Contents

• Background
• Programme
• Vehicle Integration
• System Testing
• Future Developments
CTA International

• CTA International 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

Ammunition comparison

25mm
30mm
35mm
40mm
40mm CTA

APFSDS
GPR

CTA INTERNATIONAL
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

Bushmaster 25mm

40mm CT 2000

Bushmaster 35mm
CTAI – The Product

Utility!
Technology and Value

• Lethality
  – Target Overmatch
  – Precision
  – Multiple Targets

• Affordability
  – Low Acquisition
  – Low Whole Life Costs
  – Low ILS Costs

• Deployability
  – Light Weight/Low Volume
  – Availability
  – Sustainability
  – Reliability
  – Crew Training
  – Crew Safety

• Sustainability
  – Stretch

No Need to Compromise!
CTWS - Program Status

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Production Contract
Why Invest 50M€?
Life Cycle Medium Calibre Turrets on Principal Light Armoured Vehicles; US, UK, Germany and France

Characterised by:
New technology
Step change in capability
Response to revised operational scenarios

30 Years Approx

Proceeding Cycle


Current Cycle

Sales €
Level 1 Potential Platforms

- Warrior
- FRES
- VBCI
- EBRC
- FCS
- Bradley

- Total 1489 Systems
- Total 2500 Systems
CTWS – Why 40mm?
APFSDS Penetration

Perforation, mm RHAEQ
Milne-deMarre: $9 < K < 13$

21°C

- 40CT
- 40SS
- 30mm
- 25mm

150mm Penetration at 1500M
## Comparison HE/GPR Rounds

<table>
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<tr>
<th></th>
<th>Projectile Mass</th>
<th>Mass Steel</th>
<th>HE Mass</th>
<th>MAE m²</th>
<th>No Rnds (30mx30m SWIS)</th>
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<td>185g</td>
<td>120g</td>
<td>24g</td>
<td>15m²</td>
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<td>30mm</td>
<td>360g</td>
<td>240g</td>
<td>34g</td>
<td>28m²</td>
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<td>40mm CT</td>
<td>1000g</td>
<td>750g</td>
<td>120g</td>
<td>90m²</td>
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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
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

Warrior ‘XENA’ St Andrews Firing Point Lulworth 29th Jan 02
XENA Warrior Turret - Organisation

BAE RO Defence System Prime

MOOG
ABRO
QinetiQ
THALES

CTA INTERNATIONAL
CTA INTERNATIONAL
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!