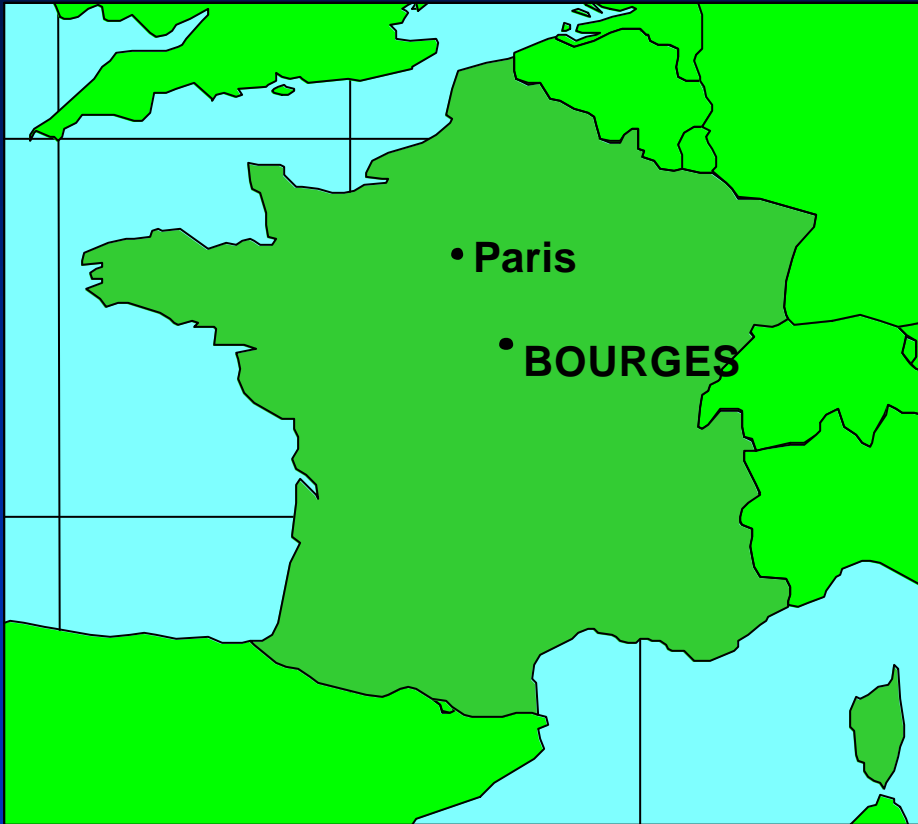


Contents

- Background
- Programme
- Vehicle Integration
- System Testing
- Future Developments

CTA International



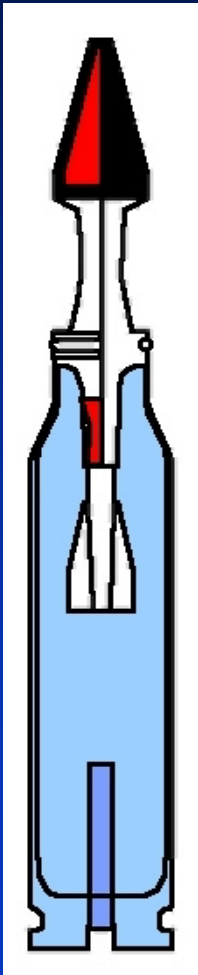
- CTAI is a joint venture company 50/50 BAE Systems and Giat Industries.
- Dedicated team, 33 strong, British and French engineers and scientists based in Bourges, France.
- Total company focused on development of 40mm Cased Telescoped Weapon System.
- Program funded from industrial investment.

Investment since 1994 - >45M€

Investment commitment - >5M€

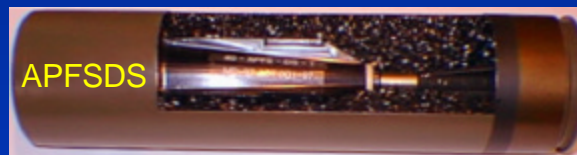
Cased Telescoped Technology

Principle of Technology 'Telescope' the ammunition



30% saving in volume for the same performance

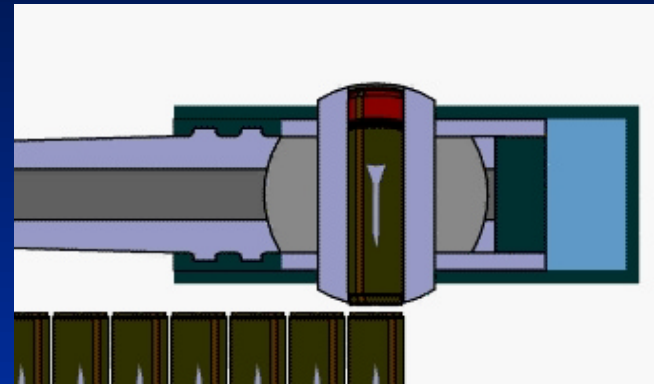
30% more performance for the same volume



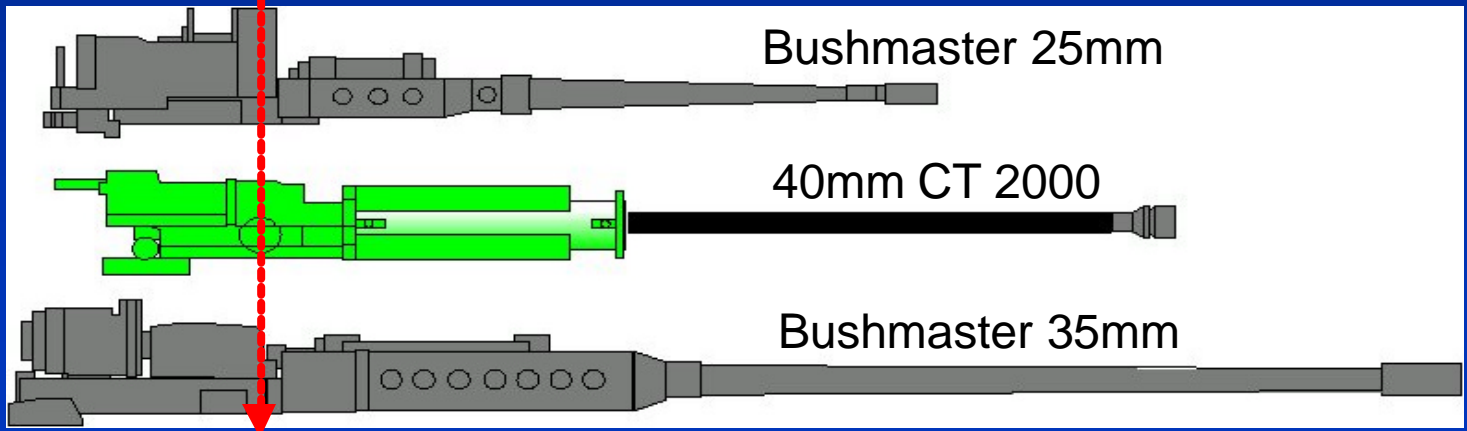
Cased Telescoped Technology

**Cylindrical cartridges enable a much simpler Cannon mechanism
As a consequence the overall cannon system is substantially smaller**

Rotating chamber and 'push through' concept



Front of Feed



CTAI – The Product

Utility!

Technology and Value

- Lethality

– Target Overmatch

– Precision

– Multiple Targets

– Light Weight/Low Volume

– Availability

– Sustainability

Dependability

– Reliability

– Crew Training

– Crew Safety

Lethality

Reliability

Stretch

Deployability

Sustainability

Affordability

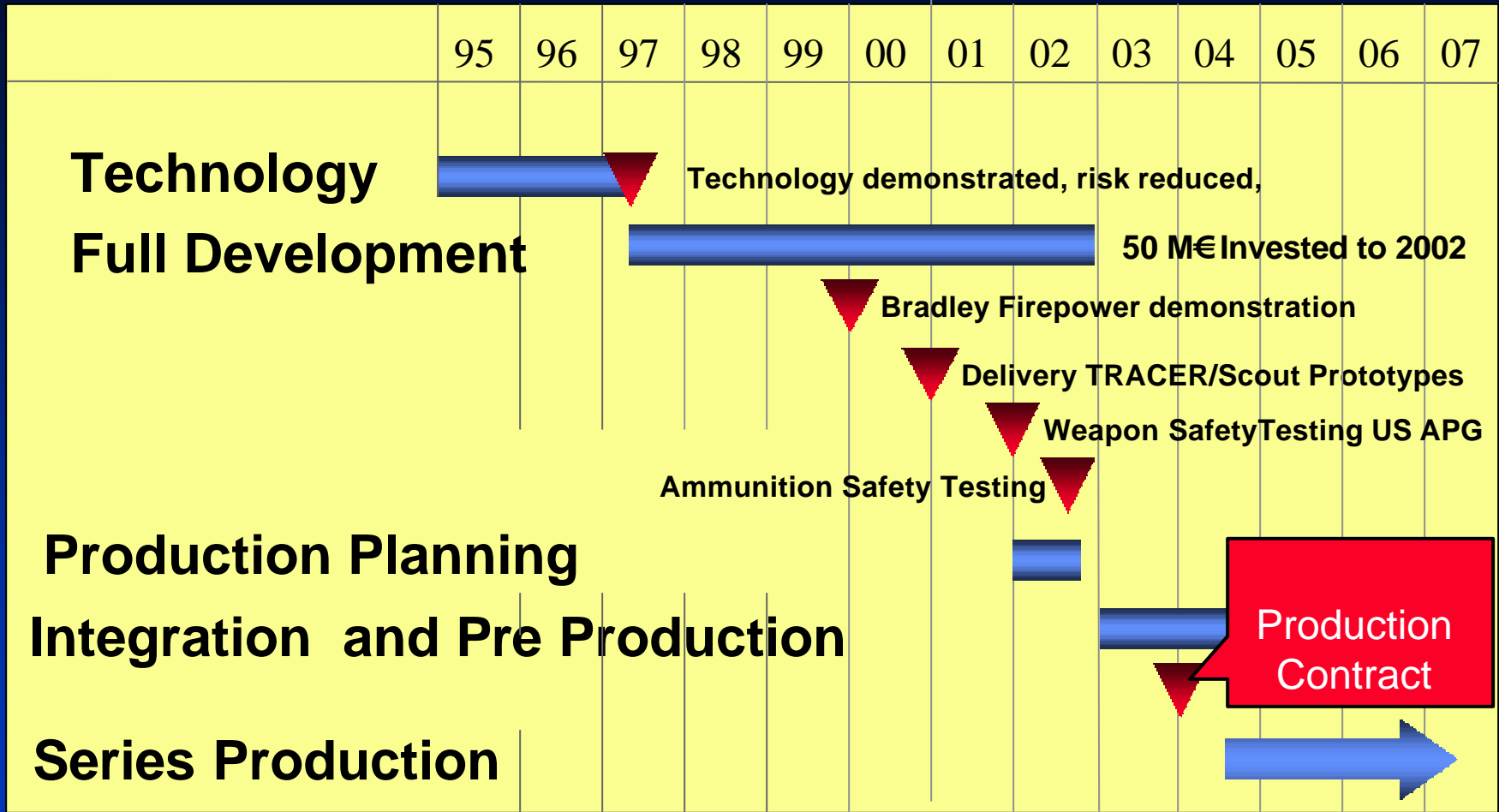
Acquisition

Whole Life Costs

– Low ILS Costs

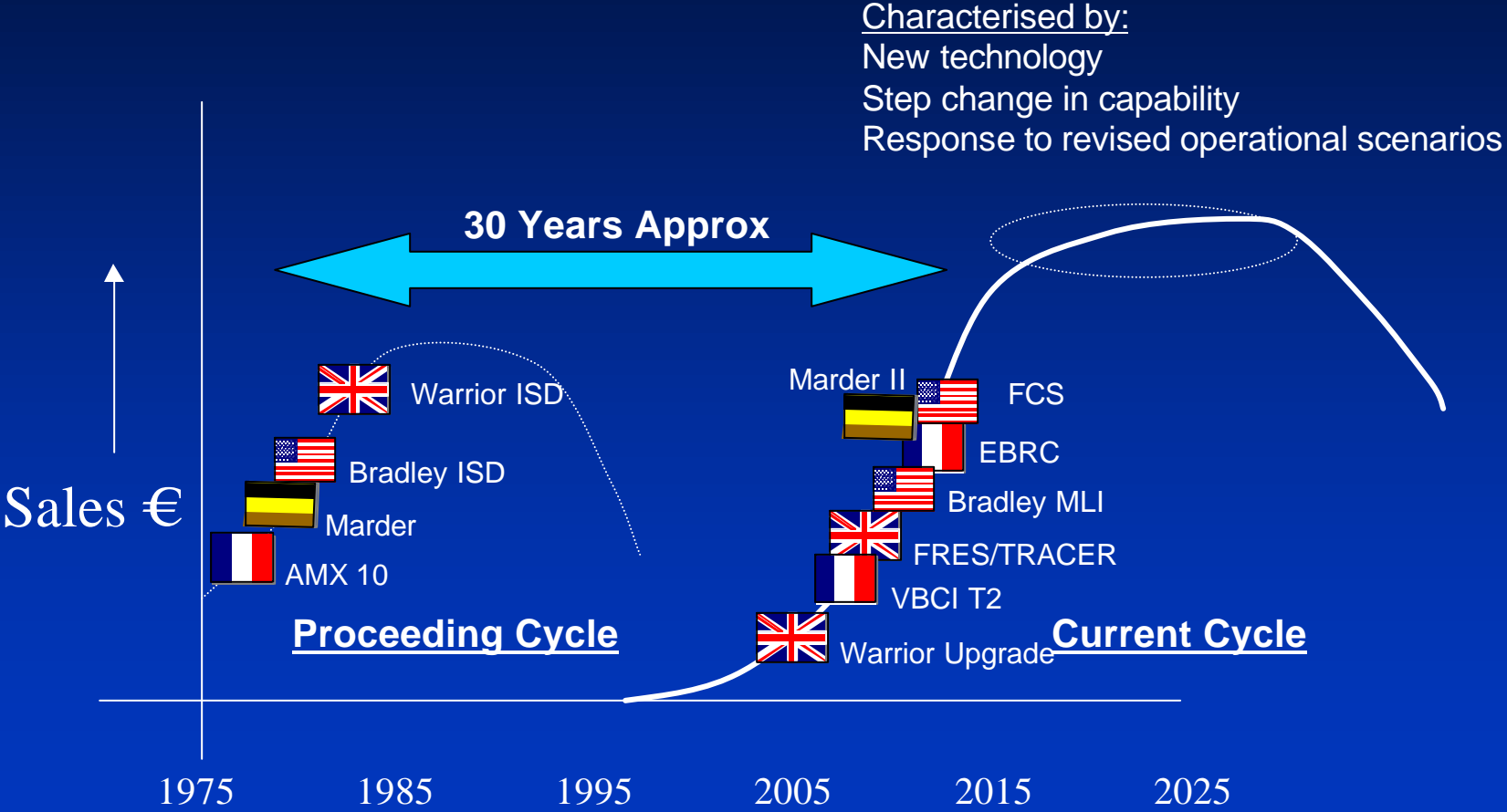
No Need to Compromise!

CTWS - Program Status

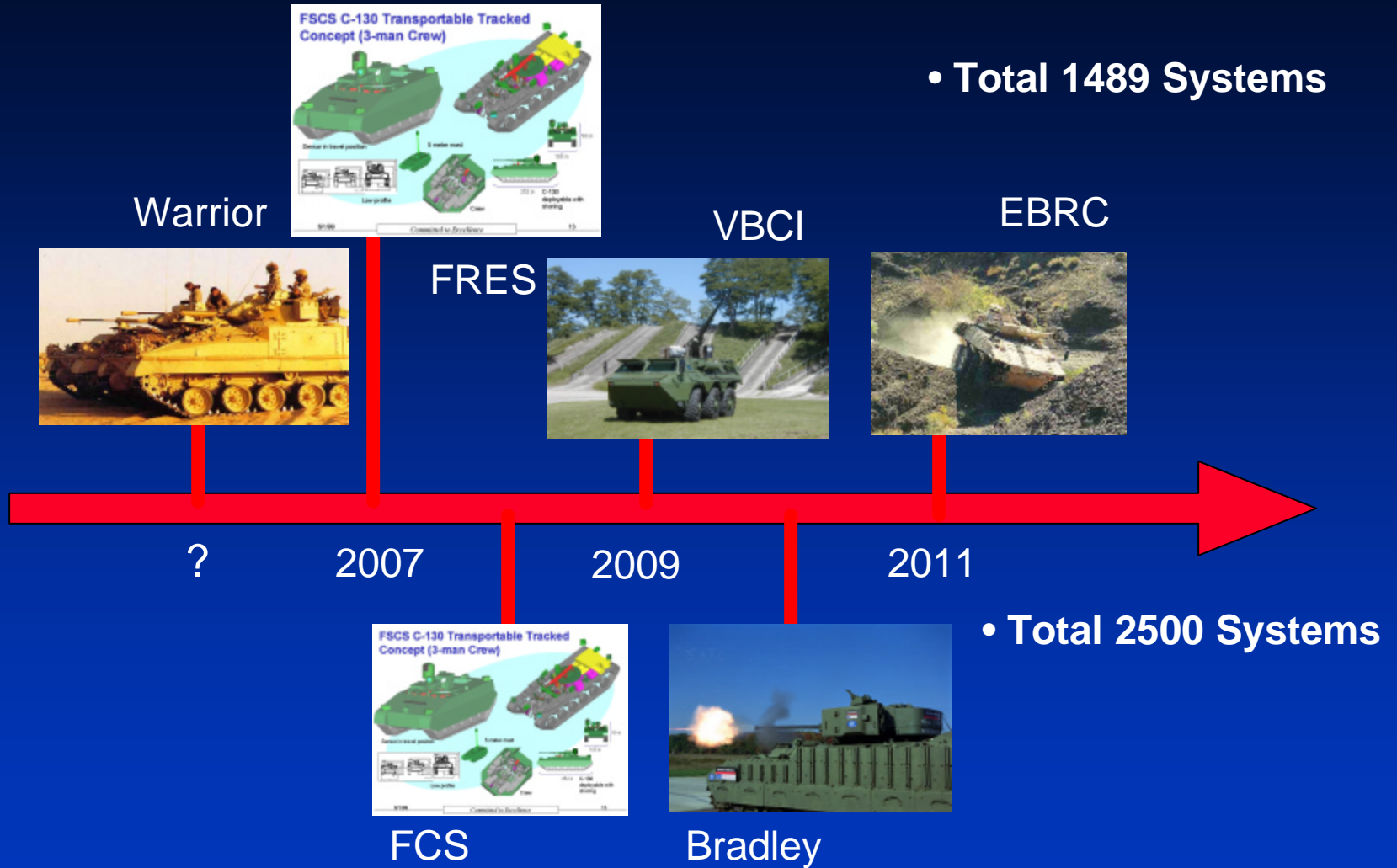


Why Invest 50M€?

Life Cycle Medium Calibre Turrets on Principal Light Armoured Vehicles; US, UK, Germany and France



Level 1 Potential Platforms

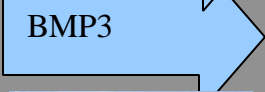


CTWS – Why 40mm?

APFSDS Penetration



BMP3+



BMP3



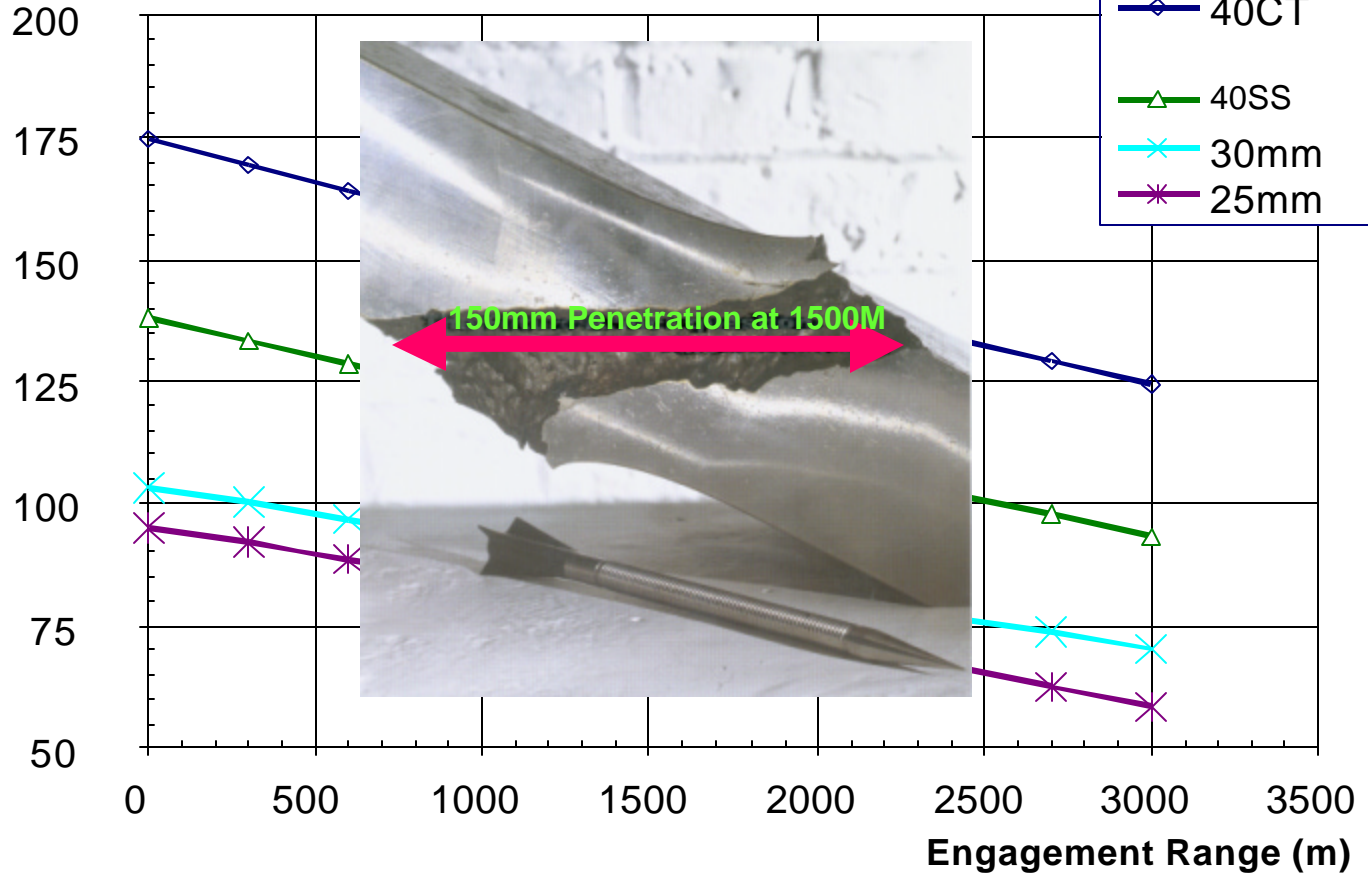
BMP2+



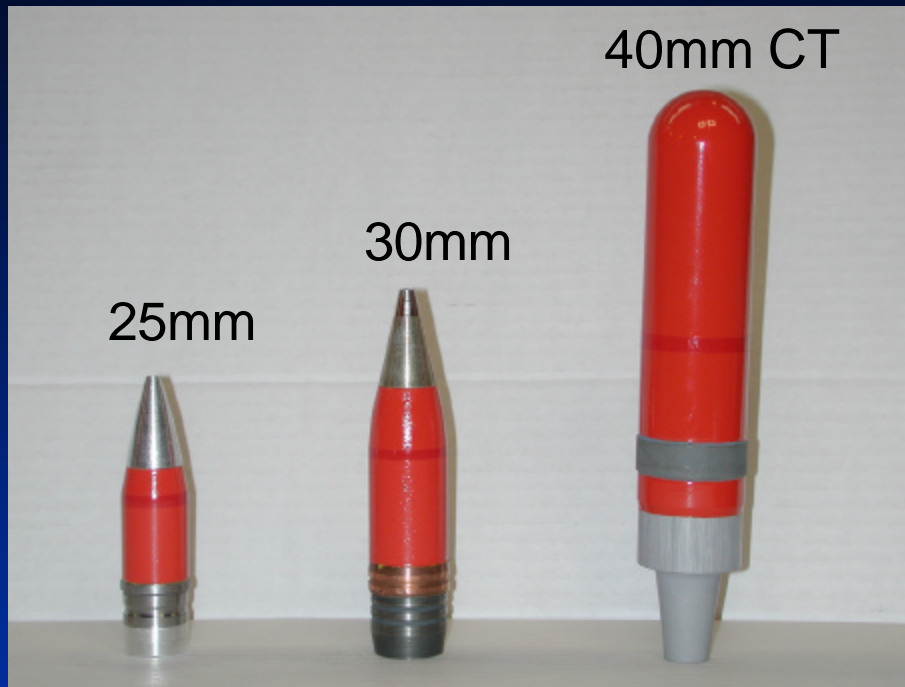
Perforation, mm RHAEQ

Milne-deMarre: $9 < K < 13$

21°C



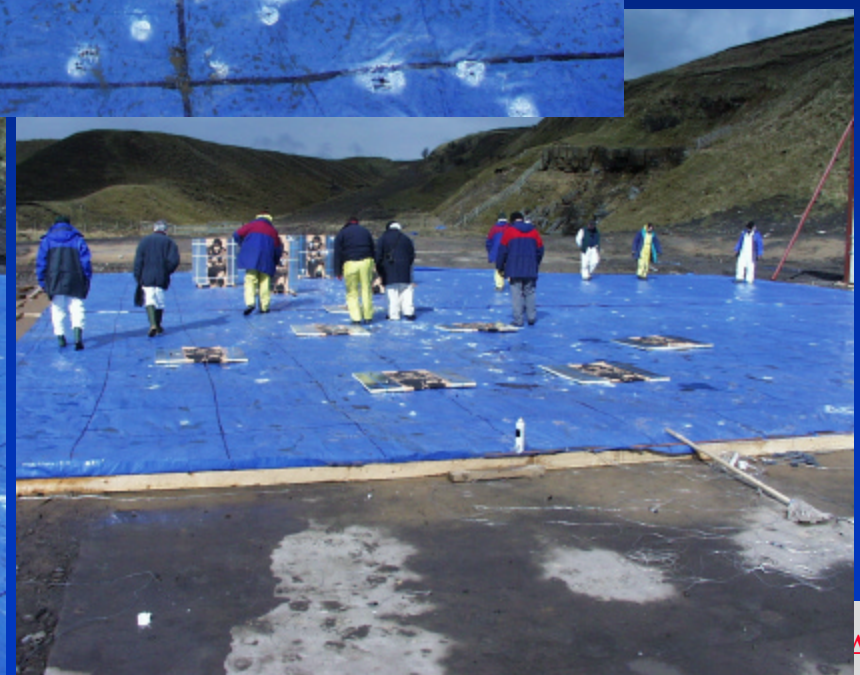
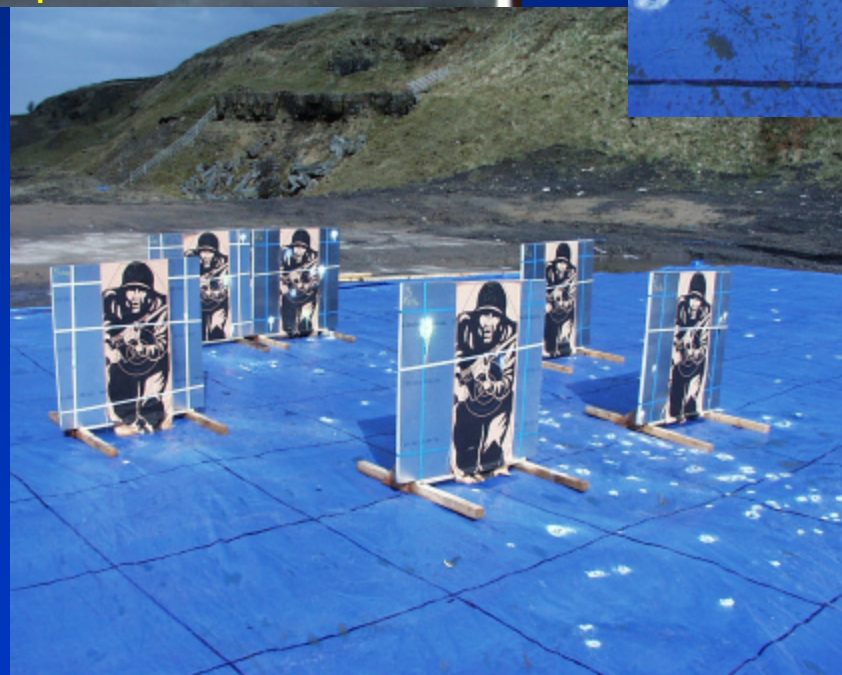
Comparison HE/GPR Rounds



	Projectile Mass	Mass Steel	HE Mass	MAE m2	No Rnds (30mx30m SWIS)
25mm	185g	120g	24g	15m2	45
30mm	360g	240g	34g	28m2	20
40mm CT	1000g	750g	120g	90m2	6

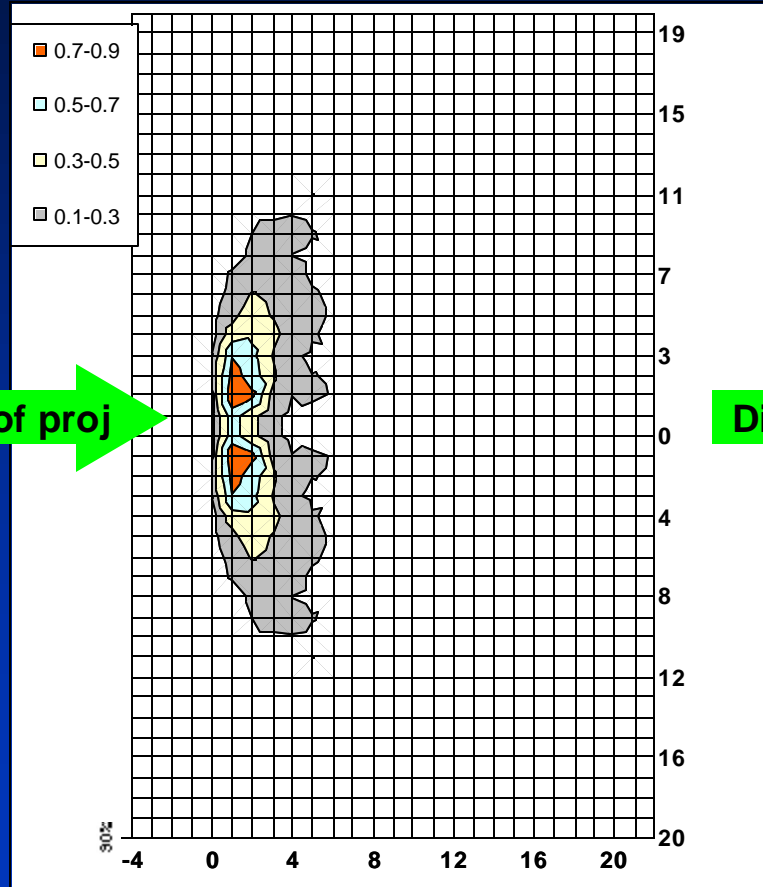
Air Burst Fragmentation Trials

40mm Type 2
Optimised A/Pers

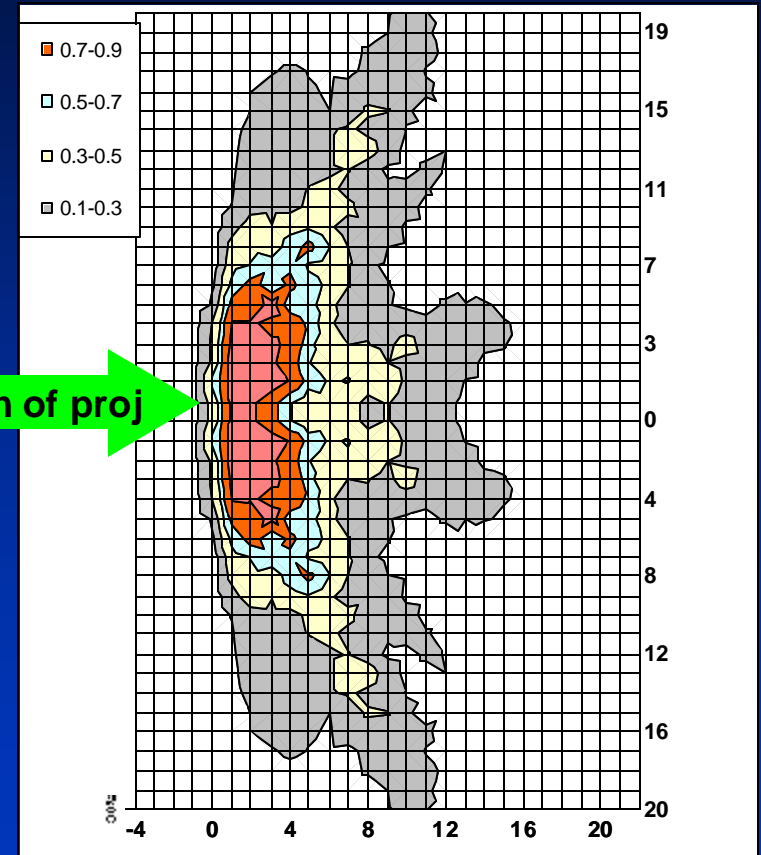


Comparison of Lethal Areas (Single Round P.Incapacitation Crisat Prone)

30mm Airburst



40mm GPR Airburst



System Integration

Bradley Integration



Bradley Integration



SIKA and LANCER Integration

CTAI support of both Prime Contractors

- Extensive Engineering Support
- 40mm CTWS Remote Weapon Stations
- Industrial Confidentiality Maintained



A photograph of a military vehicle, likely an armored personnel carrier, with a turret mounted on top. The turret is equipped with various sensors and weapons. A soldier is visible in the turret's hatch. The vehicle is on a dirt road in a forested area. Another similar vehicle is visible in the background. The text "Warrior Turret Programme" is overlaid in white on the image.

Warrior Turret Programme

WHAT IS NEEDED ?

- Increased firepower
- Fire on the move capability (stabilisation)
- Upgrade capability for base armour
- Improved Sighting (BGTI)
- Reduced turret workload
- Commonality with other platforms (FRES)

.....Must be affordable!

Warrior 'XENA' Turret Integration



- **Prototype 1 Turret completed**
- **Warrior fit verified**
- **Feasibility of legacy equipment verified**
- **Feed system space claim respecting BGTI**
- **Live Firing Tests Commenced**

XENA Warrior Turret - Organisation

BAE RO Defence
System Prime

MOOG

CTA INTERNATIONAL

ABRO

THALES

QinetiQ

CTA INTERNATIONAL

Concept: Success criteria

- Maximise the essential step change in capability offered by 40mm whilst respecting cost as the prime driver
- Fully Integrate the potential of the customer's committed investment into future subsystems (BGTI/BOWMAN)
- Deliver adequate performance for a 'CAPPED PRICE'
- Maintain flexibility necessary to react to changes in the customer requirements; facilitate their development with the customer

Remote Weapon Station Concepts

Superstructure Mounting



CT Remote Weapon Station Zero Intrusion

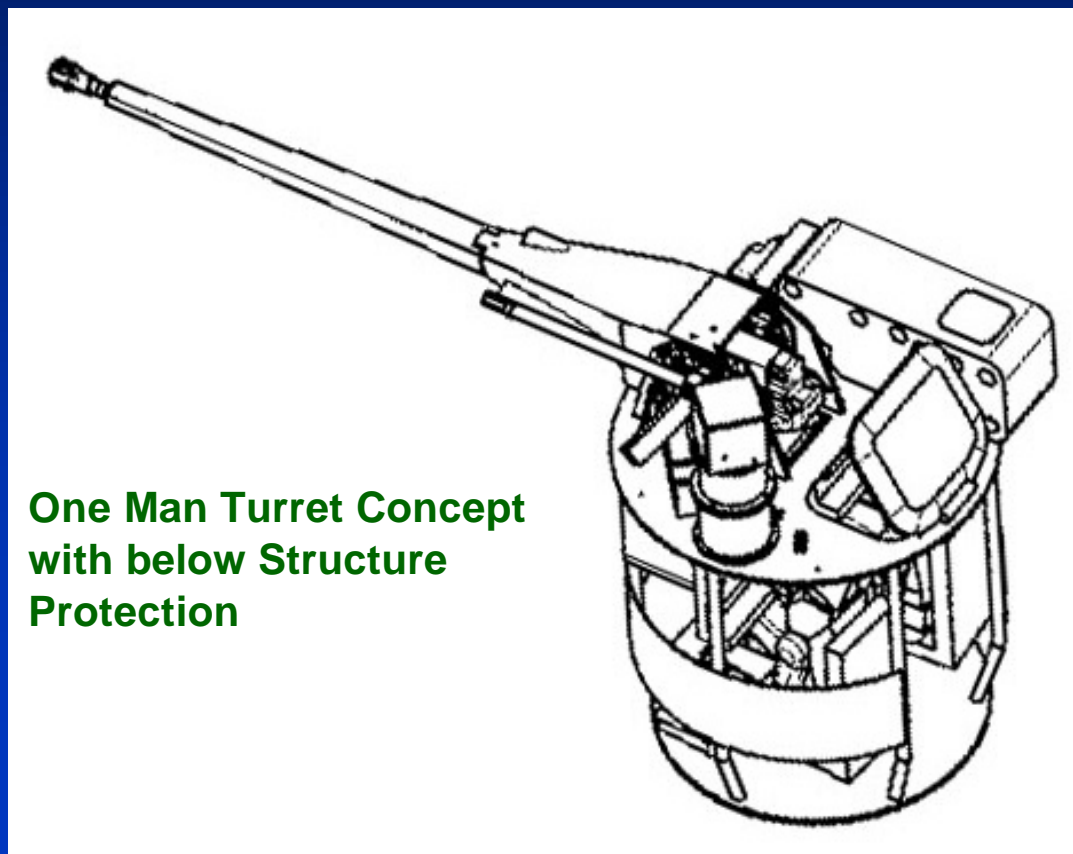
Length : 4215 mm

Width : 1180 mm

Height : 460 mm

Total Mass : 892 kg

Elevation : +47° / -12°



One Man Turret Concept
with below Structure
Protection

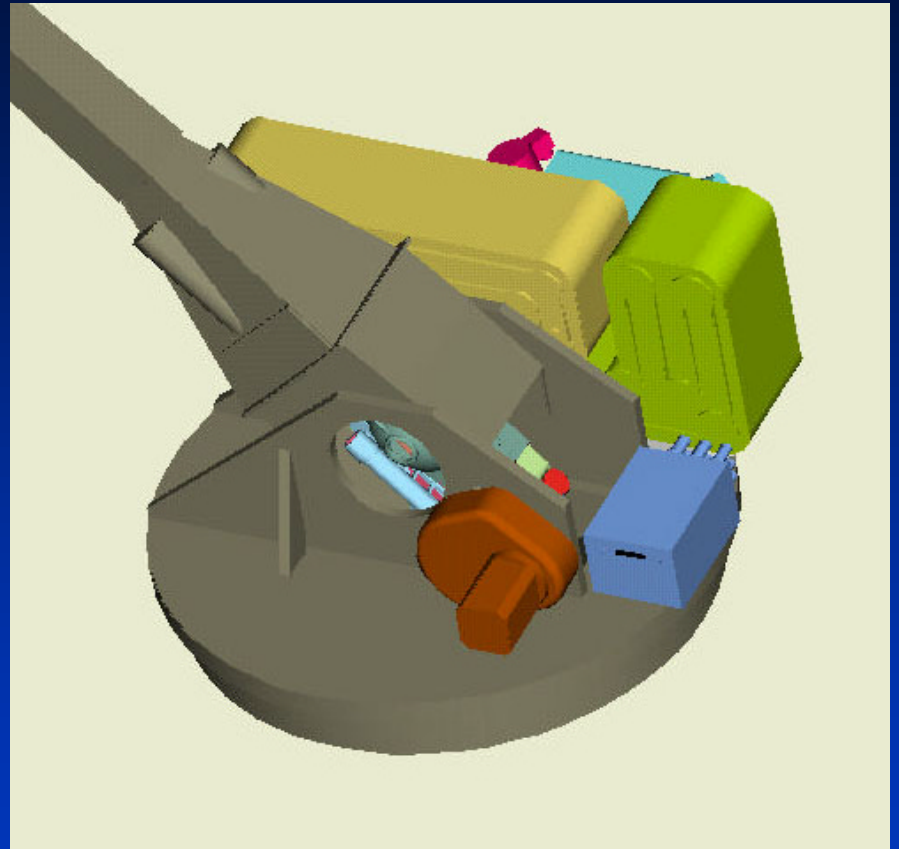
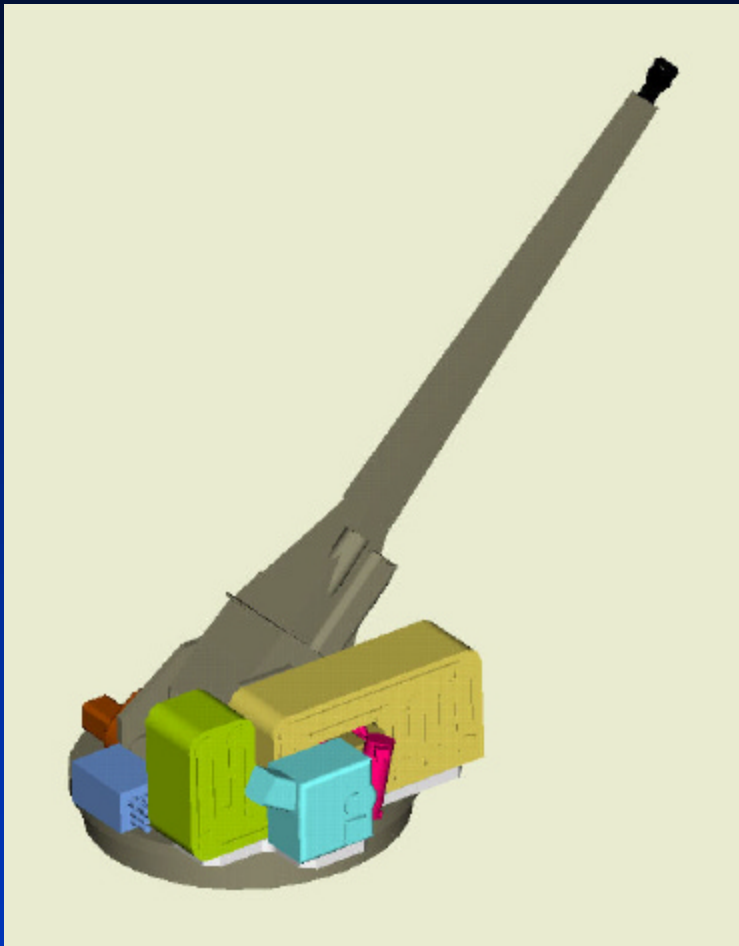
RWS on VAB 6X6



Naval Applications

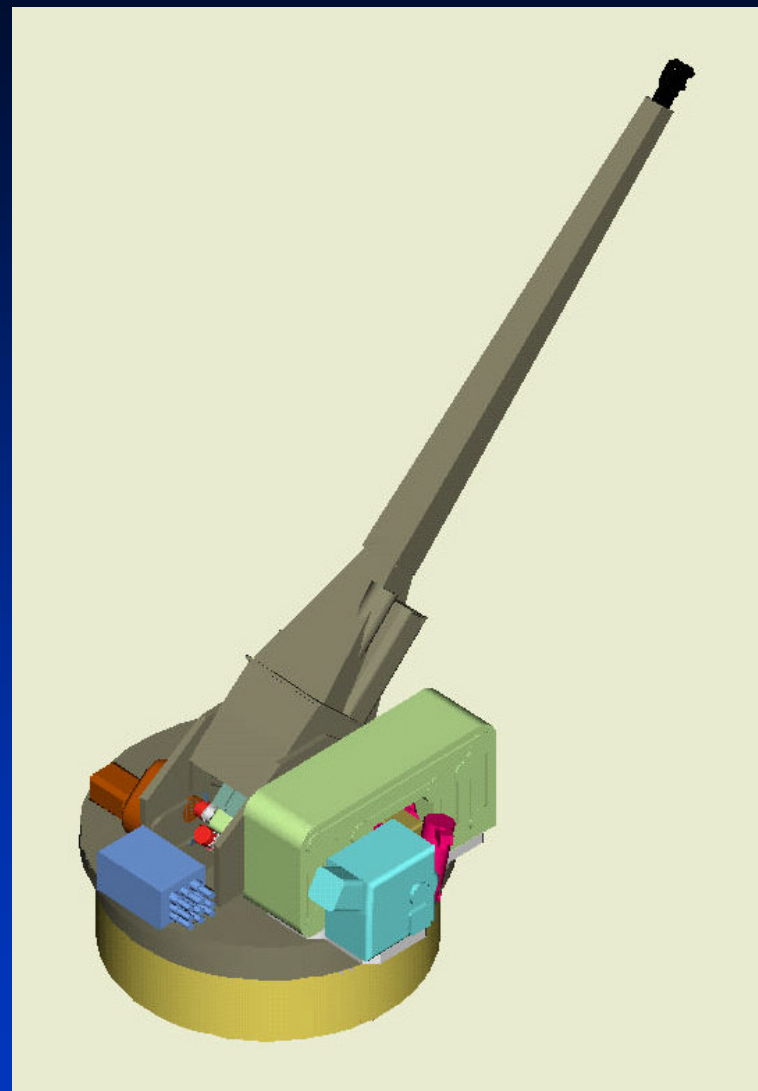
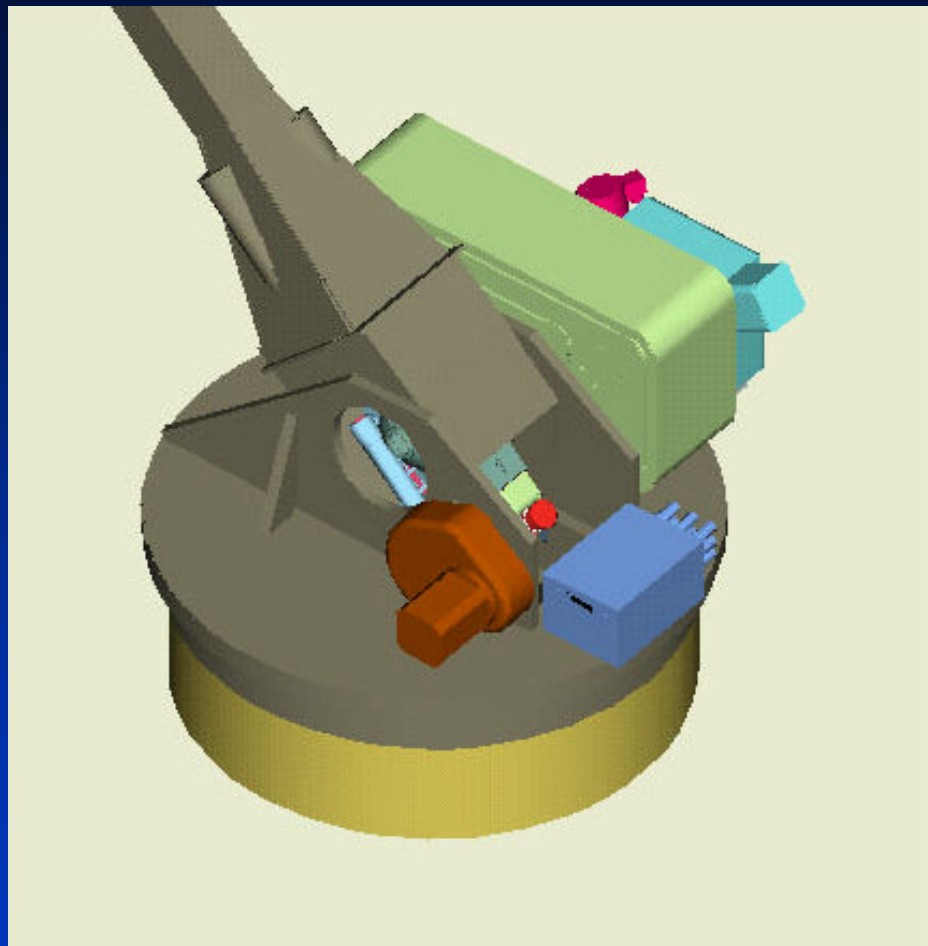


Triple Feed System Options



$$50 + (15+15)$$

Triple Feed System Options



$140 + (15+30)$

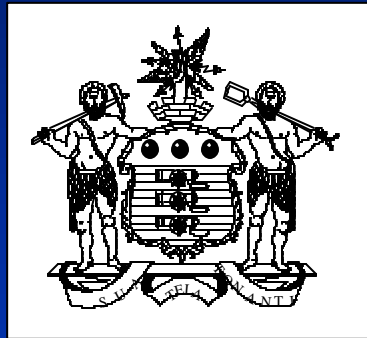
40mm CTWS
Weapon Safety Testing

Requirement

- Establish Availability of CTWS before 2003
- Ready to support platform development

Safety Testing of System; UK/US/Fr agreed Standards

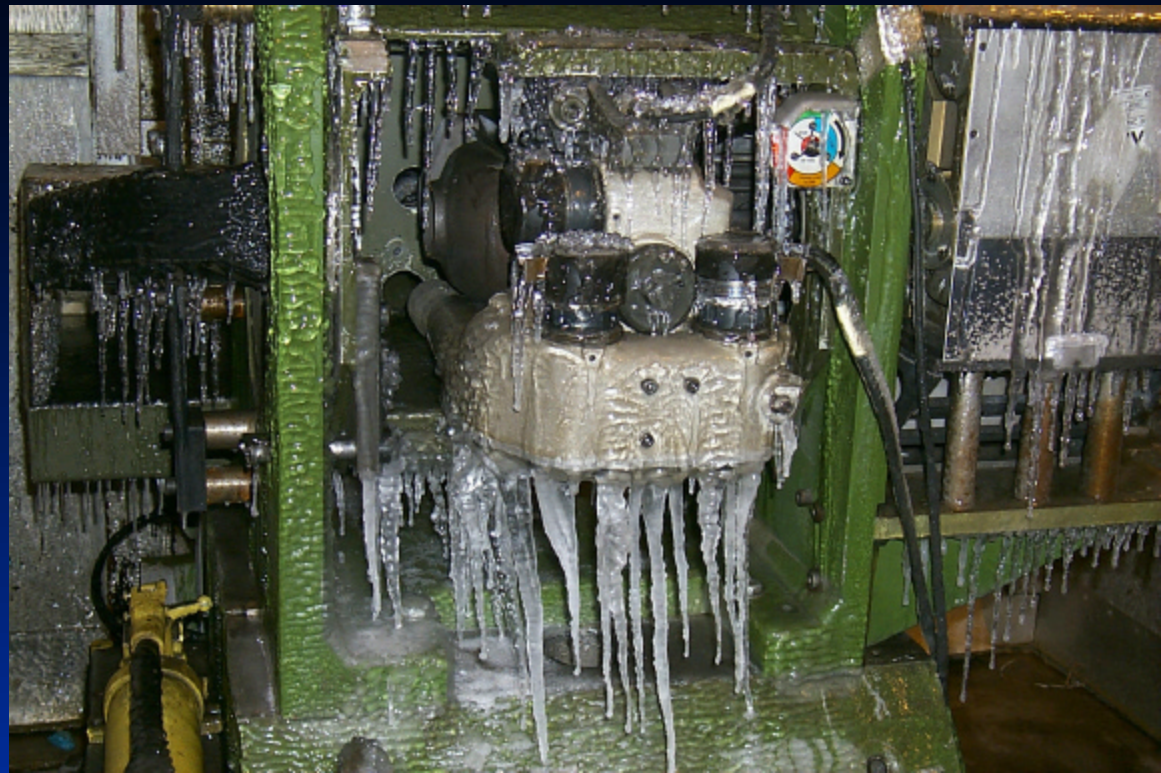
UK MoD
Ordnance
Board



US DoD
DTC, ATC

OB Proc 43060 Signed July 2000
Major General Curran (UK) Brig General Ertwine (US)

Icing



Elevation Extremes (Compound Angles)



Elevation Extremes (Compound Angles)



Elevation Extremes (Compound Angles)

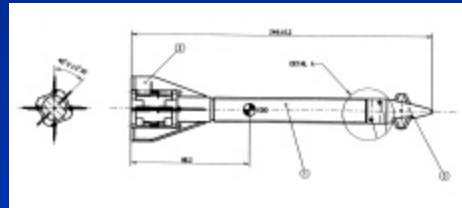
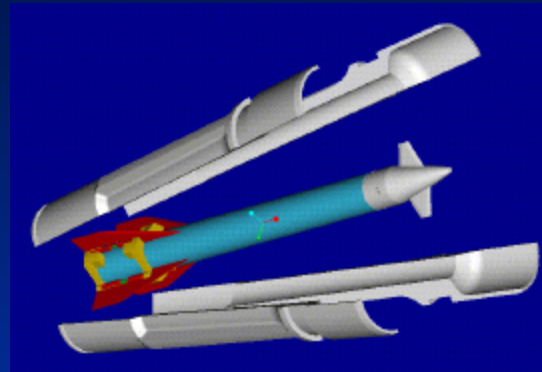


Future Developments CTAI

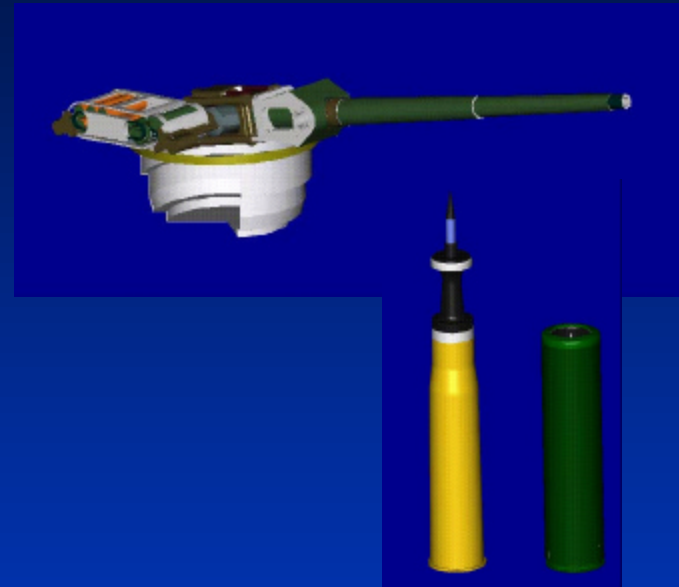
UK, France, US Research Development Funding based on 40mm CTWS and CTA Technology Generically.



Ammunition Technologies
Compressed Charge
Sabot Materials
Rod Materials



Guided Dart CTGP
SMS, DERA,
SPART, DARPA



105mm Studies
SPART
ARDEC

Conclusions

- CTAI poised to support weapon requirements in New and Legacy Light Armored Vehicle Platforms
- Bold Industrial Investment key to success
- CTAI's demonstrated successes and innovative approaches to both technology and business have established CTAI as a 'brand label' in US and Europe.
- 40mm CTWS development will be complete and production ready by end 2003
- International Partnering can work!