

U.S. Navy Mine Warfare Programs



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CAPTAIN Danielle George
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16 January 2020



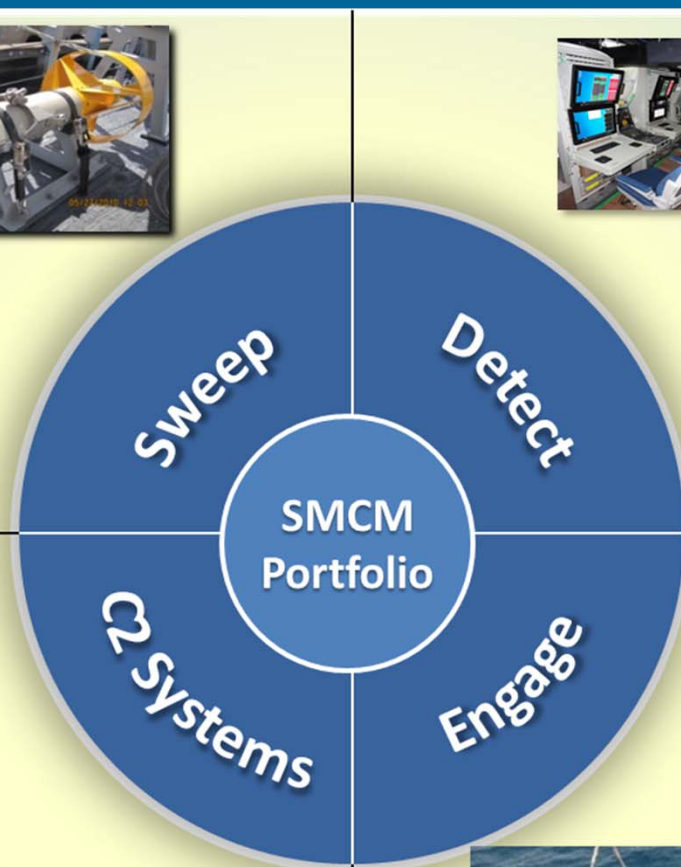
PMS 495 Program Portfolio



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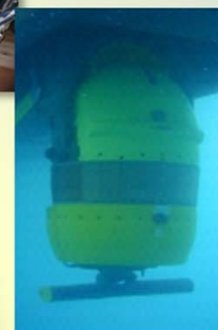
Current Surface MCM (SMCM) Systems MCM-1 Class Ships



AN/SLQ-37/38 Minesweeping System



AAG/IAAG



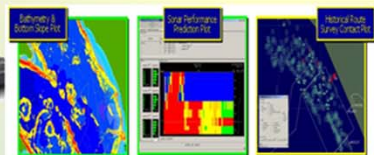
AN/SQQ-32 (V)4
MSS/ VDS



OK-520 Winch



AN/SSN-2(V)5 PINS



MEDAL



AN/SLQ-48 MNS



AN/SLQ-60 SeaFox MNS



SMCM Legacy Systems Highlights



- **AN/SLQ-37/38 Minesweeping Systems**
 - Utilizing forward deployed Mobile Cable Repair Units to sustain mine sweeping capabilities to end of service life
- **AN/SLQ-48 Mine Neutralization System (MNS)**
 - Maintaining the readiness of this legacy neutralization system at all time highs through Fleet support events and overhaul and reconditioning programs
- **AN/SLQ-60 SeaFox MNS**
 - Delivering new and refurbished neutralizer rounds to the Fleet
 - Delivered the SeaFox Simulator to the Fleet in 2019 to increase operator proficiency
- **AN/SSQ-94 Mine Countermeasures Simulator (MCS)**
 - All MCM ships upgraded with the AN/SQQ-94(V)4 MCS in 2019 bringing improved CIC training capability to the Fleet
- **AN/SQQ-32(V)4 Sonar**
 - All MCM ships upgraded with the AN/SQQ-32 (V)4 Through The Sensor (TTS) software upgrade to optimize sonar performance during minehunting
- **AN/SSN-2(V)5 PINS**
 - Conducting a tech refresh and software upgrade on the legacy PINS system to sustain the system through the end of MCM-1 service life



AN/SLQ-37/38



AN/SLQ-48 MNV



AN/SLQ-60 SeaFox
Neutralizer



AN/SSQ-94 Trainer



SQQ-32(V)4 Sonar

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Current Airborne MCM (AMCM) Platforms



MK-104 Mod 3



MK-105 Mod 4



MK-103 Mod 2



AN/SPU-1/W



AN/AQS-24B



Precision Navigation System (PNS)



Sweep

Detect

C2 Systems

Engage

AMCM Portfolio

AN/ASQ-232A





AMCM Legacy Systems Highlights



- **AQS-24B High Speed Synthetic Aperture Sonar**
 - High resolution acoustic imagery
 - Fielded to MH-53E squadrons in 2017, excellent availability and reliability
 - Over 700 hours towed in 2019



- **AQS-24C Volume Search Sonar**
 - Provides rapid detection of moored mines
 - Production contract awarded to Northrop Grumman. First 2 delivered 06/2018
 - Fielding to fleet in 2020



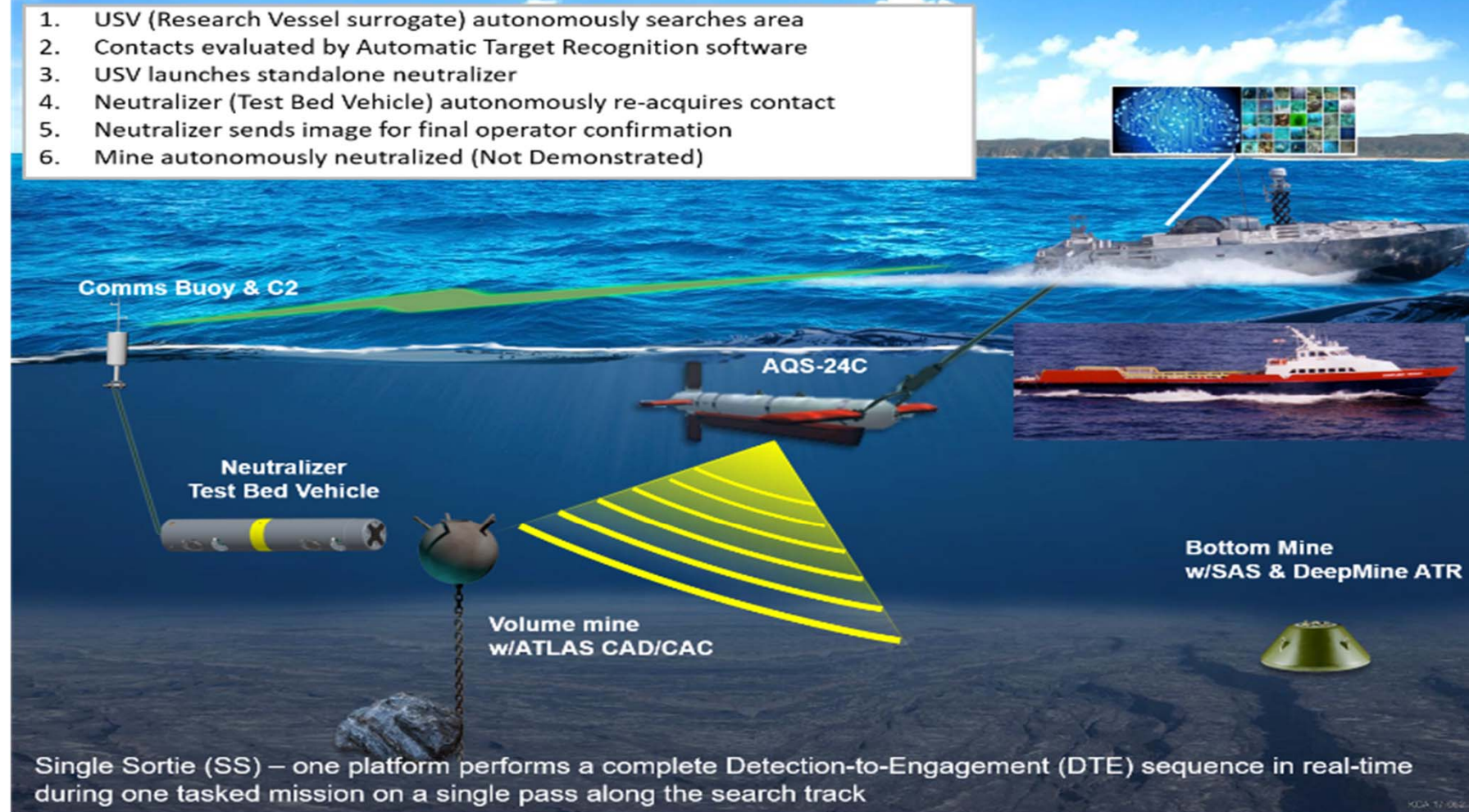
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Single Sortie Detect to Engage

SSDTE Demonstration (Phase I): NSWC Panama City – July 2019

1. USV (Research Vessel surrogate) autonomously searches area
2. Contacts evaluated by Automatic Target Recognition software
3. USV launches standalone neutralizer
4. Neutralizer (Test Bed Vehicle) autonomously re-acquires contact
5. Neutralizer sends image for final operator confirmation
6. Mine autonomously neutralized (Not Demonstrated)



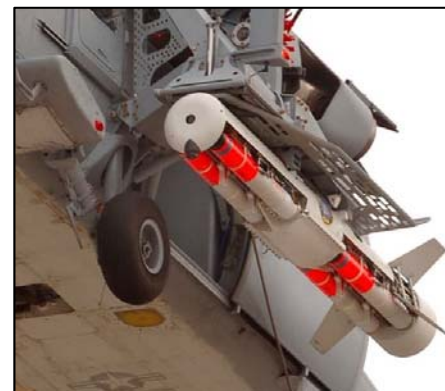
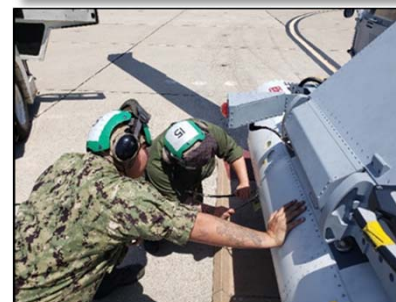
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AMCM LCS MP & VOO Systems Highlights



- **Coastal Battlefield Reconnaissance and Analysis System (COBRA) (AN-DVS-1) Block I**
 - Two COBRA systems delivered in 2019, six additional systems on contract for delivery in 2021/2022
 - Completed COBRA Block I -3A CT4 Flight Test at Eglin AFB to collect data in new environments against previously untested targets for insertion into the COBRA Algorithm Development Set
- **Airborne Laser Mine Detection System (ALMDS) (AN/AES-1)/ Airborne Mine Neutralization System–Archerfish (AMNS) (AN/ASQ-235)**
 - Provided on-site technical and tactical support during the following exercises in FY19:
 - Royal Fleet Auxiliary's *Mounts Bay* and ESB Vessel of Opportunities (VOO)
 - BALTOPS
 - HSC-21 Unit Level Training
 - HSC-28 Unit Level Training (Savage Ice)
 - Planned FY20 exercises:
 - HSC-28 MIW HARP Assessment participation (Norfolk / Key West) – 2QFY20.
 - HSC-28 BALTOPS with MK 64s (live) – 3QFY20.
 - HSC-21 RIMPAC with MK 64s (live) – 4QFY20



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Barracuda Program Highlights



Barracuda provides a low-cost mine clearance capability in an A-size sonobuoy diameter form factor for near surface mine neutralization.

- Mission: Provide rapid reacquisition, identification, and neutralization capability against near surface sea mines
- Employment: Semi-autonomous capability launched from the MCM USV and hosted by LCS MCM MP or other platforms of opportunity.



Barracuda, Major Subassemblies for Assembly Operations



Program Status

- Milestone B and Contract Award to Raytheon- April 2018
- SRR/SFR and PDR conducted in FY19
- Currently commencing Detail Design of Neutralizer Vehicle

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Maritime Mining

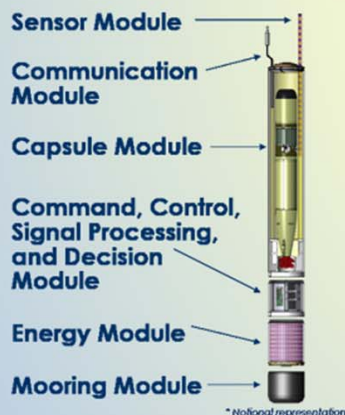


Quickstrike Joint Direct Attack Munition (JDAM)



Quickstrike Extended Range (ER)

Hammerhead



Clandestine Delivered Mine (CDM) MK 68



MK 62



MK 63



MK 65

Quickstrike



Submarine Launched Mobile Mine (SLMM) MK 67

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Mines Highlights



- **Quickstrike MK 62/MK63/MK65**
 - Continued development of Safe and Arm Device MK 75 with Sechan Electronics
- **Quickstrike Joint Direct Attack Munition (JDAM)/Quickstrike Extended Range (ER)**
 - Aerial Delivery Improvement: increased standoff, precision safety
 - Operational Demonstration #2 conducted 3QFY19
- **Clandestine Delivered Mine (CDM)**
 - Conducting prototype testing
 - Qualification testing to be completed in FY20
 - Initial delivery by end of FY20
- **Hammerhead**
 - New Program-started in 2018
 - Prepositioned, encapsulated torpedo
 - Modular architecture approach to allow for future technology insertions
 - Request For Information released in December 2019
 - Release of Prototyping Proposal planned in FY20



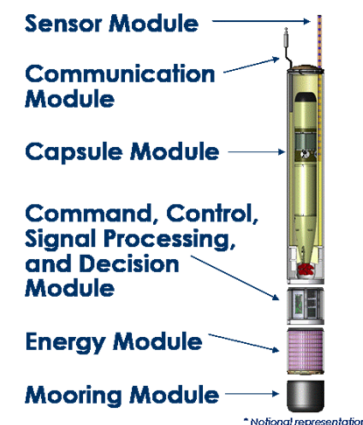
Valiant Shield '18



Quickstrike ER



Clandestine Delivered Mine (CDM)



Hammerhead

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QUESTIONS?

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