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The Future of Airborne Mine Countermeasures

Prepared For:
Mine Warfare Association

The implicit intra-service distinctions within the Navy provide an extensive, fine structured, hierarchical pecking order from top to bottom. At the pinnacle of this structure, since World War II, has been carrier-based fighter aviation. At…the bottom is mine warfare.

-Carl Builder,
Masks of War

Sailing Direction

- **Former CNO Greenert's vision for mine countermeasures has shaped the discussion over the last several years:**
  - Remove the man from the minefield
  - Pursue advanced technologies
    - ✓ Cheaper
    - ✓ Faster
    - ✓ More reliable
    - ✓ More capable
  - Transition from legacy to future systems as rapidly as possible
- **MCM Vision**
  - Reduce MCM timelines for Combatant Commanders
  - Reduce risk from sea mines to allow Joint Force mission execution
  - Integrate new and evolving technologies into the Littoral Combat Ship to fill capability gaps
- **Naval Aviation Vision 2025 draft language**

MH-53E Sea Dragon: "…current plans involve transitioning the MH-53E airborne mine countermeasures capability to the Littoral Combat Ship Mine Countermeasures Mission Package, which includes the MH-60S and various unmanned airborne, surface and subsurface vehicles. Though the Navy has not yet identified a replacement for the MH-53E's heavy lift capability, the CMV-22 will assume its vertical onboard delivery mission beginning in 2020."

Where we are today with Dedicated Airborne Mine Countermeasures

- **28 MH-53E helicopters in the inventory**
  - Current inventory is below the ROC/POE requirement of 29 aircraft
- **Fleet Squadrons**
  - **HM-14 located in Norfolk, VA**
    - 10 MH-53E assigned
    - 450 personnel (Active and Reserve)
  - **HM-15 located in Norfolk, VA**
    - 13 MH-53E assigned
    - 550 personnel (Active and Reserve)
- **Forward Deployed Detachments**
  - **HM-15 Manama, Bahrain**
    - 4 MH-53E deployed
  - **HM-14 Pohang, S. Korea**
    - 3 MH-53E deployed
- **Fleet Replacement Squadron**
  - **HM-12 (re-established 01 Oct 2015)**
    - 5 MH-53E assigned

MH-53E Community Initiatives

❑ Organizational

- ROC/POE rewritten to reflect enduring mission of forward deployed detachments
- Squadron Manning Documents (SQMD) rewritten to include requisite billet increase
- Reinstitute the Community Systems Safety Working Group (SSWG)
- Establishment of HM-12 as the FRS (01 Oct 2015)

❑ Training

- Standardized and improved Heavy Lift planning procedures
- Renewed Emphasis on Mountain Flying training
- Revised Community Air Combat Training Curriculum (ACTC) to align with mainstream rotary-wing aviation
- Developed HM-focused Sea Combat Weapons and Tactics Program (aligned with mainstream rotary wing aviation)

❑ Manpower

- Funded 80 additional squadron maintenance billets through normal budgeting process
- Targeted community detailing to ensure best NEC reutilization

❑ Specific actions to improve maintenance process and procedures

- Support overseas detachments with a rotation of dedicated phase maintenance crew from CONUS
- Contract Field Teams onsite to augment squadron-level maintenance/ increased TECHREP availability
- Deployed Pack-Up Kit inventory reviewed and high priority parts inventory increased

MH-53E Community Investments

❑ 2012-2016 Funded Programs

- Integrated Maintenance Diagnostics System (IMDS) completion
- KAPTON Wiring Installation Completion (complete at the end of CY15)
- T64 Engine Reliability Improvement Program (ERIP)
- AFCS Computer Risk Reduction (obsolete circuit boards)
- AFCS Test Set Development
- Improved Engine Nacelles
- Community Manpower Increase (80 additional billets)
- Critical Avionics Upgrade

❑ POM17 (Pre-decisional)

- Fully fund FRS and Fleet Manpower requirement
- H-53E Series PRL Increase (targeted $4.2 M increase)
- Procure additional support equipment

Significant investments will continue to be made to ensure capability through 2025

MH-53E Legacy AMCM Systems

❑ Influence Sweep Systems

- AN/SPU-1W (Magnetic orange Pipe)
- Mk-104 Acoustic Sweep System
- Mk-105 Magnetic Sweep System

❑ Mechanical Sweep System

- Mk-103 (Mk-17 cutters)

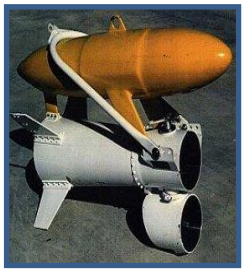
❑ Neutralization System

- AN/ASQ-232 SEAFOX Airborne Mine Neutralization System
  - POR in 2014
  - Systems deployed in C5F with limited training assets in NORVA and Panama City

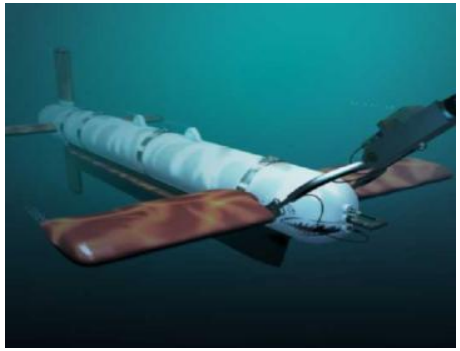
❑ Mine Hunting

- AN/AQS-24A Side Scan Sonar with Laser detection/ID capability
- Future Upgrades include:
  - Q-24B – Technical refresh of the Q-24A which addresses obsolescence and reliability issues and adds High Speed Synthetic Aperture Sonar (HSSAS) side scan arrays
    - Expected fielding of 10 systems to HM-15 Det 2 in 4QFY16 (12 systems procured)
  - Q-24C – Provides expanded volume search capability to B-variant through the addition of iPUMA sonar to the tail of the towed body
    - Expected fielding in 4QFY18 (only 12 systems procured)

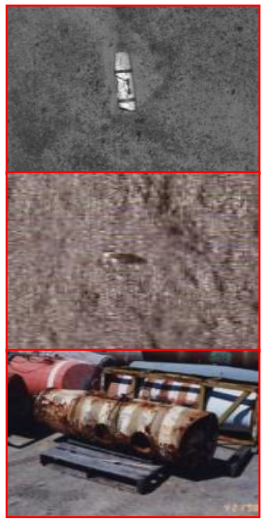
Legacy AMCM Systems

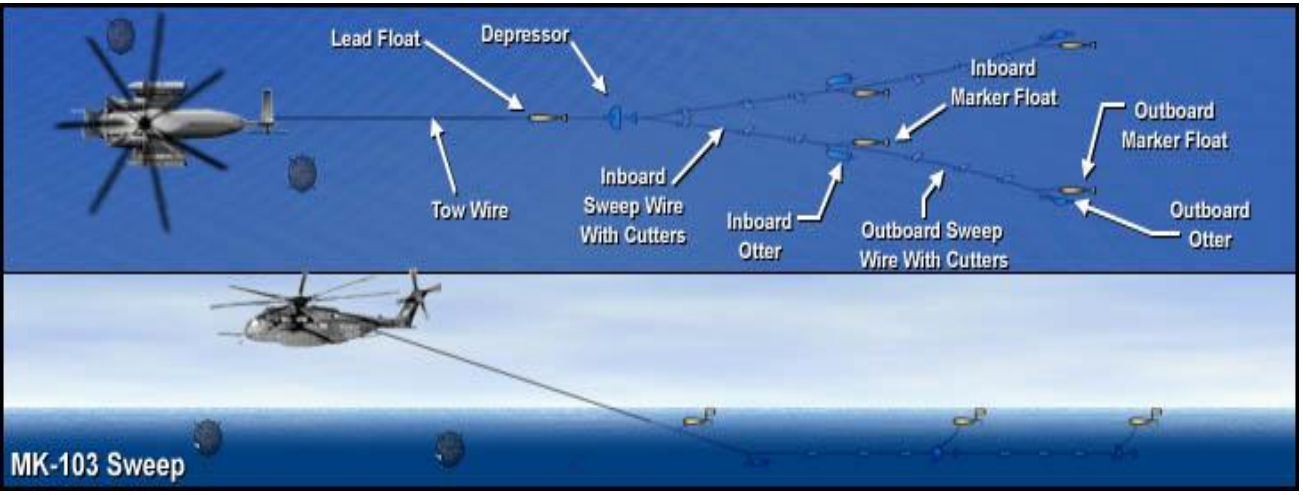


MOP, MK-104, and MK-105 Influence Sweeps



Q-24 Side Scan Sonar





MK-103 Mechanical Sweep

Sea Fox Neutralization

Legacy to Future Mine Countermeasures

- **MH-53E sundown corresponds with the LCS MCM mission package reaching full operational capability, expected NLT 2025.**
  - A sundown path was established back in the late 1990's with Organic Airborne Mine Countermeasures (OAMCM)
  - OAMCM proof of concept deployment was expected in 2005
  - MH-53E was extended in service due to slow OAMCM system development
  - The original sundown path was not feasible. Sundown is now tied directly to LCS MCM MP reaching FOC

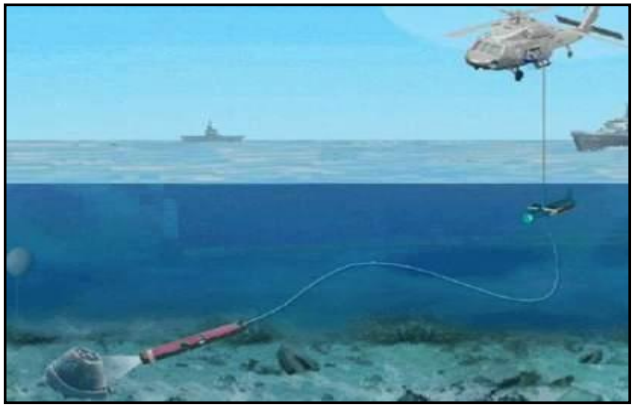
- **AMCM mission will be assumed by the Littoral Combat Ship (LCS), MH-60S and various unmanned surface, airborne, and underwater systems**
  - First operational LCS MCM MP deployment slated for FY19

- **LCS expected to reach FOC in 2024-2025.**
  - Future MCM system performance, capability, and capacity will ultimately determine the MH-53E sundown path

The NAE is committed to ensuring a viable MH-53E capability through 2025

MH-60S Airborne Mine Countermeasures Systems

- **ARCHERFISH Airborne Mine Neutralization System (AMNS)**
  - System successfully demonstrated its capability over the last two years on the MH-60S Seahawk
  - Reliability/robustness issues with the fiber optic cables must be overcome
- Tech Eval results exceeded KPPs
  - IOT&E from 17 Nov 2015-15 Jan 2016 (tentative)
- Systems are expected to IOC 2QFY16
  - HSCWINGPAC is sourcing the first LCS deployments and will determine which squadrons deploy as part of the Mission Package
  - West coast Wing Weapons School has the lead on developing training syllabus, currently in-work
- **BARRACUDA AMNS**
  - Future development project
  - Neutralization capability for near surface, drifting and in volume mines
  - Proposed replacement for ARCHERFISH



MH-60S Airborne Mine Countermeasures Systems

- **Airborne Laser Mine Detection System (ALMDS)**
  - Initial proof of concept deployment in C5F in Fall of 2014 with HSC-26 Detachment
  - System shows promise but issues must be overcome
    - Reliability
    - False contact rate

- Expected to meet LCS MCM MP KPP for Area Coverage Rate Sustained (ACRS)
  - IOT&E from 17 Nov 2015-15 Jan 2016 (tentative)
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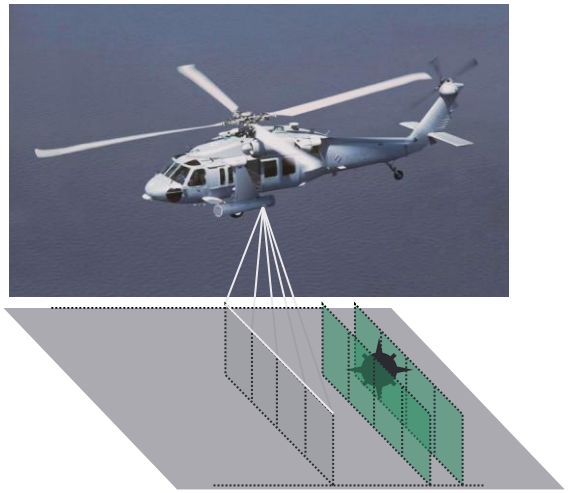

Future AMCM CONEMPS

- **The MH-60S is an integrated component of the LCS MCM Mission Package**
  - Part of a “Family of Systems” approach to MCM
  - Legacy AMCM capability fully transitioned to future systems in 2025

- **Mine Countermeasures Mission Package for the LCS incorporates one MH-60S and one MQ-8 (series) as airborne assets**
  - Primary MH-60S AMCM systems will include ALMDS and ARCHERFISH
  - 1-aircraft detachments sourced from expeditionary HSC squadrons
  - One MQ-8B/C with Coastal Battlefield Reconnaissance and Analysis (COBRA) will be organic to the HSC detachment

As the Navy transitions from legacy to future systems, aviation assets will continue to play a large role in the Mine Countermeasures fight.