Royal Navy Small Calibre Gun Research to Defeat the Small Boat Threat

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Jonathan Watkins
Surface Warfare Weapons Team
Naval Systems
Dstl Portsdown West

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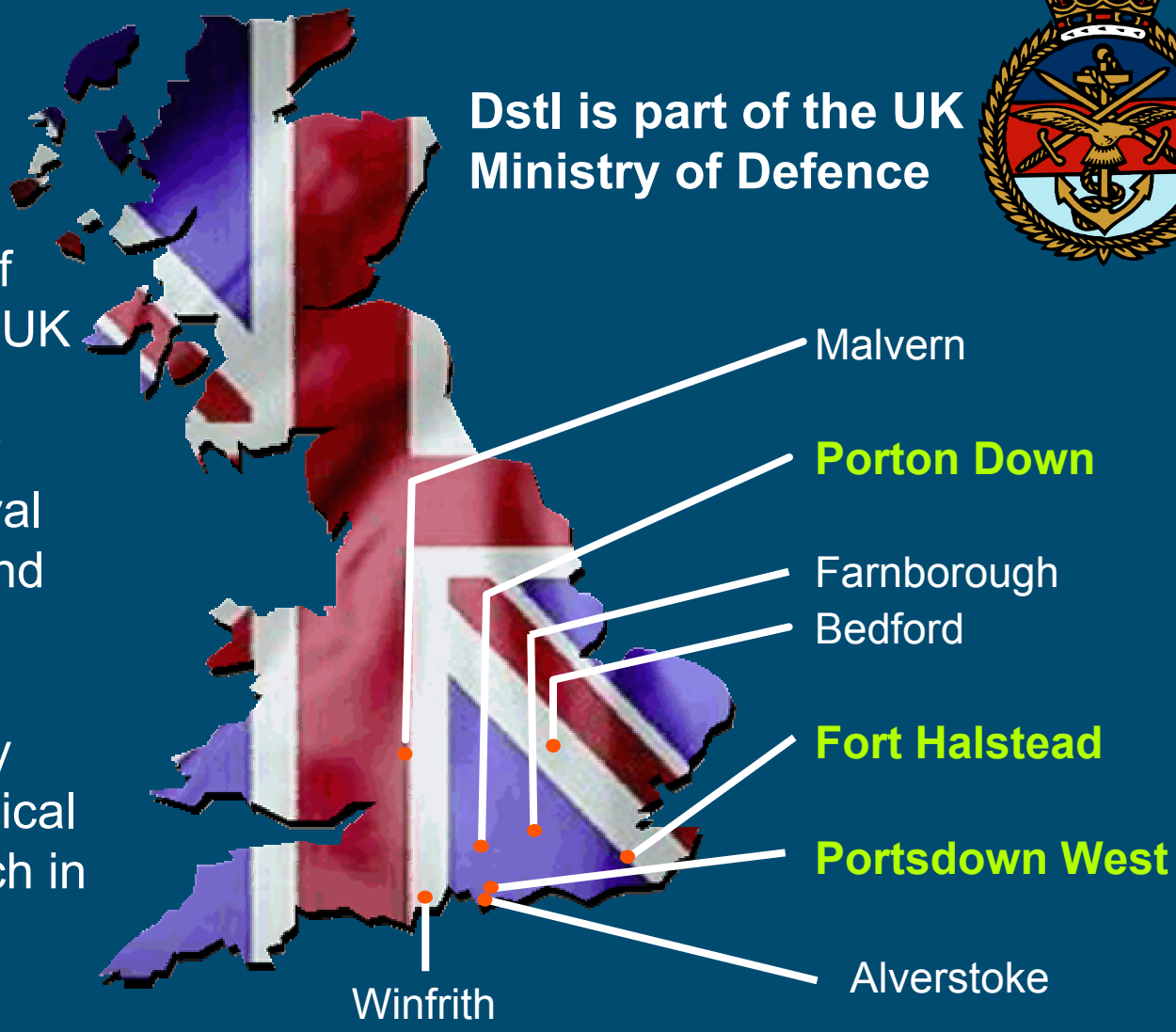

Dstl - Naval Systems Department

- The Naval Systems Department provides analysis and top-level platform and weapon systems advice in support of MOD decision making on Naval Systems.
- The Naval Systems Dept comprises of the following groups
  - Above Water Systems - (Surface Warfare - Weapon Systems Team)
  - Littoral Warfare (Operational Analysis)
  - ASW Capablility
  - Under Water Systems

Fast In Shore Attack Craft (FIAC)


PLAY

Existing Small Calibre Gun

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(2km)
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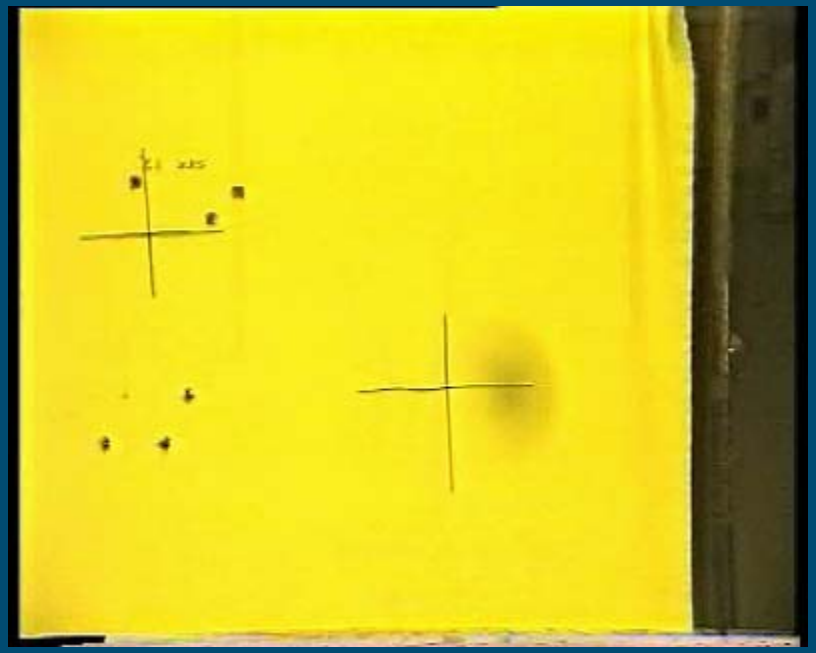
Operator Performance?

HMS Somerset Trial

30mm Cannon - Remotely Controlled from Ops Room

Alternative Cannon

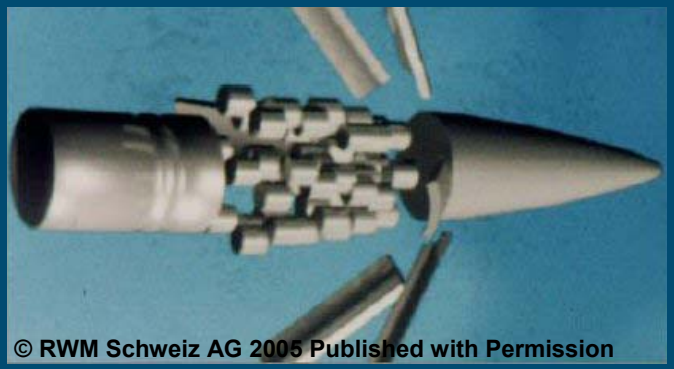
30x173mm MK44 Bush Master II

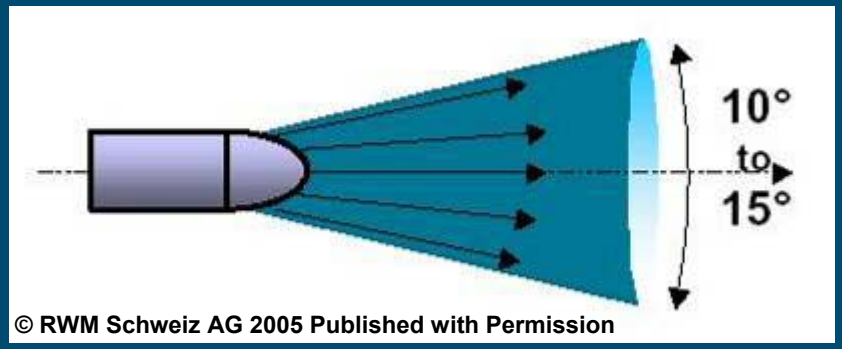


Proof Firings

Air Burst Munitions

- Key Points for 30x170mm RWM Schweiz AG
  - 162 Sub-Projectile Kinetic Energy Payload
  - Each 1.24 g
  - Programmed to Eject Payload (Burst) Ahead of target





- Potential Advantages of ABM
  - Increased chance of hitting target due to better coverage by sub-projectile payload
  - Hence provides Increased lethality against soft targets

ABM Trial - Shoeburyness, Nov 2003

- Co-operation with USN and USMC & Industry

- Objectives of Trial
  - Assess ABM against representative target
  - Assess Penetration of fragments
  - Assess Fragment Dispersion
  - Assess Burst Point Placement

The Target Matrix

1km Target Matrix 11th November 2003

The Churchend Range

11th November 2003

ABM Burst Point Capture

1.5km Range

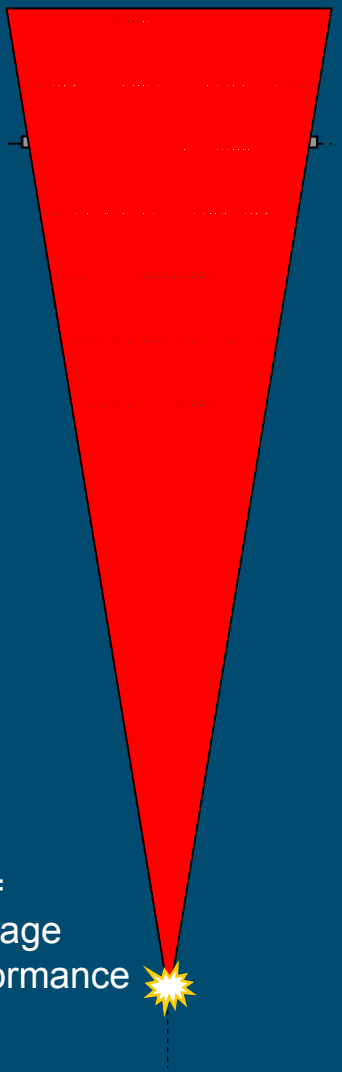
Front Camera

Side Camera

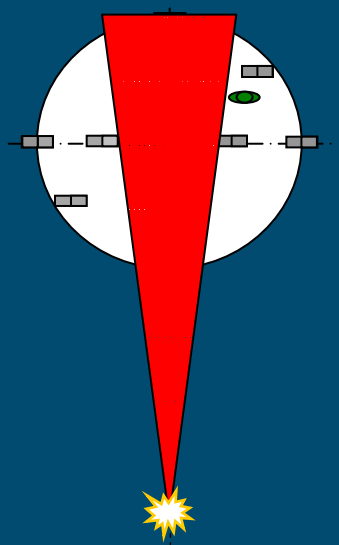
Target Plate Analysis

Effects of Burst Distance

Target



~50m



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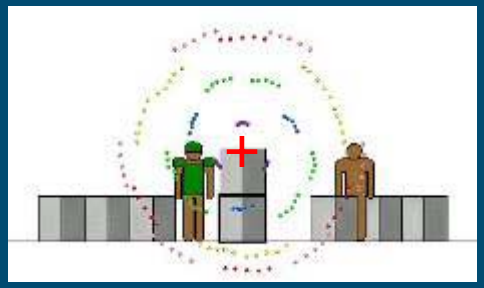
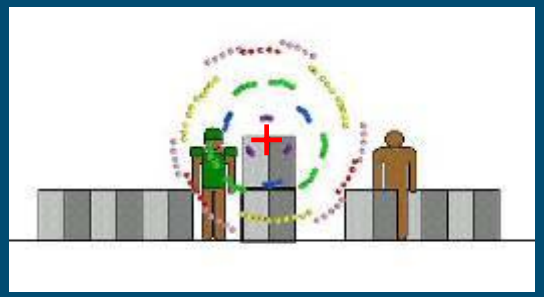


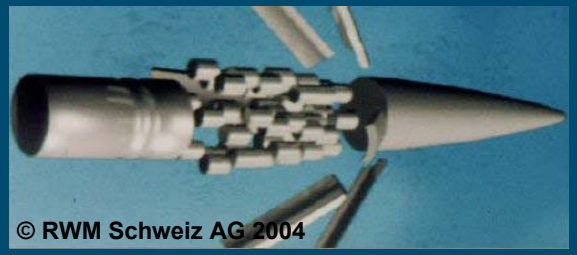
Increased Burst Distance =
Greater Sub-projectile Coverage
Decreased Penetration Performance



Decreased Burst Distance =
Decreased Sub-projectile Coverage
Increased Penetration Performance

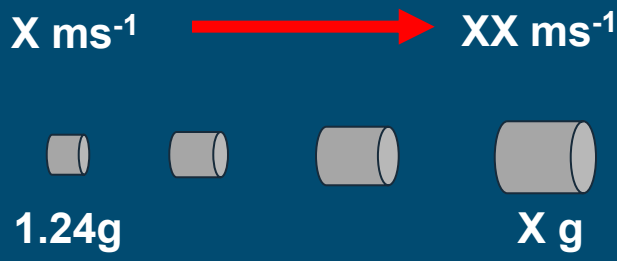
ABM Future Work

- Trial planned for May - Jun 05
  - Different Design of ABM by General Dynamics (High Explosive Air Burst)
  - HEI rounds will be fired for direct comparison against target plates



GENERAL DYNAMICS
Ordnance and Tactical Systems

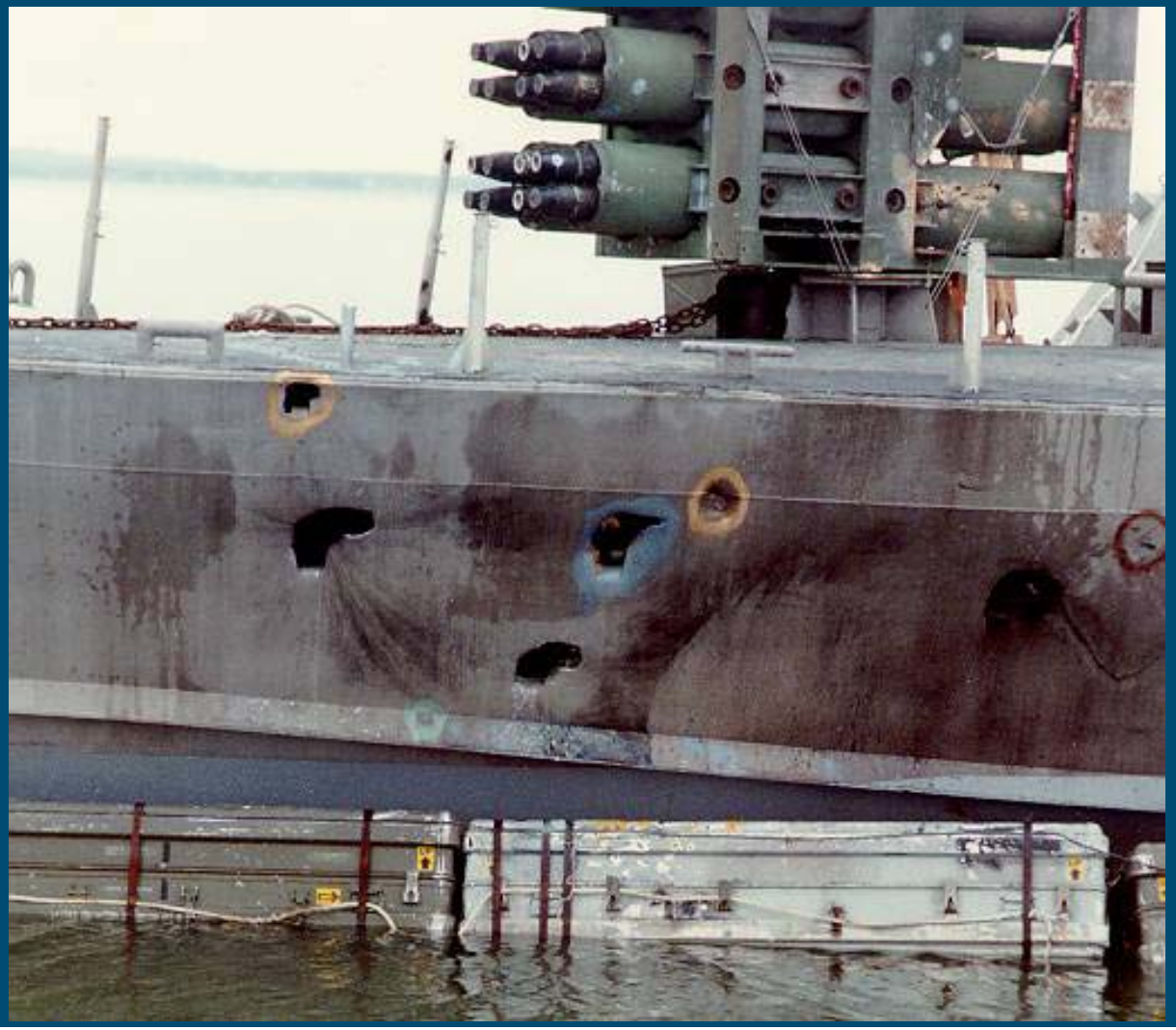
- Gas Gun firings and Modelling to determine optimum sub-projectile size and associated lethality against threat set



- Results feed directly into both UK and US Navy Procurement Programmes
  - T23 Upgrade
  - US LPD17 & EFV

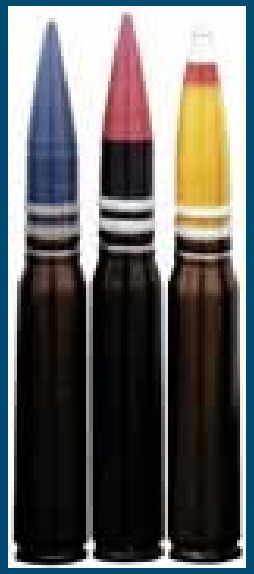
Potential Platforms for ABM

Effects of High Explosive Rounds



Future Ammunition Work

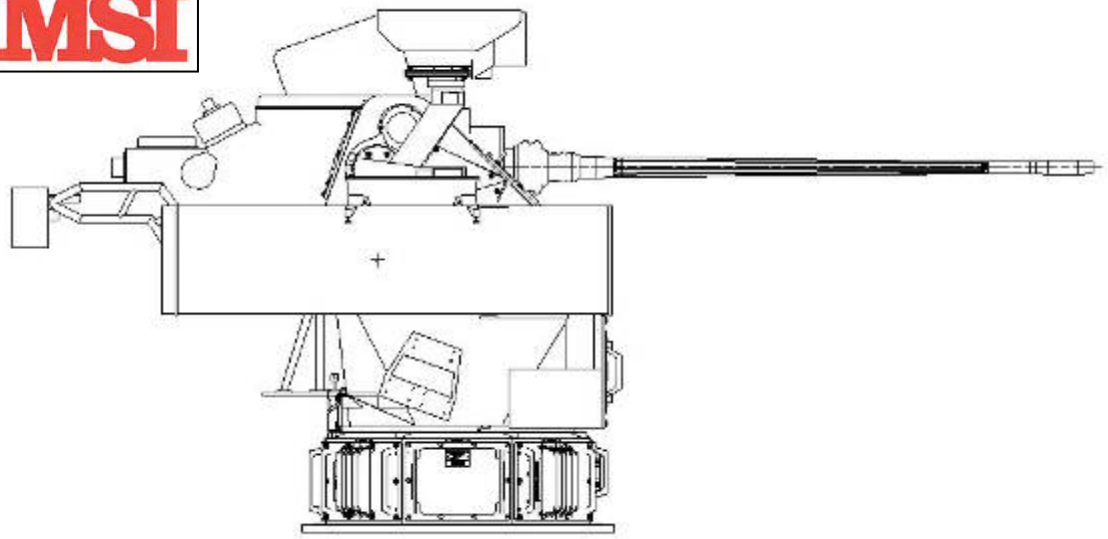
- Investigate Lethality of a COTS range of Ammunition against precisely defined representative targets
- Larger calibres considered
- Using Typical threat materials and suitable position (e.g. angles)
- Determine required gun/ammunition lethality against the threat set

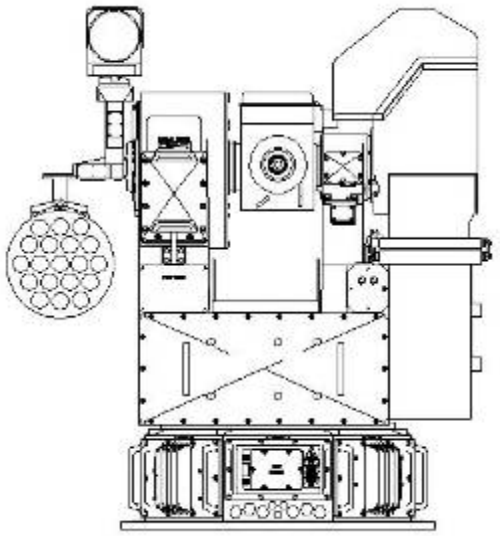


Hybrid Gun Mount

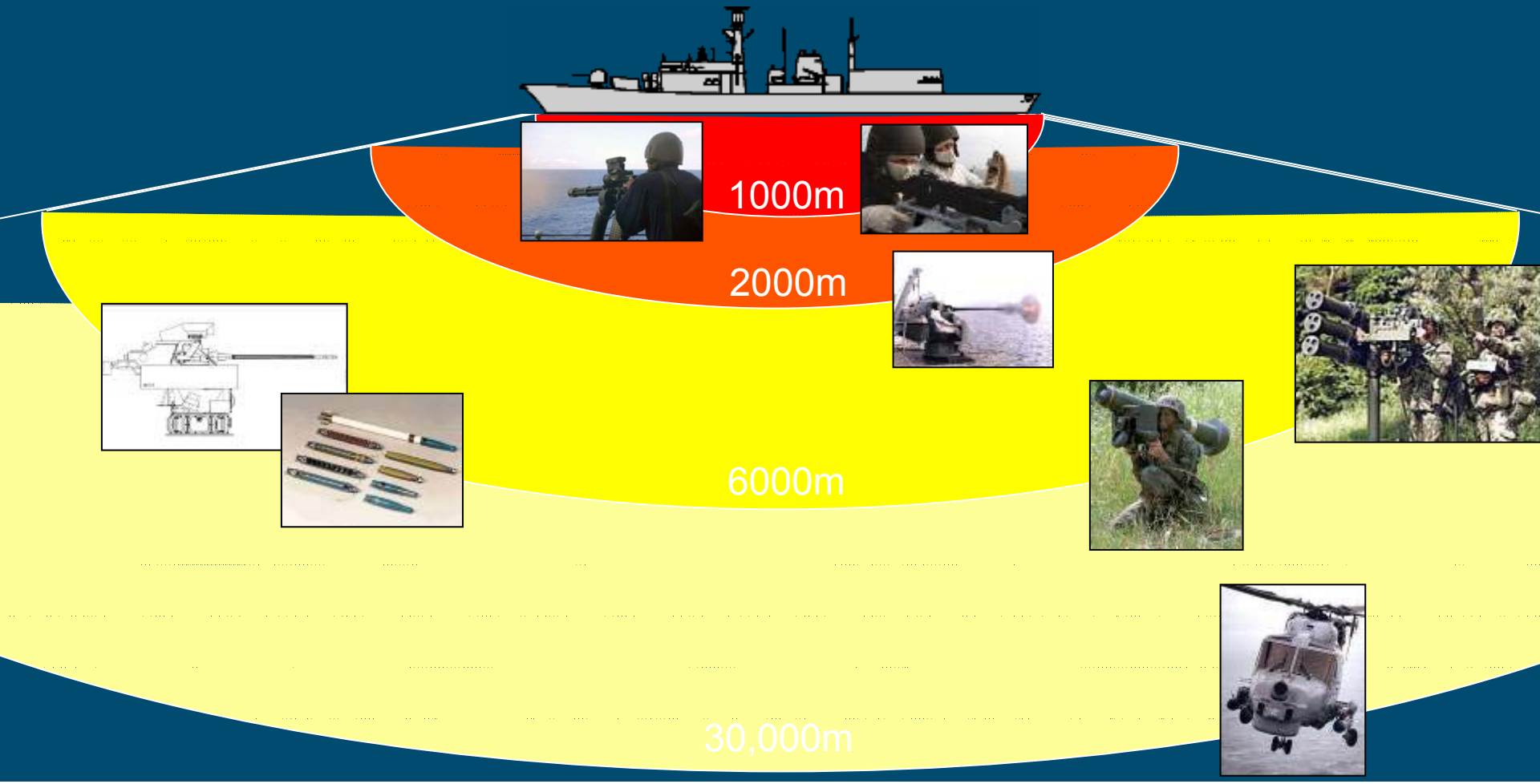
- 70mm Low Cost Rocket
- 6km Range (Increased with Guided Variant)
- Studies Conclude Launcher fit is feasible
  - Issues with Local Control Position

MSI





A Layered Defence



Implications of Swarm Attack

- Investigate Impact of dealing with a FIAC Swarm Attack from a SCGS

- Human Factors
  - Examine Human Computer Interface for Operator control
  - Prevent the operator from being overwhelmed?
- Can Technology assist?
  - Target Prioritisation?
  - BDA?