

CTA INTERNATIONAL

Guns and Ammo Symposium

Technology

Applicability

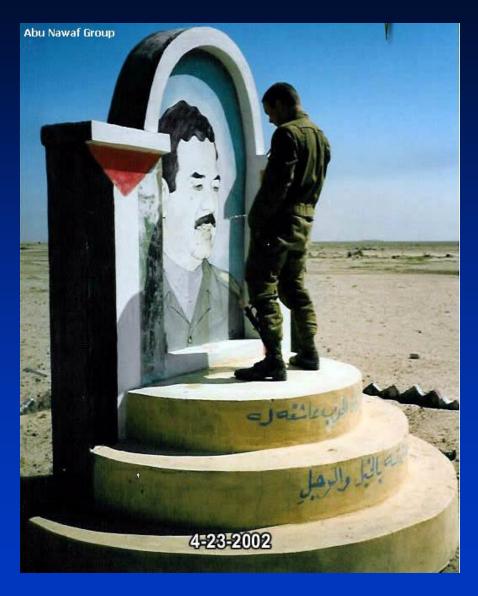
Program

Risk

System Integration



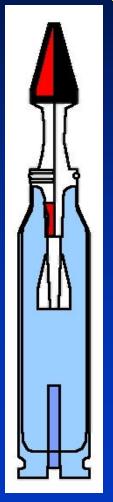
Precision and Target Effect





Cased Telescoped Technology

Principle of Technology 'Telescope' the ammunition



30% saving in volume for the same performance

30% more performance for the same volume





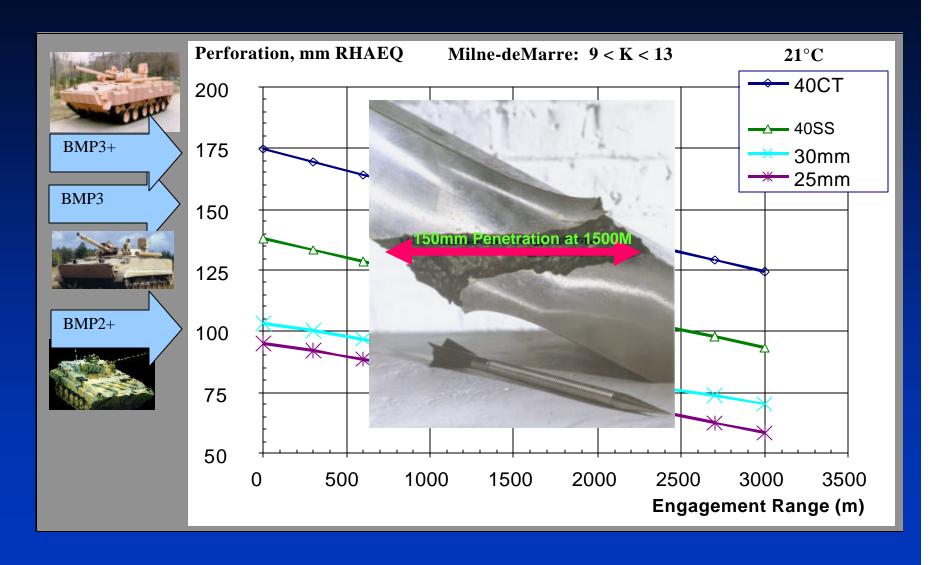


Cased Telescoped Technology





APFSDS Penetration





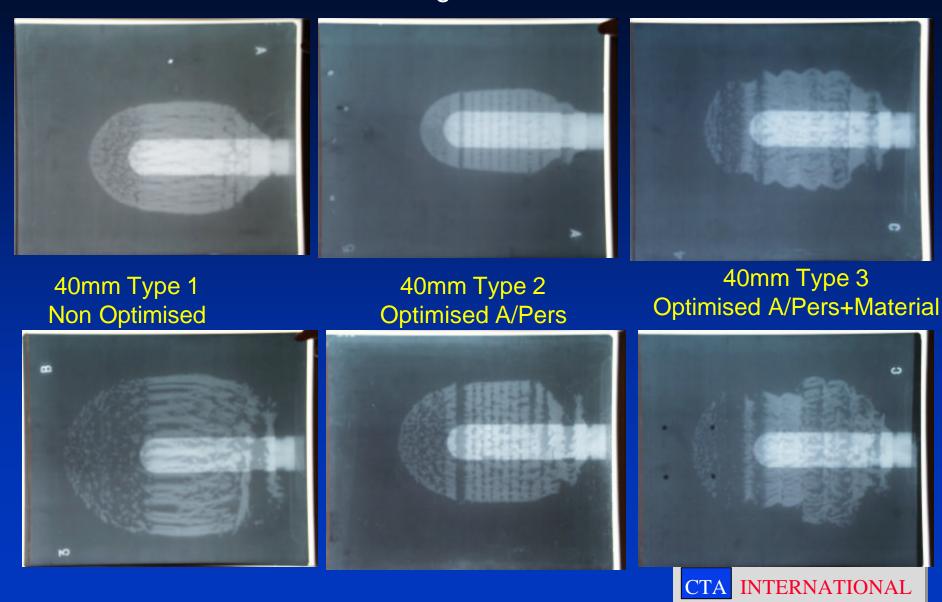
Comparison HE/GPR Rounds



	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



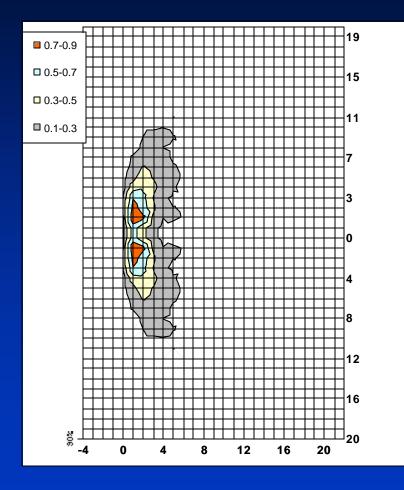
Air Burst Fragmentation Trials



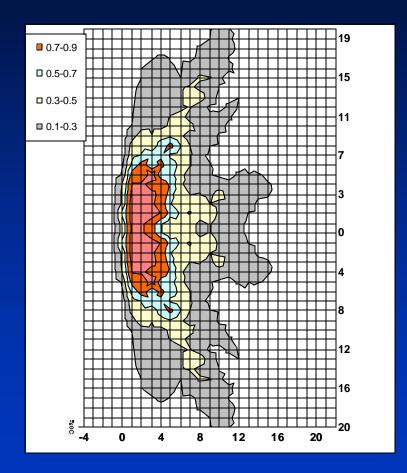


Comparison of Lethal Areas (Single Round P.Incapacitation Crisat Prone)

30mm Airburst



40mm GPR Airburst

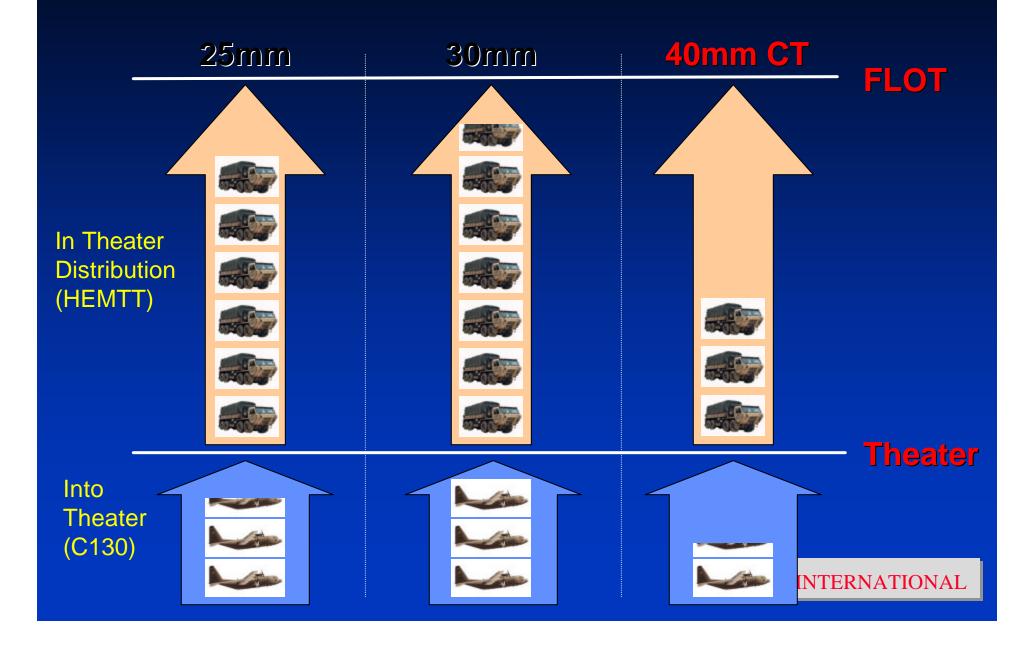




Weapon LRU's and Lifed Items



Ammunition Logistics





2003 / 2004 Programme







Customer Commitment

- May 02 OFCP reports that 40mm CTWS is the solution
- UK will commit to 40mm CTWS for Warrior and FRES variants
- UK and France are funding risk reduction of CTAI programme

2003/4 Programme \$11.5M based on customer objectives

Customer committited to share deliverables with other nations

Interoperability with FRES and EBRC encouraged at sub system level

France and the UK sign deal for 40mm CTWS

an agreement with CTA International (CTAI) to fund a risk-reduction programme for the 40mm Case Telescoped Weapon System

The objective is to ensure that the design is sectorically secure when the two armies need to select the armament for new platforms or mid-

According to David Leslie, CTAI managin; director: "This demonstration of support from both governments is a major milestone in CTAI's programms. The sount contracts will enable us to work closely with the procurement agencies and

ighting vehicle (IFV) upgrade and for at least one of the air-bursting munition type member of the projected Future Rapid Effects Under the terms of the contract, CTAL workment has recently been issued.

The French Army is expected to specify the | Level (TRL-7) by December 2004. veapon for the projected Engin Blinde a Roues urret (June's Defence Weekly 10 April).



Warrior IPV arms with a CTAI 40mm Case Telescaped Weapon System

tem and the two warshot natures of French government. timm CTWS for the prosected Warrior infantry discarding salvet and a general-purpose round

System, for which the user requirements docu--ing-with France and the UK, will bring all. Lancer testbeds developed to meet the new car elements of the system to a Technical Readiness | celled operational requirements of the UK at

The UK Ministry of Defence has recently te Contact, which is currently at the snally phase. | completed its Objective Future Cannon RO Defence of the UK jointly own CTAL and versions of this could include a 6 x 6 model with Programme to determine which medium-calibre the two companies have provided all develop a 40mm CTWS installed in a remote-controlled | weapon would be appropriate for new vehicle | ment funding to date as a private vents platforms as well as upgrades of existing plat-

For trials and dom 40mm CTWS was recently installed in the turn of the Alvin Vehicles Warrior (JDW 9 March). is also installed in both examples of the SIKA an US armies

Giat Industries of France and BAE System

Christopher F Fost

Trade Studies 1997 –2002

UK MoD – Tracer Medium Cal reg't Lancer Prime - Tracer/Scout req't SIKA Prime – Tracer/Scout req't Joint UK/US Program Office French MoD Cannon studies UK MoD Objective Cannon Program



UK Programme

Key Tasks:

- Achieve TRL 7 for system by Dec 2004 (In service readiness)
- Demonstrate air burst fuzing during 2004
- Demonstrate 40mm CTWS in operational environment (Warrior)
- Demonstrate Feed system in operational firing environment



In Service Readiness for UK MoD

- Demonstrate by Dec 2004 TRL 7
 - Weapon
 - Feed System
 - APFSDS
 - GPI
 - GPR with Impact Fuze

Warrior Based



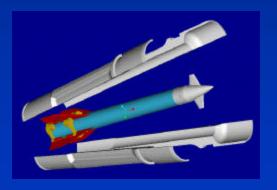
- **✓ Platform in service**
- **✓ Realistic Environment**
- **✓ Tranformation of training benefits**
- **✓ Lessons learned will read into FRES**



Additional Activities 1

- Triple Feedsystem
- 80° Elevation range on weapon
- Turret Integration
- GPR Airburst Fuze
- Weapon Navalisation
- CTGP Advancement

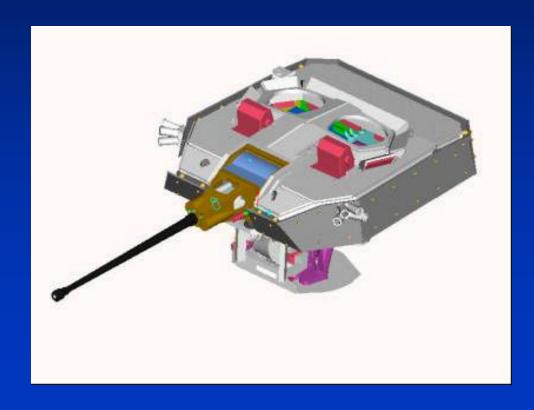






Additional Activities 2

- Weapon Performance to be evaluated in a turret envelop
- To be based on Warrior turret and (ex Lancer) unmanned turret





Lancer Remote Turret

CTAI
Warrior Prototype 2
Turret



RISK?



40mm CTWS Maturity

- Over 6000 tactical rounds fired
- Weapon qualified by UK Ordnance Safety Group
- Ammunition qualification 2003
 - Two tactical rounds
 - One Training Practice
- Ammunition IM Compliant (Stanag 4439)
- Intensive endurance trials 2003/4
 Chamber/Breech Ring tested to Destruction
- Full system turret testing early 2004
 - 2 Man and Unmanned









System Integration



CTAI Integration Background

LANCER Gun and Ammunition Handling





SIKA Gun and Ammunition Handling

BRADLEY Fighting Vehicle Integration





WARRIOR Infantry Fighting Vehicle Integration



40mm CTWS Turrets

Conventional 2 Man 1 man gun operation





Fully integrated Weapon
Dual APFSDS/HE Feed System
Dual Axis Stabilisation
Man Machine Interface
Improved Protection

Unmanned remote Weapon Station



Integrated CTWS - Platforms





UK/France















MANNED



Warrior Turret Programme



Customer Drivers





Solution Offered by this Programme

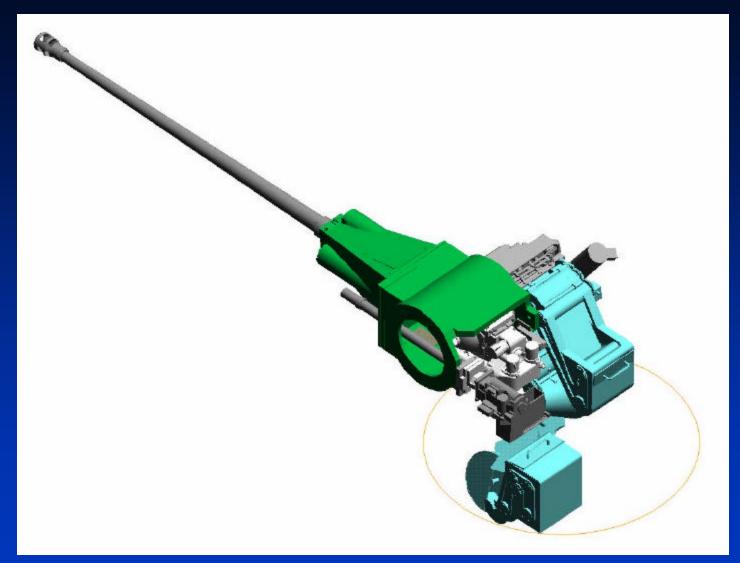
- 40mm CTWS
 - Automatic Cannon
 - Two natures of ammunition, GPR and AP
 - Automatic feedsystem
- Dual Axis Stabilised Power Drive System
- Improved Armour Protection
 - Protected against 14.5mm AP B32 @PB (eq BS41 @200m) 360°
 - Upgrade potential against 30mm APFSDS over frontal arc



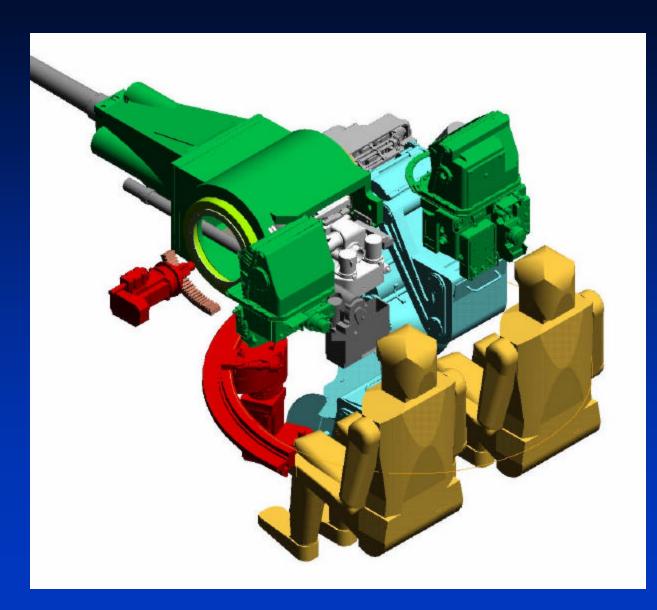
Warrior Turret STATUS 15th March 2002



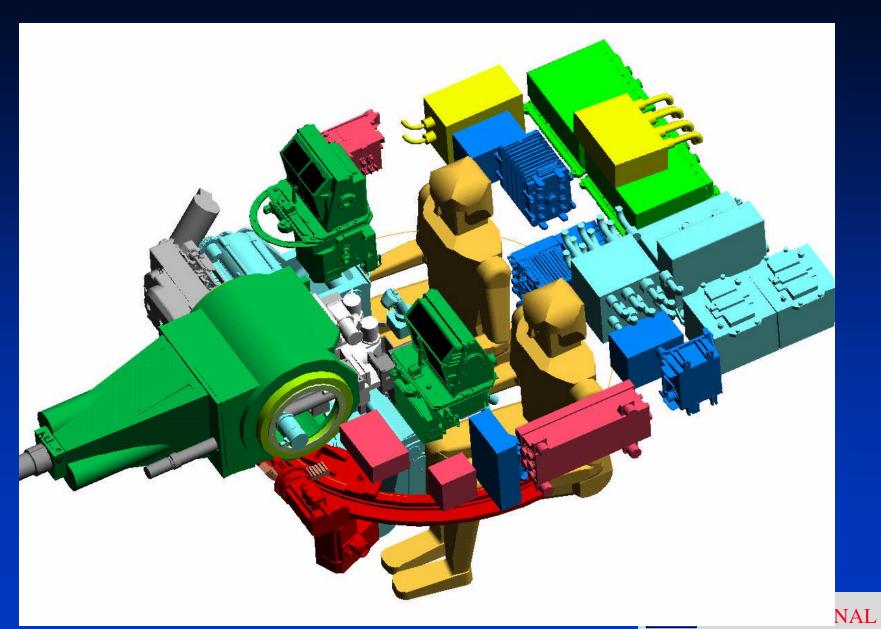


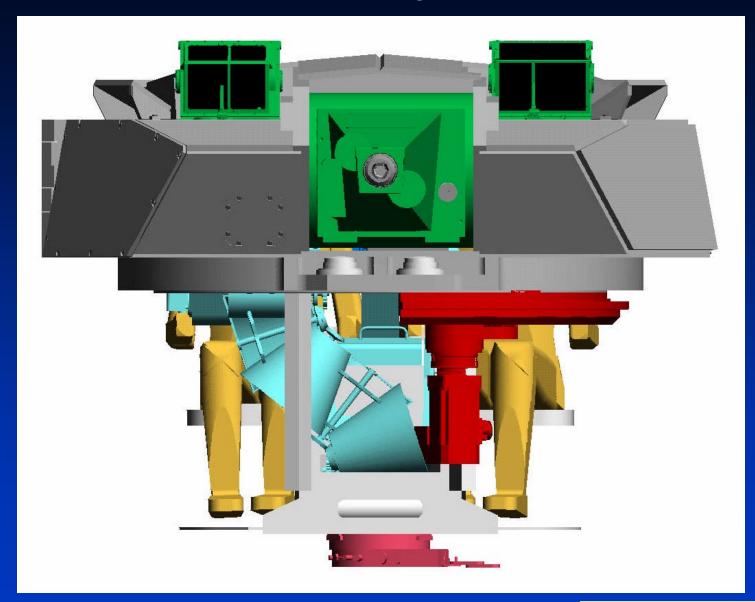




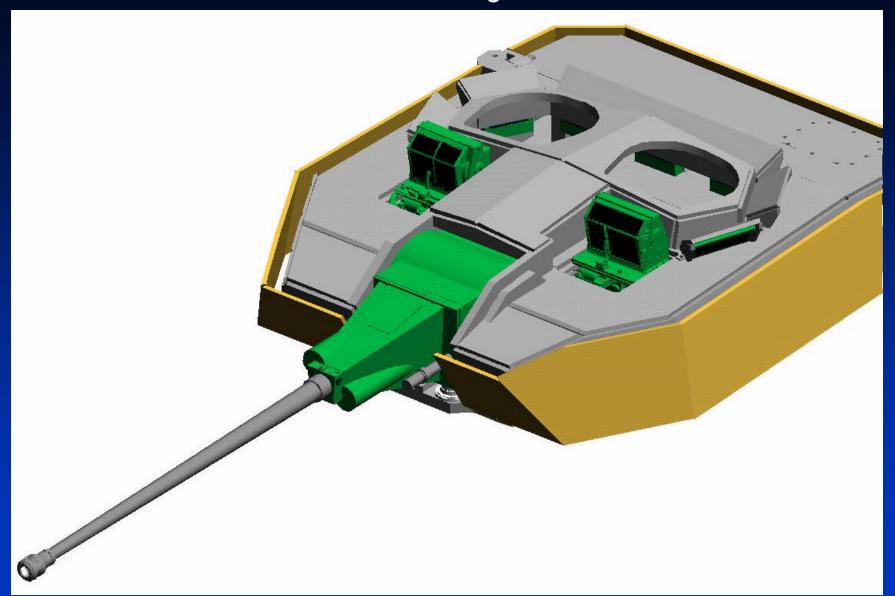














Conclusions

- 40mm CTWS is on track for insertion into Warrior upgrade 2006
- 40mm CTWS will be ready as a System for FCS/FRES FUE
- 40mm CTWS is transformational
 - Lethality
 - Logistics
 - Training



40mm CTWS production start January 2005

