U.S. Navy Mine Warfare Programs

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PMS 495 Program Portfolio

Detect | Sweep | Neutralize | Command and Control | Mine

ALMDS | COBRA | MK-103 | MK-104 | MK-105

AQS-24B | AQS-24C | AAG/IAAG | AN/SLQ-38 | AN/SLQ-37 (V)4 Strike

SQQ-32V (4) HFWB | AN/SPU-1/W MOP | AN/SLQ-48 | Hammerhead | CDM

AN/SLQ-60 SeaFox | AN/SLQ-48 | AN/SQ-232A SeaFox | Barracuda | Quickstrike (JDAM)

AN/SQ-235 A rc herfish | Quickstrike Extended Range | Quickstrike Mod 3

PNS | MEDAL EA | Slmm | NsaM | OPMA | MOC

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ACCELERATE | INNOVATE | DELIVER
Current Surface MCM (SMCM) Systems
MCM-1 Class Ships

Sweep
AAG/IAAG
AN/SLQ-37/38 Minesweeping System

Detect
OK-520 Winch
AN/SQQ-32 (V)4 MSS/ VDS

C2 Systems
AN/SSN-2(V)5 PINS

Engage
AN/SLQ-48 MNS
AN/SLQ-60 SeaFox MNS

SMCM Portfolio
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
Current Airborne MCM (AMCM) Platforms

- MK-104 Mod 3
- MK-105 Mod 4
- MK-103 Mod 2
- AN/AQS-24B
- AN/SPU-1/W
- Precision Navigation System (PNS)
- AN/ASQ-232A

AMCM Portfolio

- Sweep
- Detect
- C2 Systems
- Engage
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
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)

Single Sortie (SS) – one platform performs a complete Detection-to-Engagement (DTE) sequence in real-time during one tasked mission on a single pass along the search track

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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

  – 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) – 2Q FY20.
    – HSC-28 BALTOPS with MK 64s (live) – 3Q FY20.
    – HSC-21 RIMPAC with MK 64s (live) – 4Q FY20
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.

**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**
Maritime Mining

Quickstrike Joint Direct Attack Munition (JDAM)
Quickstrike Extended Range (ER)

Aerial Delivered Mines

In-Development

Hammerhead
Sensor Module
Communication Module
Capsule Module
Command, Control, Signal Processing, and Decision Module
Energy Module
Mooring Module

Clandestinely Delivered Mines

Clandestine Delivered Mine (CDM) MK 68

In-Service

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 3Q FY19

- **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

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