



Industry R&D Partnership Conference

Technology Investment Overview

Land Mine Countermeasures Initiatives

6 August 2004

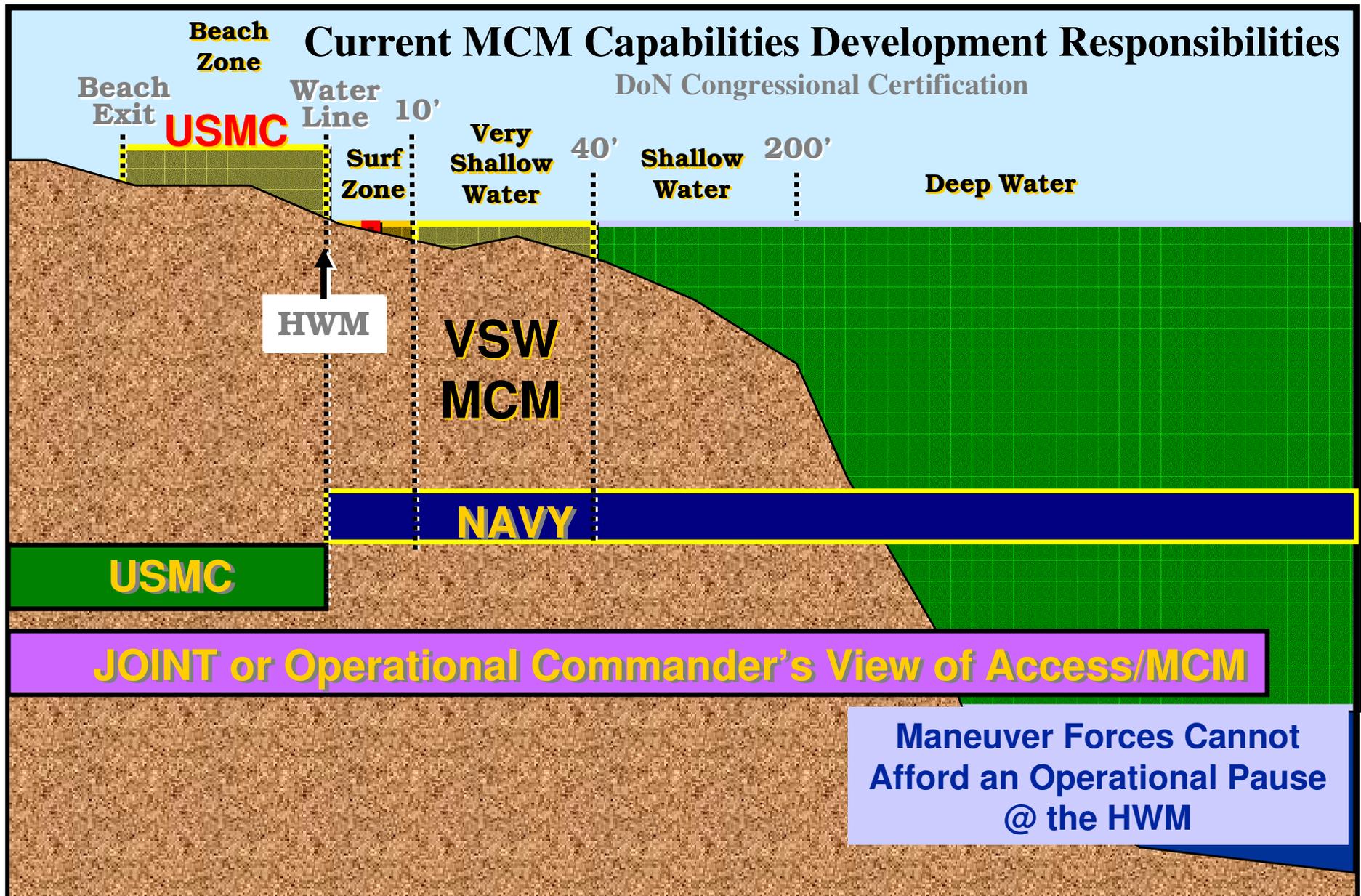


USMC S&T Program Foundational Concepts





MCM Responsibilities





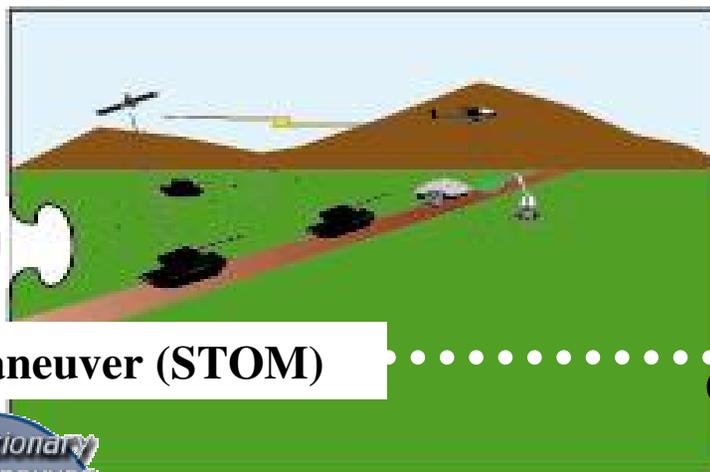
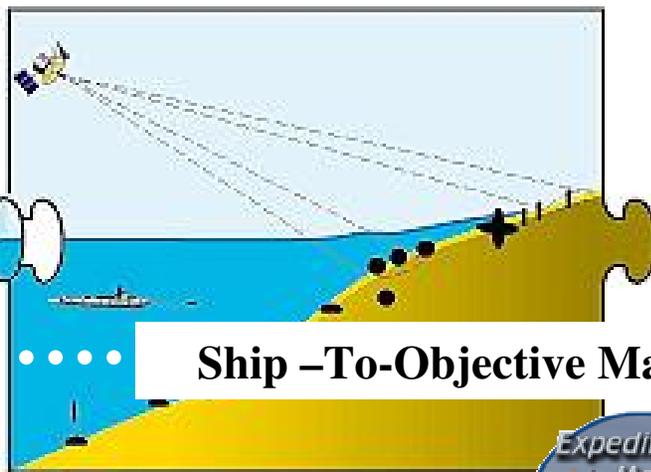
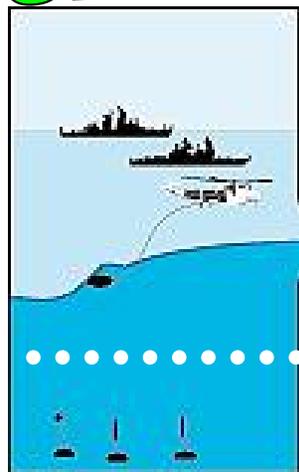
Land MCM S&T is Vital to The Marine Corps MCM Master Plan



MCM Master Plan

USMC Strategy Enabling
MAGTF MCM
to Become a Functional Component
of Expeditionary Maneuver
Warfare (EMW) By 2015

Seamless Maneuver = Unencumbered



Splash Point

Ship -To-Objective Maneuver (STOM)

Military Objective





Required Marine Air-Ground Task Force (MAGTF) MCM Capabilities

	Command Element	Ground Combat Element	Combat Service Support Element	Aviation Combat Element
– Deterrence & Interdiction	X	X	X	X
– Stand-off Detection of Mines	X	X	X	X
– Close-in Detection	X	X	X	X
– Handheld Detection	X	X	X	X
– Neutralization				
• Assault Breaching	--	X	--	--
• Tactical Clearance				
– Assault	--	X	--	--
– Route	--	X	X	X
– Area	--	X	X	X
– Marking	--	X	X	X
– MCM C4I	X	X	X	X
– Enhanced Survivability	X	X	X	X



Current Gaps in Required MAGTF MCM Capabilities

- **Deterrence & Interdiction** **Amber (Marginal)**
- **Stand-off Detection of Mines**..... **Red (Inadequate)**
 - **Mines/Minefields: Surface and Buried**..... **Red**
 - **Buried Individual Mines -- Metal & Plastic**..... **Red**
 - **Wide-area, Side-attack & Anti-helicopter**..... **Red**
- **Close-in Detection (vehicle mounted)**..... **Red**
- **Hand-held Detection**..... **Amber**
- **Neutralization**..... **Amber/Red**
 - **Assault Breaching**
 - **AAV w/Mk 154, M1A1 w/ TWMP, Planned ABV**..... **Amber/Green (Good)**
 - **AAAV**..... **Red**
 - **Tactical Clearance**..... **Red**
 - **Assault (BZ/BEZ)**..... **Red**
 - **Route** **Red**
 - **Area (e.g., laydown/beddown)**..... **Red**
- **Marking: Rapid Visual & Electronic**..... **Red**
- **MCM C4I**..... **Red**
- **Enhanced Survivability for Personnel & Vehicles**..... **Red**



MAGTF MCM Gaps

(Areas Inadequately Addressed In Current USN/USMC/USA Programs)

- **Detection:** Buried Minefields, Single Buried & Side/Top Attack Mines
 - Standoff: Provide Tactical Maneuver
 - Close-In: Preclude Ambush
 - Hand-Held: Buried Plastic, Low Metal Mines
- **Neutralization:** Surface, Buried, Side/Top Attack Mines, and Improvised Explosive Devices (IED)
 - **Breaching**
 - Beach Zone (BZ): Assault Lanes for Advanced Amphibious Assault Vehicle (AAAV) “EFV”
 - Sustained Operations Ashore (SOA): Breaching Systems for MARFORs without M1 Tanks having Track-Width Mine Plow or Assault Breacher Vehicle (ABV)
 - **Clearance**
 - BZ: Craft Landing Zones (CLZ) for Air Cushioned Landing Craft (LCAC) Support
 - Tactical: Route and Area
- **Enhanced Vehicle and Personnel Survivability**

Leverage Big Army Investments

Emphasize in USMC Plans



Questions?





Land Mine Countermeasures S&T Efforts That Might Address Current Gaps

- **Detection:**
 - § **Passive Electromagnetic (EM) Technologies to Detect Infrared (IR), Millimeter Wave, and Microwave Emissions**
 - § **Active EM Technologies to Include Gamma Ray Imaging, X-ray Backscatter, Microwave Enhanced IR, Radar, and Magnetic Induction**
 - § **Acoustic/Seismic Technologies**
 - § **Explosive Vapor Technologies including Biosensors and Chemical Sensors**
- **Breaching:** **Mechanical Displacement, Explosives, Acoustic/Seismic/Magnetic Signature Duplication, Robotics, Explosives and Explosive Warheads**
- **Clearance:** **Mechanical and Erosion Mine and Overburden Removal, Mechanical Clearance and Destruction, Explosives, and Robotic Technologies**
- **Proofing:** **Mechanical, Signature Duplication and Low False Alarm Detection Techniques.**
- **Marking:** **Visual, Electromagnetic and Mechanical**