Current and Future MIW Systems

Brief to:
NDIA
Mine Warfare in 21st Century Expeditionary Operations

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AGENDA

- PEO LCS MIW Objectives
- Legacy vs. LCS Based Mine Countermeasures
- MIW Modernization
- MCM MP Systems Rapid Acquisition Concept
- MCM MP Incremental Delivery
- MCM MP T&E Status
- MIW & MCM MP Status

PEO LCS Objectives – MIW

- MIW is our most complex and challenging mission area within PEO LCS
- PEO LCS is committed to supporting and improving our existing systems to the end of their projected service lives
- We are equally committed to the revolutionary approach taken by the LCS Mine Countermeasures Mission Package

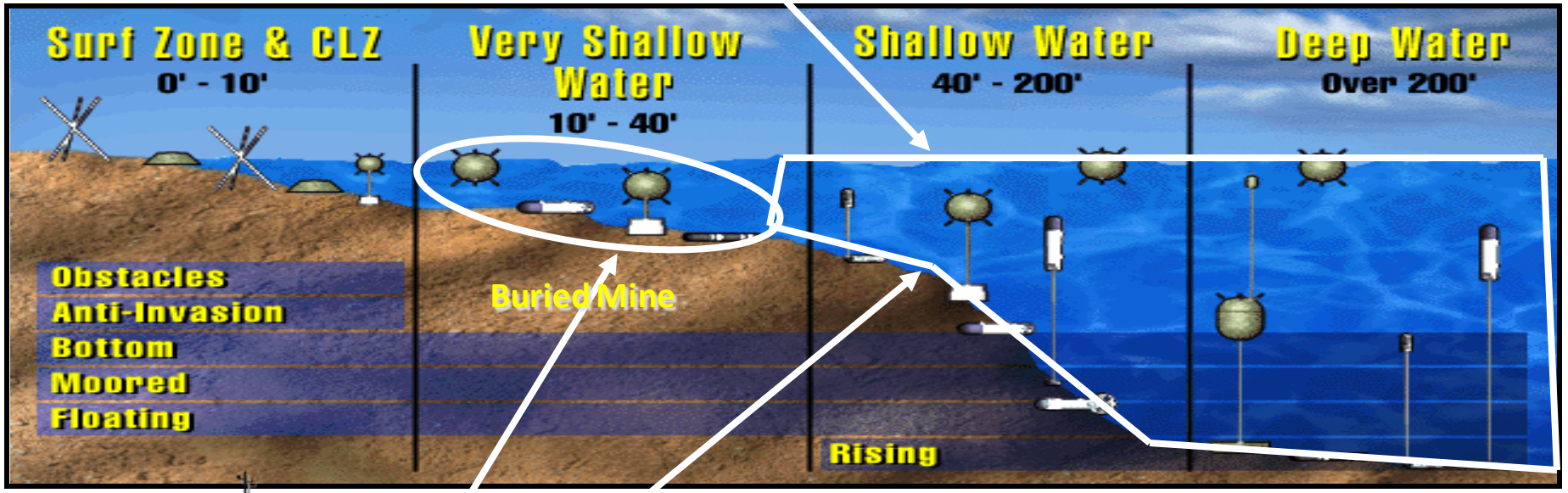
Legacy MCM Capabilities

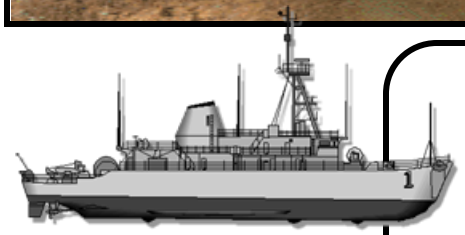
MH-53E

MK105 Mod4

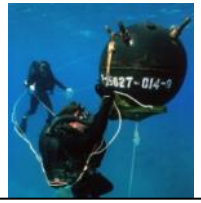
AN/AQS-24A

AN/ASQ-232





MCM Class Ship



EOD MU DET

AN/SLQ-48

AN/SLQ-37/38

AN/SQQ-32

Future MCM Capabilities

Minefield Detection and Neutralization

Assault Breaching System

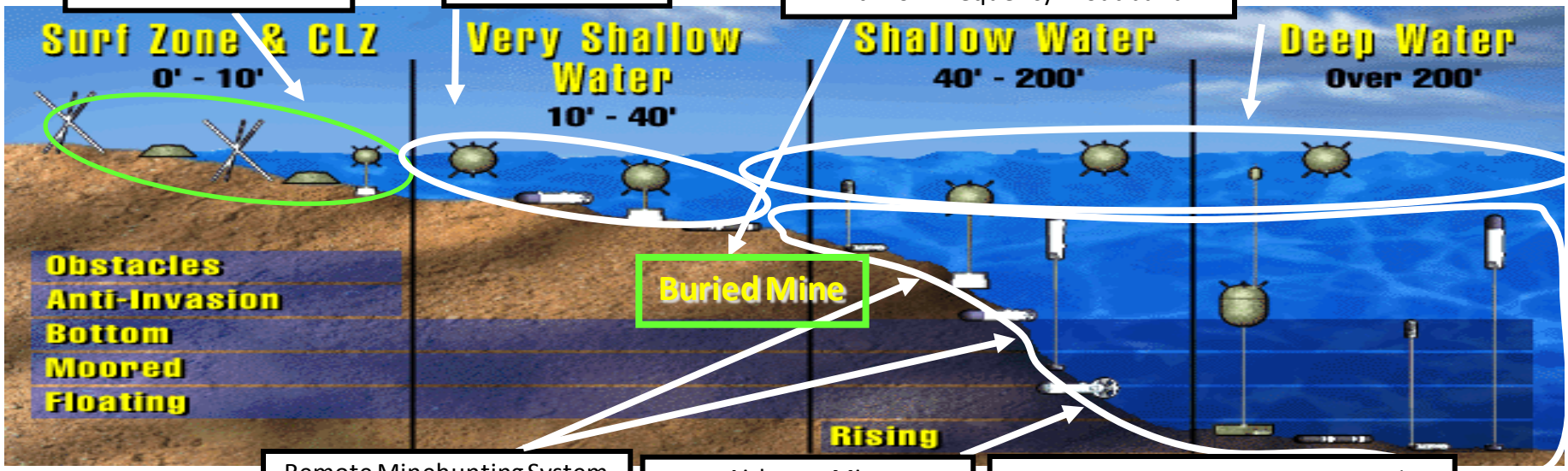
EOD MU DET

Buried Mine Detection

Surface Mine Countermeasures Unmanned Underwater Vehicle with Low Frequency Broadband

Laser (Hunt)

Airborne Laser Mine Detection System



Remote Minehunting System & MH-60S AN/AQS-20A

Buried Mine Detection | Sonar (Hunt)

Airborne Mine Neutralization System

Propelled explosive charges (Kill)

Unmanned Surface Sweep System / Organic Airborne and Surface Influence Sweep

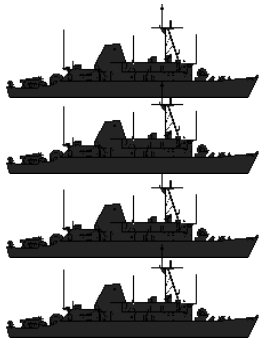
Magnetic/Acoustic Influence Sweep

Legacy vs. LCS Based Mine Countermeasures

Current Fleet
Mine Countermeasures Capability

LHD (Large Deck Amphibious Ship)

MCM Ship Class (4)



LSD (Amphibious Ship) w/ EOD & Marine Mammal Systems

Manpower ~ 2,300 Sailors

LCS
No Ships in the Minefield

LCS w/
MCM Mission Package

LCS - General Dynamics w/ MH-60S

LCS - Lockheed Martin w/ MH-60S

Manpower ~ 390 Sailors

Mine Warfare Combat Systems Modernization

- AN/SQQ-32(V)4 Installation on MCM 5 completed February 2012; Installation on MCM 7 completed June 2012

- AN/AQS-24B- Contract awarded February 2012 for AN/AQS-24B High Speed Synthetic Aperture Sonar (HSSAS); Preliminary Design Review (PDR) conducted 29 August 2012

- Surface Mine Neutralization System – SEAFOX (SMNS- SF)

MCM MP Rapid Acquisition Concept

- Use of Open Architecture principles and practices
  - Government-defined, modular, open system architecture common to all mission modules
  - Standardized, publicly-available, non-proprietary interfaces
  - Government controls all requirements, interfaces, and specifications
    - No Lead System Integrator
    - Interface Control Document (ICD) governs seaframe-mission module interface
    - Navy/Industry, cross-functional Mission System & Ship Integration Team (MSSIT) resolves mission module to Seaframe interface and integration issues
    - Change Control Board (CCB) evaluates and approves all proposed configuration changes
  - Complete, validated TDP with appropriate data rights; no vendor "lock-in"
  - Compete development and production of common components individually
    - Maximize opportunities for small businesses and new entrants
- Flexibility in selection of mission systems and underlying technologies
  - Evolutionary acquisition at a pace driven by approved requirements
  - Field mission systems only when cost, schedule, and technical factors align
  - Rapidly replace systems that are no longer effective and/or sustainable
  - Competitive prototyping of candidate components and mission systems
  - Collaboration with Industry, ONR, academia, FFRDCs, and other program offices

MCM MP Capabilities

FY14 | FY15 | FY17 | FY19

Increment I

Rapid Minehunting & Clearing

Organic Airborne Mine Countermeasures Module


ALMDS


MH-60s


AMNS

Sustained Minehunting

Remote Minehunting Module


RMMV




AQS-20As


RMMV

Replaces Legacy Minehunting and Neutralization Capabilities
Removes ships from the minefield
Improves Clearance Speed/Endurance

Increment II

Beach Zone Detection

Coastal Mine Reconnaissance Module


VTUAV


COBRA Block I

Fills Current Capability Gaps

Increment III

Near Surface Neutralization

Organic Airborne Mine Countermeasures Module


AMNS Inc II

Sustained Influence Sweep

Influence Mine Sweep Module


USV

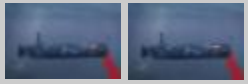

USSS

Replaces Legacy Minesweeping Capabilities and Adds Capacity

Increment IV

Buried Mine Detection

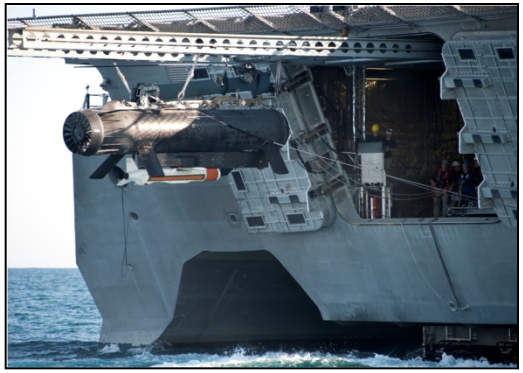
Unmanned Undersea Module


Knifefish UUV

Fills Current Capability Gaps

LCS Mission Modules
T&E Strategy – Phased Approach

- Overall approach to testing MPs is to utilize a crawl/walk/run methodology
  - Crawl: Individual mission systems or components are tested
  - Walk: Complete mission module or several systems will be integrated and tested on shore or a surrogate ship using subject matter experts (SMEs) and draft operations manuals
  - Run: Mission modules are integrated with the ship's systems and operated by mixed crews of MP Detachments and SMEs from the developing laboratory
- Guidance and coordination from LCS MM T&E Flag Oversight Board (OSB) and T&E Program Manager (PM) Steering Group
- Testing will be conducted on both seaframe types
- Successfully executing a phased approach of shipboard testing
  - MCM MP: Developmental Testing (DT) (Phase 3) completed August 2012 on USS Independence (LCS 2)



RMMV Launch, Handling, and Recovery

MCM Detachment supporting MCM DT

MH-60S integration testing with OAMCM Systems

MCM MP Increment I Testing

- DT-B2 Phase II
  - Completed on USS Independence (LCS 2) on 15 March 2012
  - Spent a total of 36 days at sea conducting test events
  - Preliminary Results
    - Conducted all components of shallow and deep water mine hunting scenarios (from planning to neutralization); Proved MCM capability from the Littoral Combat Ship
    - Characterized Launch, Handling, and Recovery (LH&R) of the RMMV in Sea State 2
      - Completed 12 LH&R Cycles (to include night operations)
    - Validated line-of-sight and over-the-horizon communication with the RMMV
    - Completed multiple MH-60S sorties with ALMDS, AN/AQS-20A, and AMNS
    - Completed simultaneous RMS and MH-60S sorties
    - By end of testing, the MCM MP Detachment and Seaframe Crew executed all mine hunting missions
  - Test Report expected September 2012
- DT-B2 Phase III
  - Completed on LCS 2 on 3 August 2012
    - Characterized dynamic wake field properties
    - Validated LH&R procedural changes
    - Evaluated RMMV capture spine and control software modifications

MCM MP – Planned Testing

- 3QFY13-4QFY13: Dual RMMV control test on LCS-2
  - Dual RMMV control
  - OPTEMPO with multiple offboard organic vehicles
  - LH&R risk mitigation
  - Multi-vehicle communications system (MVCS) with RMMV 4.2
- 2QFY14: OAMCM Phase B Operational Assessments and DT/IT
  - Complete on-hull OA for OAMCM and MH-60S
  - Complete scenario based missions in prep for TECHEVAL/IOT&E
- FY14: TECHEVAL and IOT&E

LCS & MCM MP – Status

MCM MP

- Two (2) MCM MPs delivered (2007/2009)
- Two deliveries pending (MCM MP #3 – Q2 FY13 ; MCM MP #4 – Q4 FY13)
- MCM MP DT Phase 3 completed 3 August 2012 on-board LCS-2 (West Coast) - test report will be released by 30 September 2012
- The program is executing the remaining phases of DT as planned, and is on track to begin TECHEVAL and IOT&E in FY14

LEGACY MIW

- Seafox will be installed aboard three MCM's, GLADIATOR, SENTRY and DEXTROUS over the next 6 months
- High Frequency Wide Band Sonar (AN/SQQ-32(V)4) Operational Advantage – MCM 5 débuted HFWB during MINEOP Exercise with the Japanese and had great success. Sonar crew was amazed with the performance.

QUESTIONS?