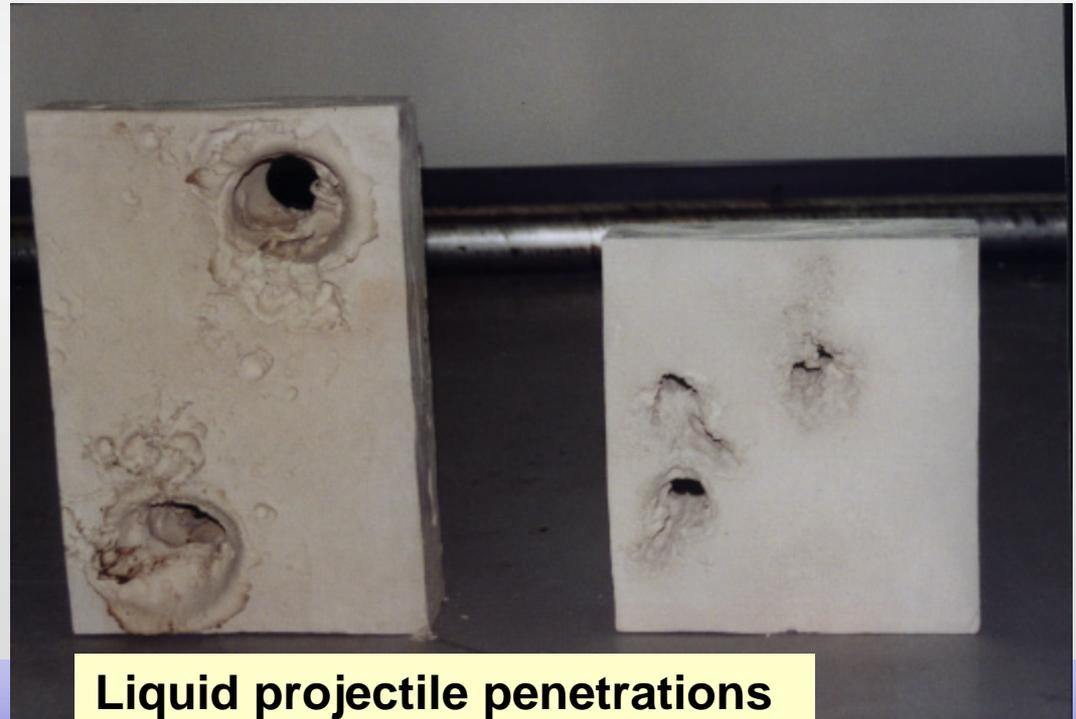
- **Inflict Pain**
- **Knock Down**

*Medicine Ball Effect*

*Influence on individuals with body*

*armor*

- **Stun / Disorient**
- **Mark an Individual**
- **Malodorants**
- **Irritants**



**Liquid projectile penetrations  
in 3 inch soft clay**

# LIQUID PROJECTILE WEAPON EFFECTS



**Additional perspective on soft clay penetrations by liquid projectiles.**



# LIQUID PROJECTILE WEAPON APPLICATIONS



- Riot control
- Peacekeeping
- Humanitarian aid
- Urban warfare
- Sky Marshals – airplanes
- Prisons
- Military Police



## ***Salient Characteristics***

- ***No ricochet***
- ***No residual object to be thrown back***
- ***Portable***
- ***Adjustable projectile launching force (scalable effects)***
- ***Can achieve high kinetic energy transfer to an individual***

## ***Opportunities***

- ***Coupling with electrical voltage for vehicle disablement or electronics disabling (some experiments performed)***
- ***Concept for doubling or tripling range in design stage***
- ***Multiple configurations and loading options available***

# SUMMARY



- **Demonstrated feasibility**
- **Clear application to current real world requirements**
- **Unique advantageous features**
- **Road map for development through deployment tailorable**
- **Production units can be built to varied specifications**

