National Defense Industrial Association Small Arms Symposium May 2008

.50 cal Short Range Training Ammunition

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GENERAL DYNAMICS
Ordnance and Tactical Systems–Canada

GD-OTS Canada New .50 cal SRTA

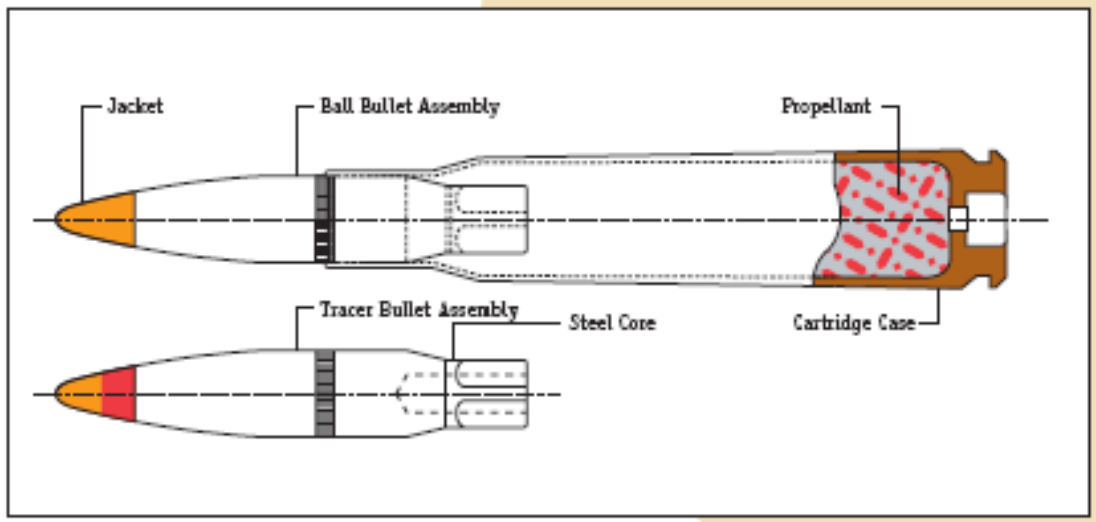
- Project Objectives
- Current Training Ammunition Products/Projects
- Concept
- Performance
  - Simulations
  - Test Data
- Applications/Benefits
- Summary

Project Objectives

- **To develop an improve .50 cal SRTA**
  - Eliminate need for weapon adaptors/ancillary equipment
  - Increase effective ballistic match range
  - Increase functioning reliability

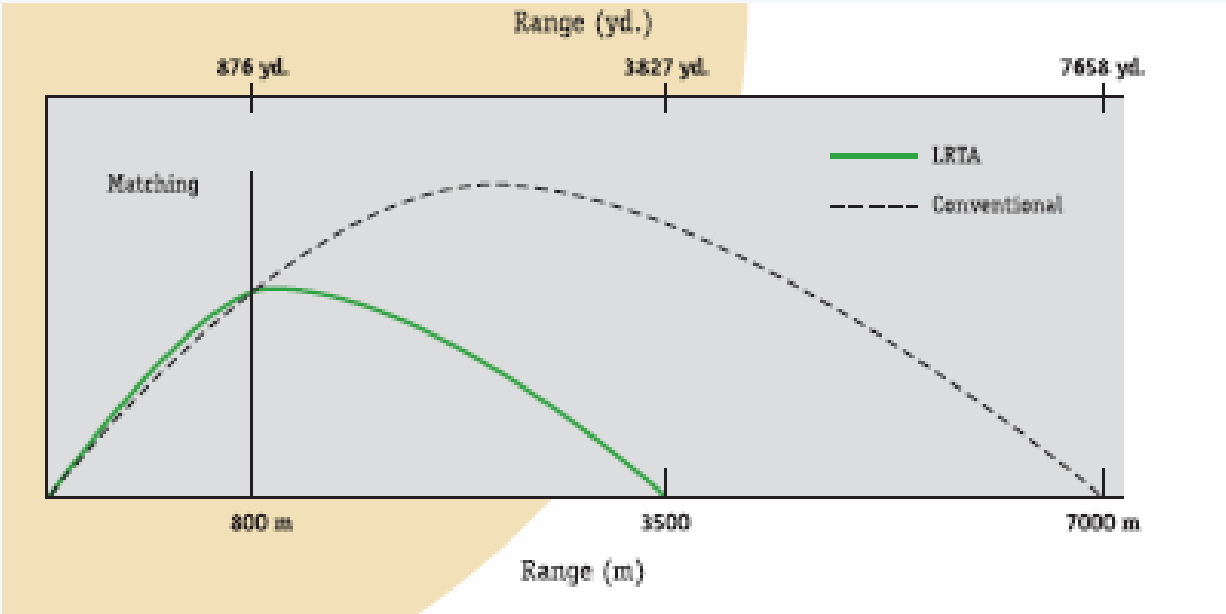
Current Product
.50 cal Limited Range Training Ammunition

- Non-toxic, 45g bullet with rear fins to limit range
- Functions in M2HB and QCB machineguns
- Ball and tracer versions in production since 2001



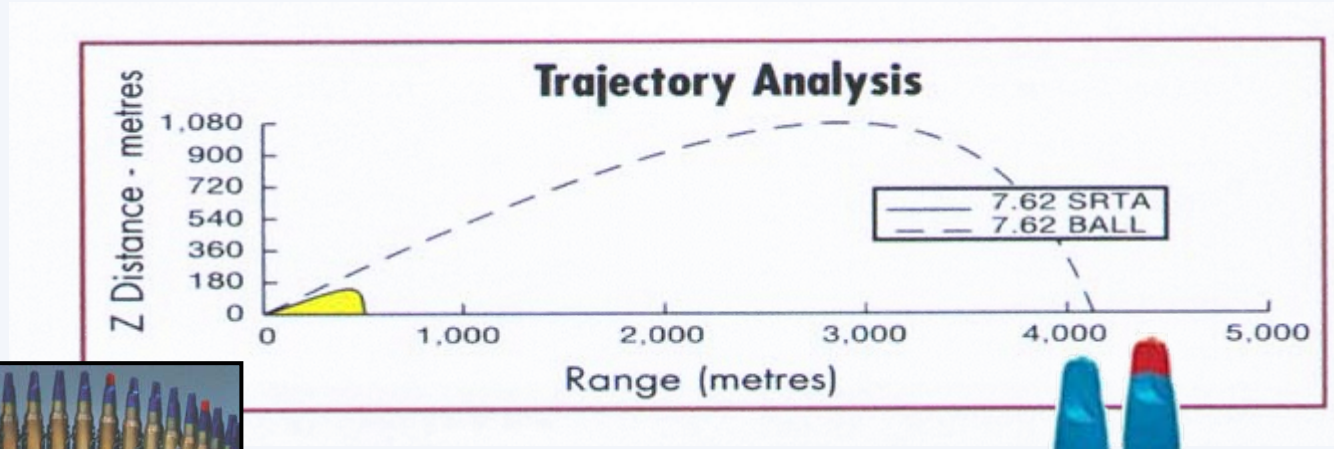
Current Product
.50 cal LRTA

- Accuracy of 30 cm at 550 m range
- Ballistic match up to 800 m with M33
- LRTA = Max range of 3,500 m or 50% reduction vs. M33
- Now in service in 3 NATO armies



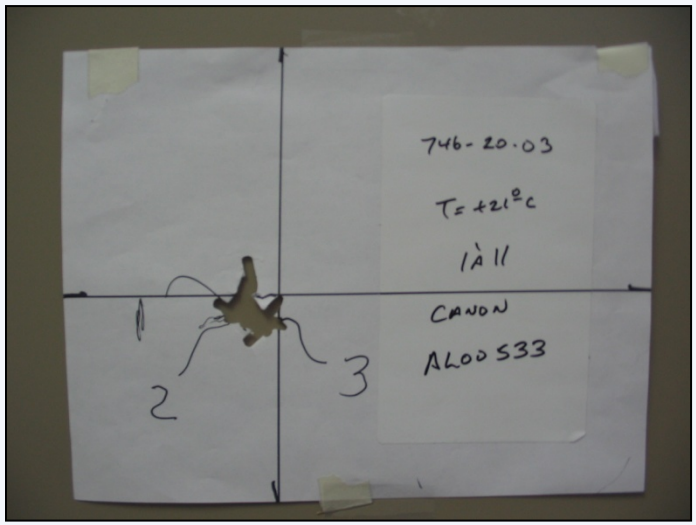
Current Product
SHORT STOP® 7.62 mm SRTA

- 7.62 mm SHORT STOP® training round
- Available in 4B/1T configuration
- Now in Production for DoD as M973 & M974



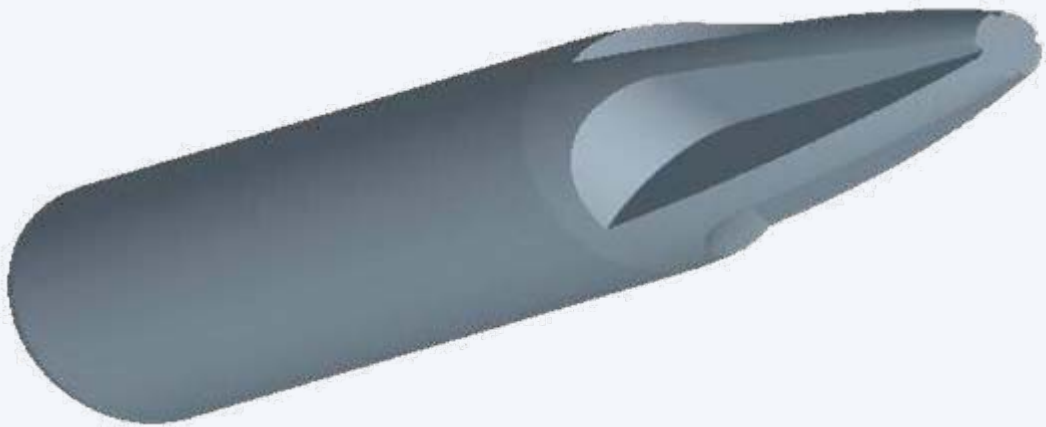
Current R&D Project
SHORT STOP® 5.56 mm SRTA

- Ballistic match to 100 m with max range of 600 m
- Under final development with ARDEC
- Phase III recently awarded



.50 cal SRTA Concept

- **The .50 cal SRTA Cartridge is:**
  - Our newest Short Range Training Solution
  - An Internally-funded GD-OTS Canada R&D program
  - Now in test and evaluation phase



.50 cal SRTA Concept

- **SRTA performance objectives:**
  - No modifications of M2 machinegun
  - Improved ballistic match with M33/M17
  - Reliable functioning from –20 to +50ºC
  - Non-toxic components
  - Max range of 700 m
  - Frangible projectile
    - No splashback beyond 25 m
  - Improved performance vs. M858

.50 cal SRTA Concept

- **The .50 cal SRTA has:**
  - A monolithic, frangible projectile
  - Forward fins with controlled spin technology to limit range
    - Fins introduce a "reverse" spin/drag, opposing rotation
    - The projectile quickly becomes dynamically unstable
  - Very good accuracy due to consistent ballistic performance
    - Yaw on target is trade-off for greatly reduced max range

.50 cal SRTA Performance

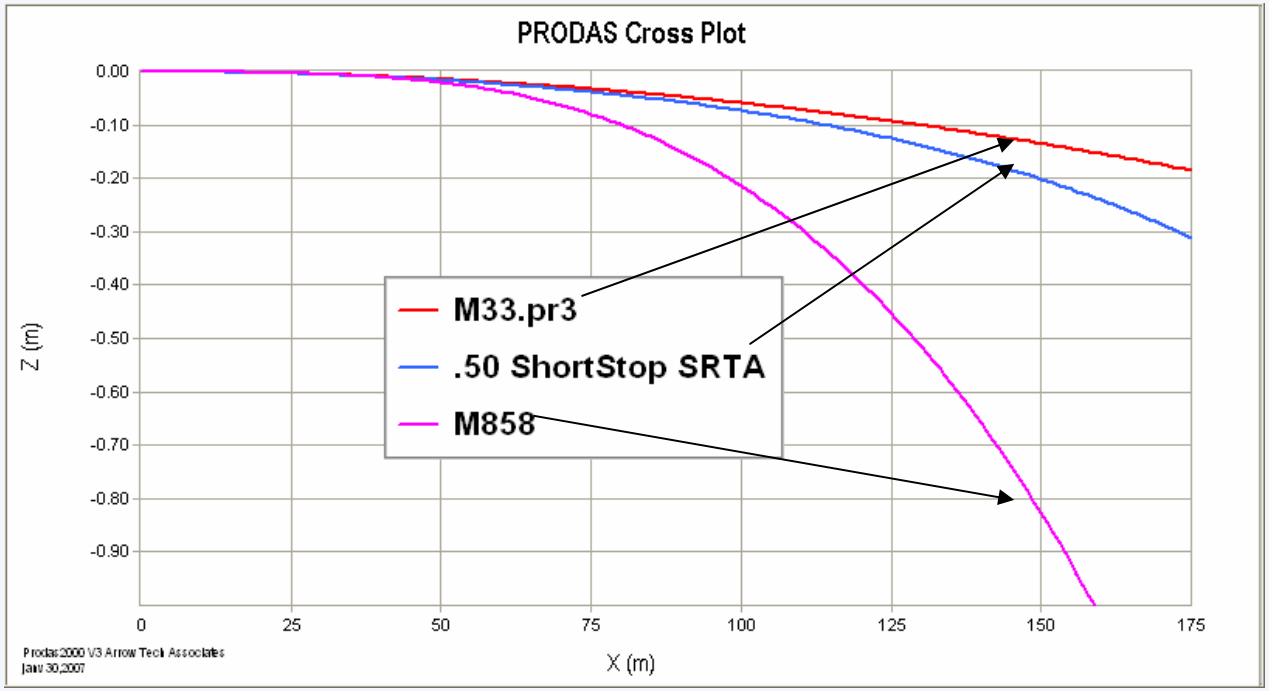
- **SRTA performance Objectives/Results**
  - Objective: ballistic match with ball round at 150 m
    - **Result: > 200 m match range possible**
  - Objective: Drop of < 15 cm compared to ball at 150 m
    - **Results obtained: < 5 cm**
  - Objective: Mean radius Dispersion < 30 cm at 150 m
    - **Results obtained: < 15 cm**

.50cal SRTA vs. M858 Comparison

- **.50 cal M858 Ball and Tracer M860 training rounds**
  - Type classified in 1983 and introduced in the US DoD
  - Requires use of M3 Recoil Amplifier Barrel Assembly
  - Muzzle velocity is approx. 4,000 feet per second.
  - Plastic projectile mass is approx. 3.3 grams
  - Ballistically comparable to M17/M33 out to 150 meters
  - Maximum range of 700 meters

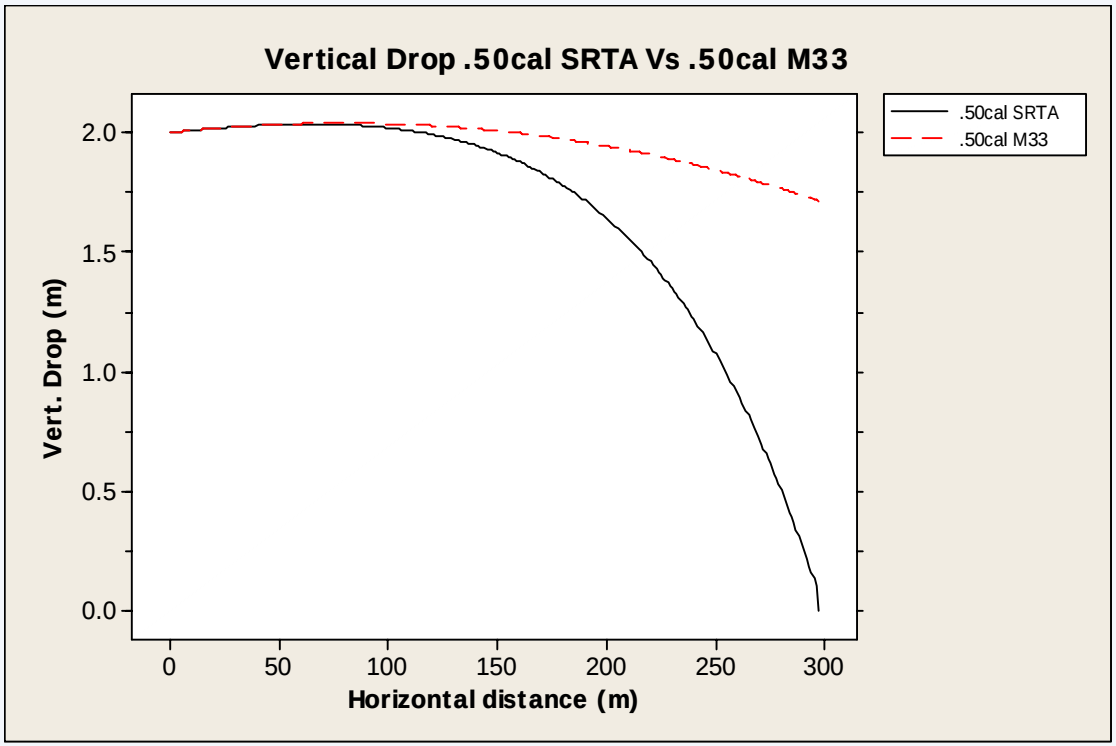
.50 cal SRTA Ballistic Simulation

- Comparison of ballistic drop with M858 at 150 m



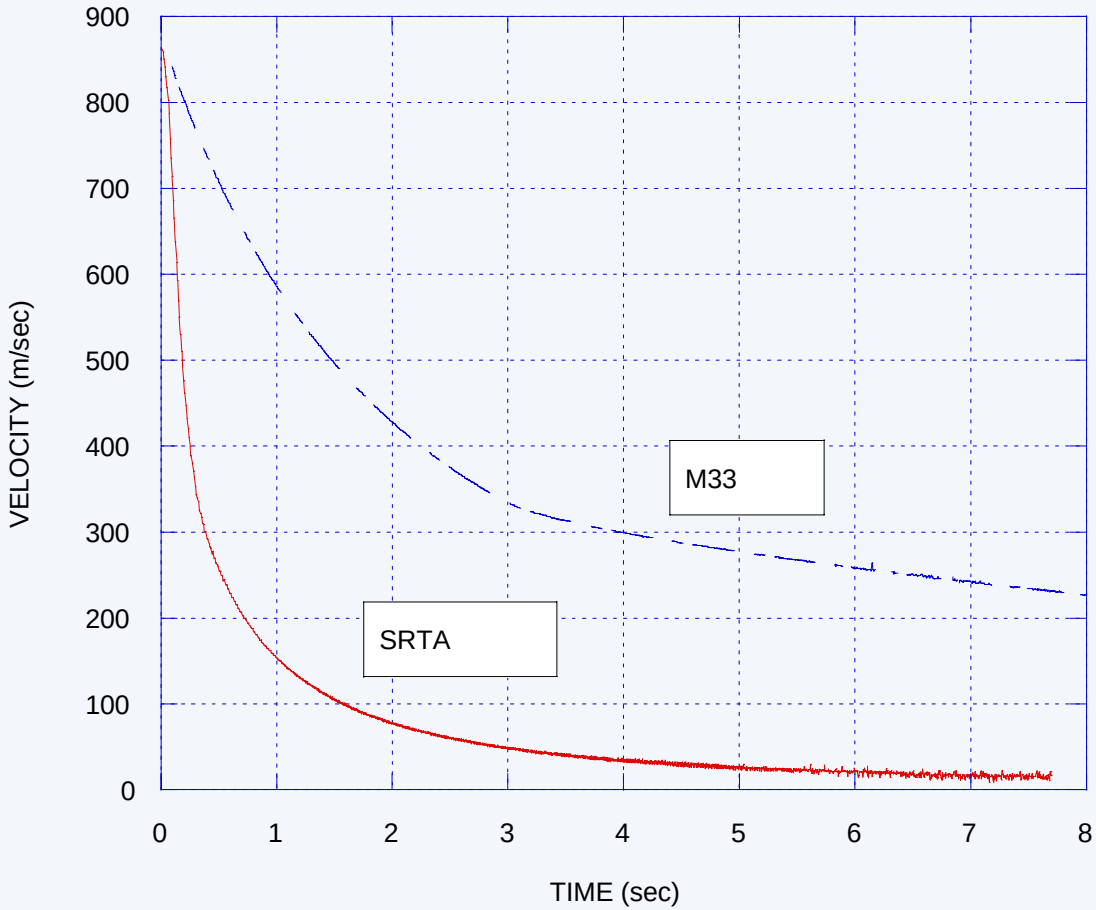
.50cal SRTA Ballistic Simulation

- Comparison of ballistic Drop vs. M33 Ball round



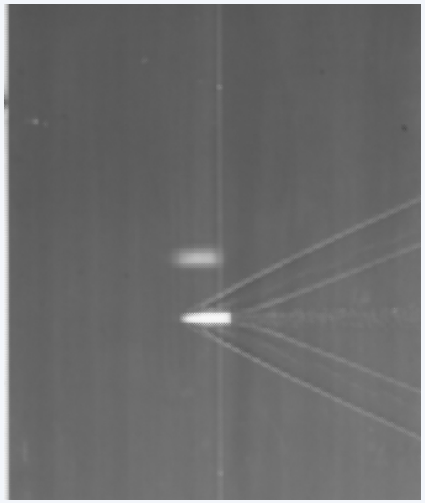
.50 cal SRTA Ballistic Simulation

- Velocity decay vs. M33 simulation with PRODAS

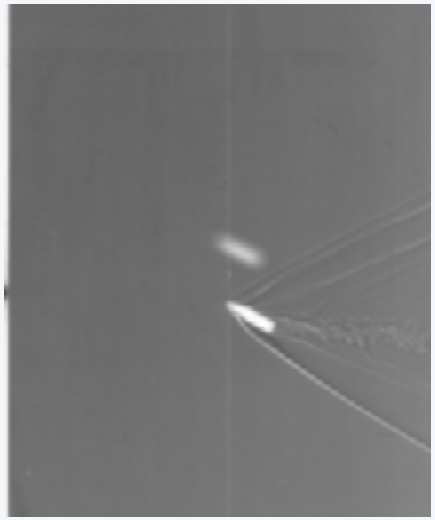


.50 cal SRTA Ballistic Testing

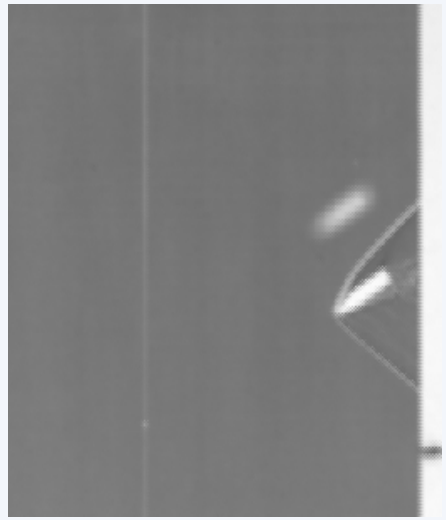
5m



68m



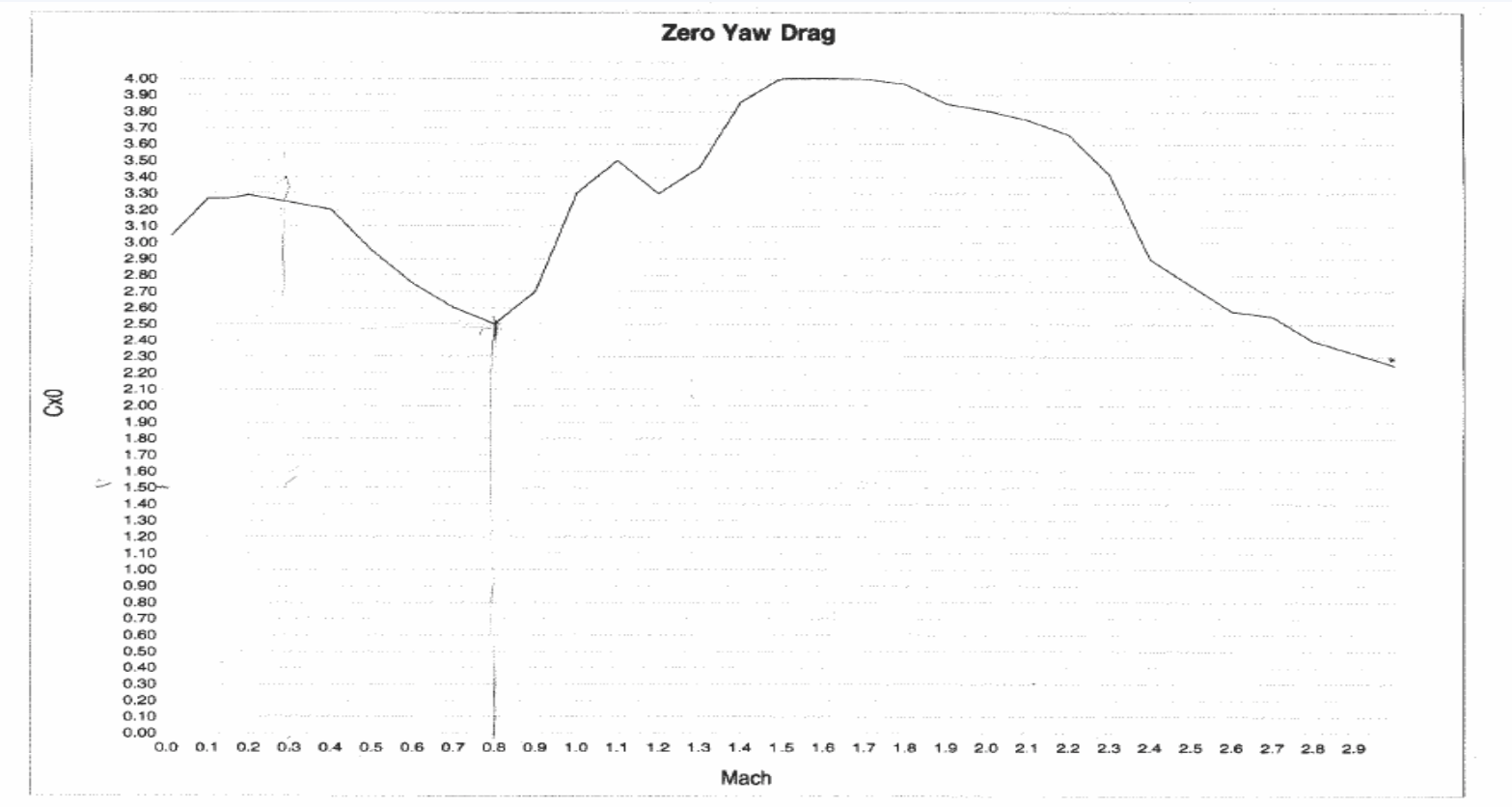
185m



Shadowgraph images from DREV spark range

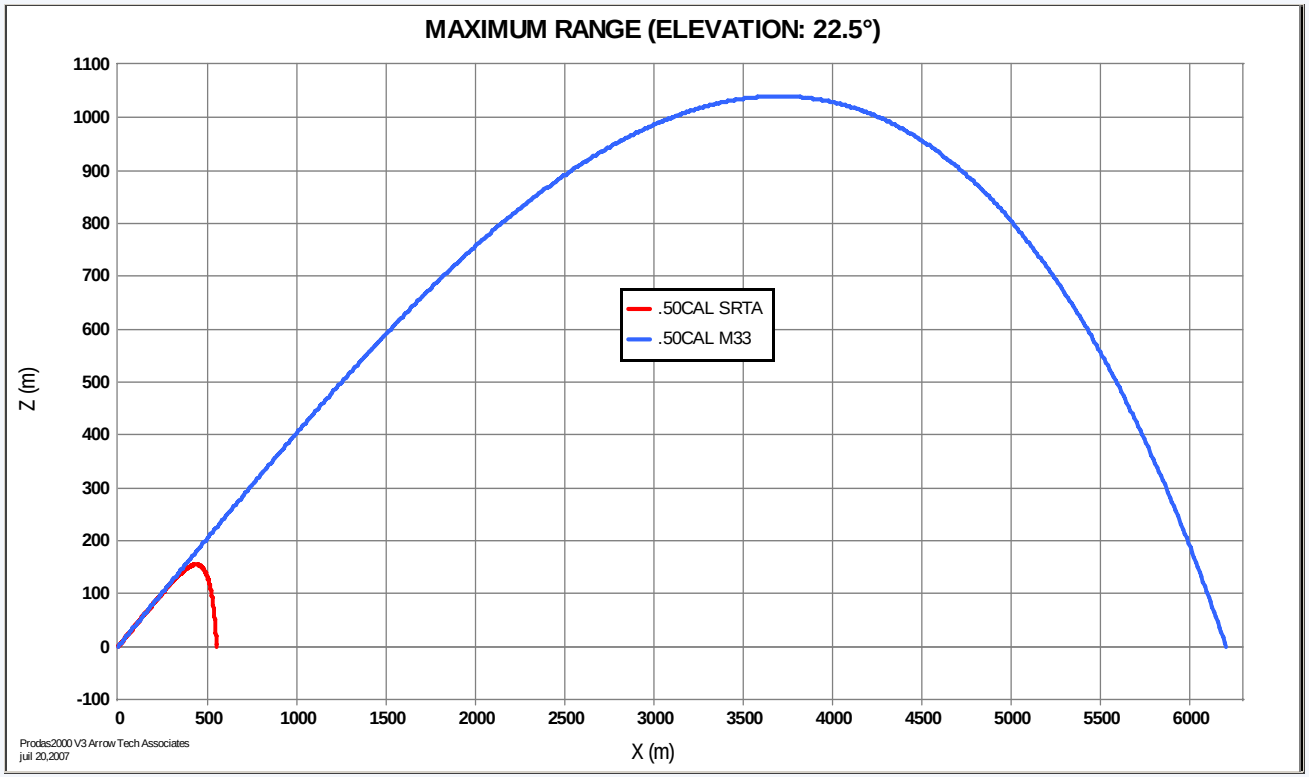
.50 cal SRTA Ballistic Testing

- Typical Drag vs. Velocity curve measured



.50 cal SRTA Ballistic Simulation

- **Maximum range simulation with PRODAS**
  - Less than 700 m



.50 cal SRTA Ballistic Testing

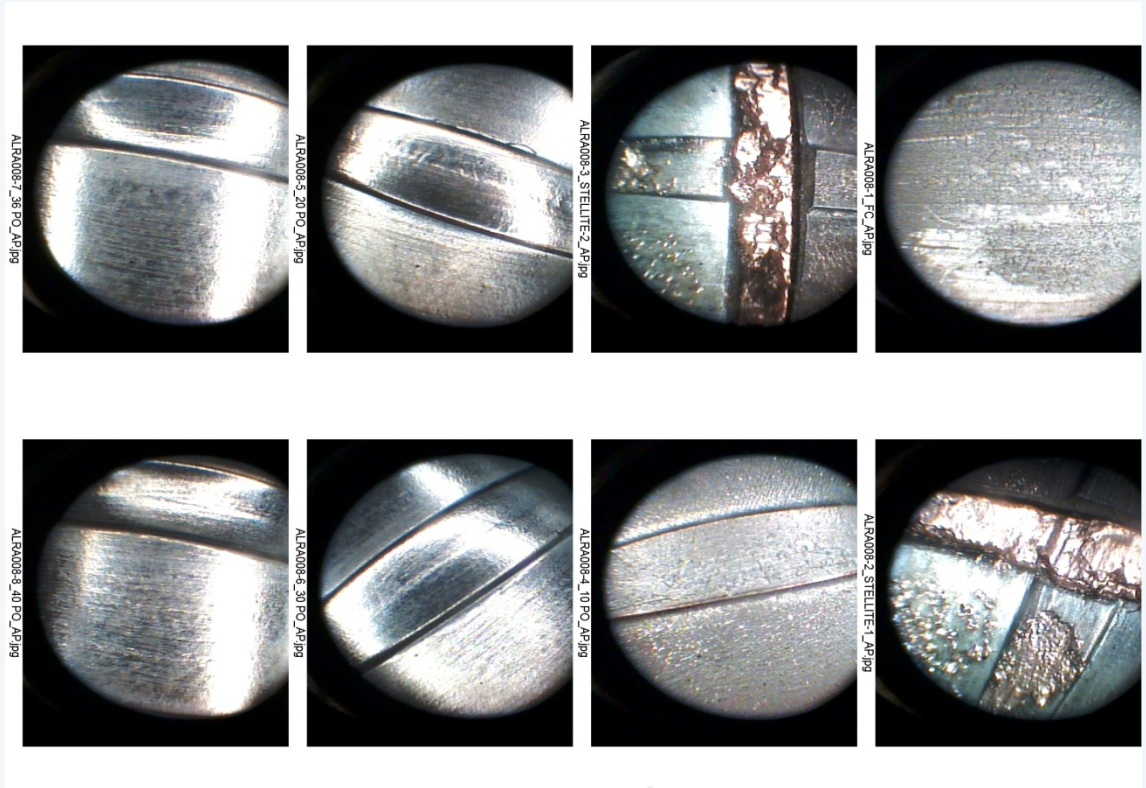
- **Ballistic match and accuracy tests at 150 m, June 2007**
  - Reference is M33

.50 cal SRTA Ballistic Testing

- **Frangibility testing at 50 m range**
  - No penetration of a 10 mm armor plate
  - No splashback at 25 m after 30 shots fired

.50 cal SRTA Ballistic Testing

- Minimal barrel fouling in M2 barrel observed



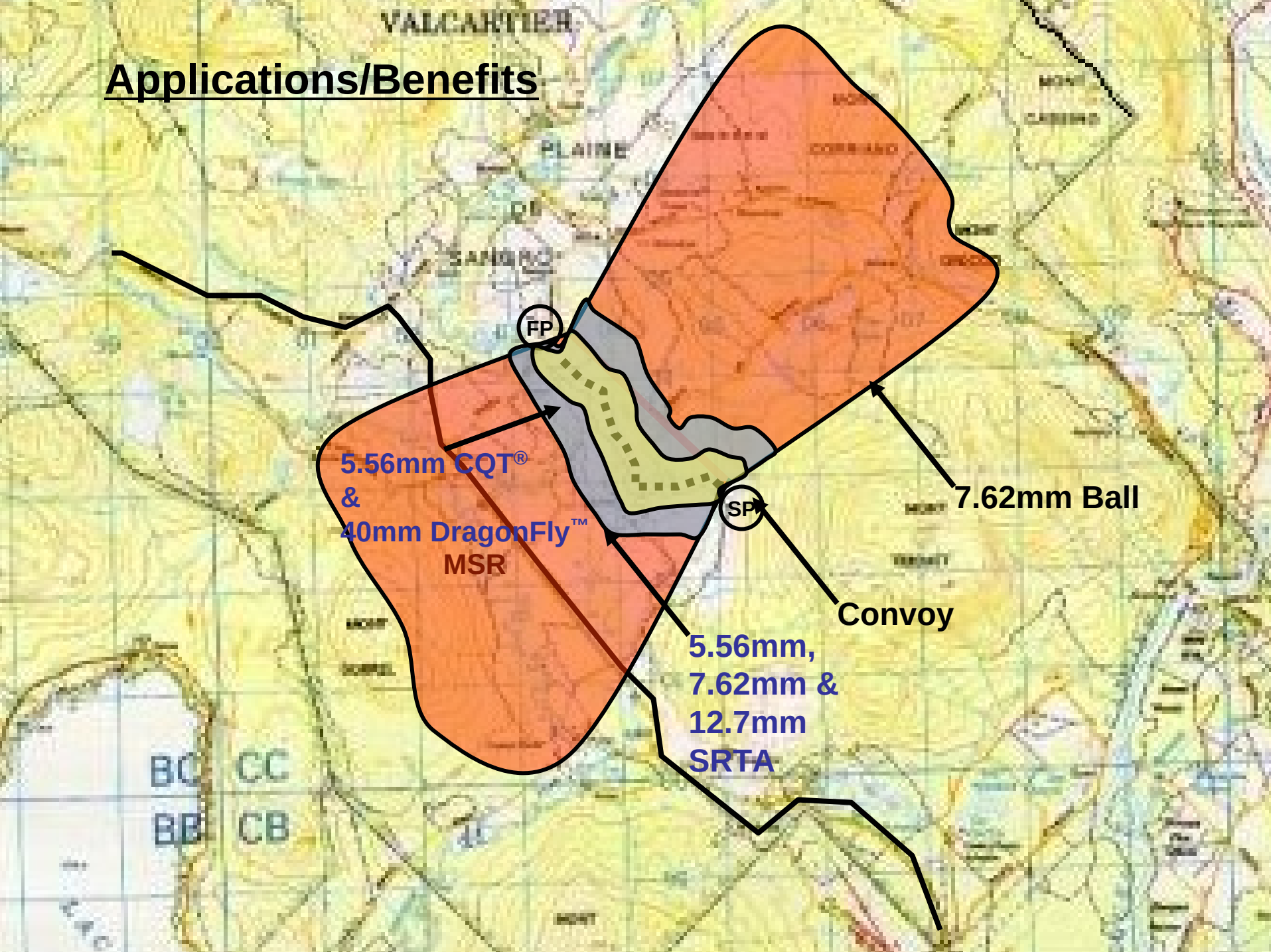
.50 cal SRTA Applications/Benefits

- **Training Applications/Benefits**
  - Maritime training with limited surface danger-zones
  - Used on reduced safety template ranges
  - Training with reactive steel targets
  - Fired on “Lead-free” ranges
  - Enables engagements with targets on 2nd and 3rd floor windows or on overpasses
  - Reduces friction created by units competing for range time

.50 cal SRTA Applications/Benefits

- **March-April 2008 edition of Infantry Magazine**
  - Article entitled: “SRTA allows 360° Training Capability”
  - At Fort Riley, Kansas: “SRTA is 1st Division's means to produce one awesome, realistic and simple training event.”
  - “Only SRTA can provide free-thinking using fire and maneuver in a 360° training environment because of the SDZ”
  - “SRTA allows trainers to condense the battlespace”
  - “SRTA ranges can be created from maneuver spaces”
  - Because of the increases in land resources the training tempo has increased.”
  - “Without SRTA, the 1st Division and the U.S. Army transition team trainers would face significant and difficult obstacles”

Applications/Benefits



.50cal SRTA Summary

SUMMARY

- The new .50 cal SRTA lead free, frangible concept represents an advance in small arms training technology
- The new .50 cal SRTA is currently an in-house R&D project
- It optimizes the use of range training resources due to its significantly reduced danger-template
- This new product will further enhance the family of:

Short Range Training Solutions offered by GD-OTS Canada

Contact Information

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.50 cal SRTA Ballistic Testing

- Weapon cycling video