LCS Mission Modules Program Update Navy League 2016 Sea-Air-Space Exposition

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LCS Mission Modules

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Littoral Combat Ship Mission Modules

- **Surface Warfare Mission Package (SUW MP) is mature**
  - Achieved Initial Operational Capability (IOC) on USS Freedom variant in 2014
  - Achieved IOC on USS Independence variant in 2015
  - Adding anti-Fast Inshore Attack Craft (FIAC) missile capability is current focus

- **Mine Countermeasures Mission Package (MCM MP) completed TECHEVAL on USS Independence (LCS 2) in AUG 2015**
  - Exceeded requirement for percent clearance and met requirement for ACRS
  - Remote Minehunting Module reliability and availability not satisfactory
  - RMMV Independent Review Team (IRT) concluded, will result in program adjustments
  - Later increments increase capability through the water column

- **Anti-Submarine Warfare Mission Package (ASW MP) demonstration in 2014 highlighted significant capability of systems**
  - Focus is weight reduction and maturing overall system

- **Production rates are carefully balanced to support test and planned deployments**

- **Mission package logistic concept of operation is mature and supporting overseas deployment now**

Tactical Mission Modularity Provides:
Operational Versatility <u>and</u> Low-cost Technology Refresh

SUW MP – Status

- **Increment 1 & 2: Gun Mission Module (GMM) and Maritime Security Module (MSM)**

  – Completed IOT&E in APR 2014 on USS Forth Worth (LCS 3); Achieved IOC in NOV 2014

  – Completed Phase I of IOT&E in SEP 2015 on USS Coronado (LCS 4)

  – On track to complete Phase II of IOT&E in Q3 FY2016 (incorporates ship cybersecurity improvements)

- **Increment 3: Surface-to-Surface Missile Module (SSMM) and Vertical Take-off Unmanned Air Vehicle**

  – Will provide missile engagement capability against Fast Inshore Attack Craft (FIAC)

  – Longbow Hellfire missile testing in progress

  – On track to complete the development, integration, and testing of SSMM in FY17

Completed IOT&E on USS Coronado (LCS 4) in SEP 2015

Deployed an SUW MP on USS Fort Worth (LCS 3) to Singapore in SEP 2015 for its first U.S. 7th Fleet deployment

Successfully completed SSMM Guided Test Vehicle (GTV) testing in 2015; Final GTV event planned for JUL 2016 prior conducting shipboard testing in FY17

MCM MP - Capabilities

Mine Threat	Detect/Classify	Identify	Neutralize
Beach/Surf Zone — RMMV issues do not affect COBRA mission	**Beach Zone Detection** — VTUAV, COBRA Block I; *then add:* Surf Zone Detection — COBRA Block II	Accomplished by Other Forces (Not LCS Requirement)	Accomplished by Other Forces (Not LCS Requirement)
Near Surface — RMMV issues do not affect ALMDS mission	**Near Surface Detection** — ALMDS, MH-60s	Expeditionary MCM (Until Barracuda) → Near Surface Neutralization — Barracuda	Expeditionary MCM (Until Barracuda) → Near Surface Neutralization — Barracuda
Volume	**Bottom & Volume Minehunting** — RMMV, AQS-20A — *Current RMMVs Used as Transition* / RMMV impacts Sonar Minehunting / **IRT Recommendation** — USV, AQS, Knifefish UUV	**Airborne Mine Neutralization** — AMNS, MH-60s / Knifefish UUV / **Bottom & Volume Minehunting** — RMMV, AQS-20A → USV, AQS — *Current RMMVs Used as Transition*	**Airborne Mine Neutralization** — AMNS, MH-60s **+** **Sustained Influence Sweep** — UISS = USV + USSS / RMMV issues do not affect AMNS or UISS mission
Bottom			
Buried	**Buried Mine Detection** — Knifefish UUV	**Buried Mine Detection** — Knifefish UUV	**Tested in TECHEVAL** — ⭕ Performed well ⭕ Unacceptable Reliability

➡ *Transition as Additional LCS Capability Fielded*

Increments aren't Serial – they _add capability_ in the Water Column and in the Detect-to-Engage Sequence

MCM MP – Status

- **Near Surface Detection, Volume & Bottom Minehunting & Neutralization – RMMV, AN/AQS-20, ALMDS, & AMNS**
  - Completed MCM MP TECHEVAL in Aug 2015 on USS Independence (LCS 2)
    - ➢ Exceeded requirement for percent clearance and met requirement for ACRS
    - ➢ Remote Minehunting Module (RMMV with AN/AQS-20 sonar) reliability and availability not satisfactory
  - Significant programmatic changes to the MCM mission area based on Independent Review Team recommendations

- **Future Capabilities**
  - Beach Zone Mine Detection: Plan to conduct pier-side and shipboard testing of COBRA with the MQ-8B Firescout and deliver this capability in FY2017
  - Sustained Influence Sweep: Plan to deliver the Unmanned Influence Sweep System (Common-Unmanned Surface Vehicle with Unmanned Sustained Sweep System) in FY2018
  - Buried/Bottom Minehunting: Plan to deliver the Knifefish Unmanned Underwater Vehicle (UUV) in FY2019 (investigating potential to accelerate schedule)
  - Near Surface Mine Detection: Plan to deliver the Barracuda system in the FY2022/2023 timeframe

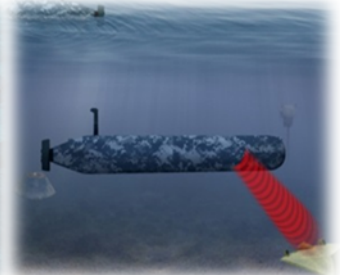| MH-60S helicopter en-route to conduct an AMNS mission during TECHEVAL | Mission Bay preparation to deploy ALMDS for ops during TECHEVAL | MCM Det Unloading AN/AQS-20 during TECHEVAL | C-USV with Influence Sweep System | Knifefish UUV |

MCM MP - Summary of Tasking Resulting from Independent Review Team (IRT) Efforts

IRT Recommendation Highlights

- Halt RMMV LRIP-2 buy and address deficiencies

- Pursue promising technologies for MCM

- Experiment with MCM capability from LCS and craft of opportunity (COOP)

- Deploy MCM MP Inc. 1 on LCS 2 in FY18

- Assess USV, RMMV, and UUV technology for MCM MP

- Execute testing to support MCM MP IOC in (FY19/FY20)

- Establish IPT at the OPNAV level for MIW

- Evaluate organizational change options within PEO LCS

CNO / RDA Memo Highlights

- Joint Implementation Plan to

  ➢ Coordinate experimentation, technology maturation, CONOPS, CONEMP, and Industry/Fleet Engagement

- Plan to include:

  ➢ Clear stakeholder alignment of responsibility and authority

  ➢ Concept development and testing

  ➢ Employment of ExMCM Co from LCS and other Navy platforms

  ➢ Deployment of MCM MP with RMMV for operational experience

  ➢ Fleet assessment of candidate systems (RMMV, USV, and, UUV)

  ➢ Cost and budgetary actions

- Establish Governance Board

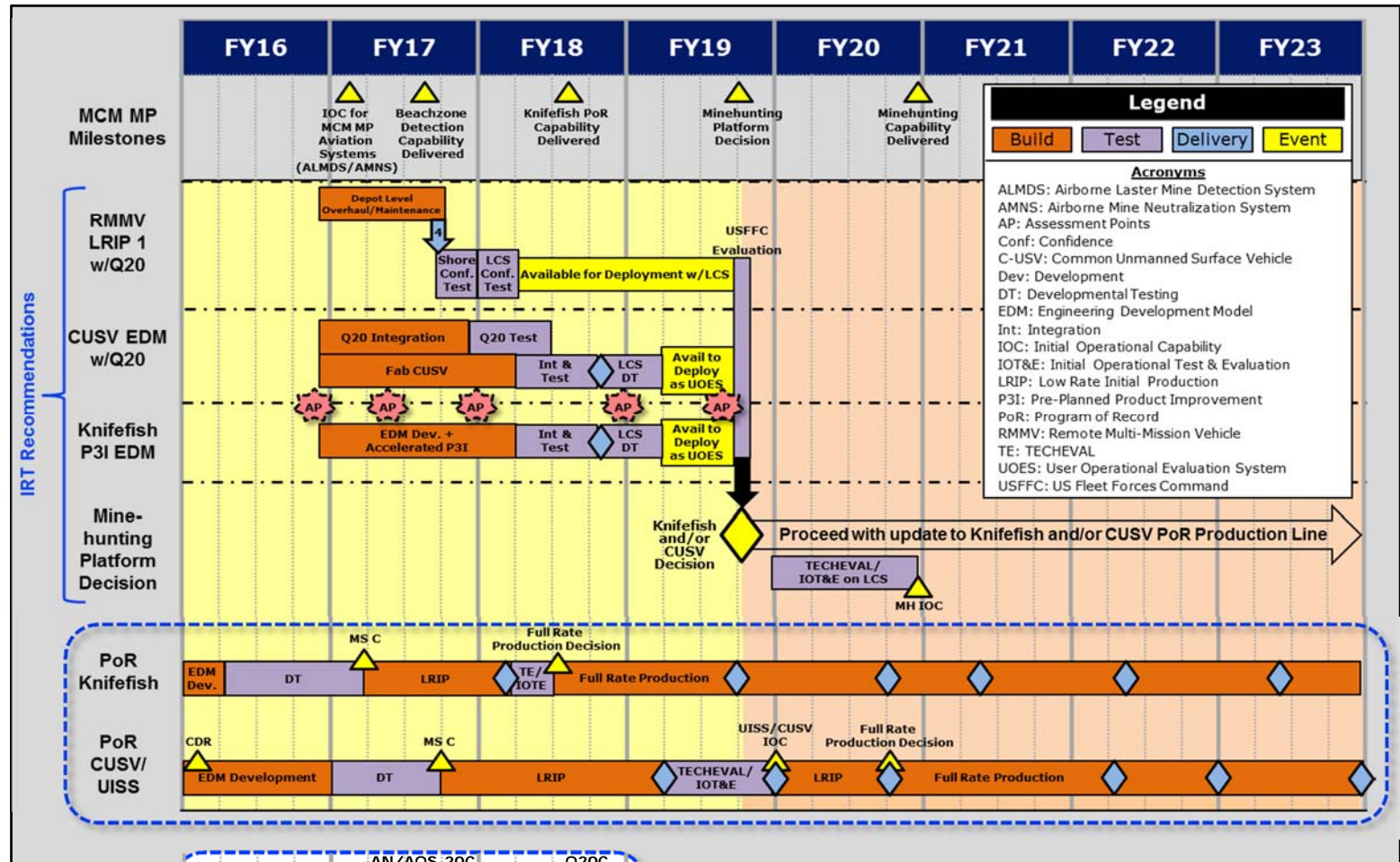# MCM MP – Path to Minehunting Decision in FY19

Provide RMMV LRIP 1 as a transition capability to support FY18/19 deployment

Adapt C-USV to tow sonar and Expand role of Knifefish in full volume minehunting

Set LCS MCM MP configuration based on testing, experimentation, and Fleet Assessment

Continue with Knifefish and UISS (with C-USV) PoR's to provide sweep and buried/bottom minehunting capability as planned

Performance of both AQS-20 and AQS-24 sonar evaluated prior to Minehunting Platform Decision

Summary
- Path defined for minehunting platform assessment and decision in FY19; IOC in FY20/21
- RMMV's will support transition deployments
- Experimentation and Fleet Assessment leveraged

ASW MP - Status

- **ASW MP Advanced Development Model (ADM) successfully demonstrated in SEP 2014 on USS Freedom (LCS 1)**
  - Demonstrated significant passive and active capability
  - Completed critical ship integration testing

- **Weight reduction efforts and software integration are next focus leading to operational testing**
  - Successfully completed modification of stern doors (Dutch Doors) on USS Freedom (LCS 1) to support testing
  - Engineering development contract awarded to three companies on 20 JUL 2015
    - ➢ Objective is to achieve weight reduction of the Escort Mission Module (EMM) (15% - 25% reduction) while meeting established performance, reliability, safety and operability requirements
    - ➢ On track to award Phase II of the contract in Q3 FY2016

- **Initial Operational Capability projected for FY2018, subject to ship availability and operational requirements**

Significant passive/active capability demonstrated during SEP 2014 testing on LCS 1

Questions?