U. S. Coast Guard Missions

**Maritime Safety**
- Search and Rescue
- International Ice Patrol

**Maritime Mobility**
- Lightering Zone Enforcement
- Foreign Vessel Inspection

**Maritime Security**
- Drug Interdiction
- General Enforcement of Laws and Treaties
- Alien Migrant Interdiction

**National Defense**
- Homeland Security
- General Defense Operations
- Maritime Interception Operations
- Military Environmental Defense Operations
- Port Operations, Security, & Defense
- Peacetime Military Engagement

**Protection of Natural Resources**
- Marine Pollution Enforcement & Response
- Living Marine Resource Enforcement
- Coastal Sea Control
Integrated Deepwater System (IDS) Acquisition Program

• **System of Systems** Procurement – Goal: Optimize Operational Effectiveness (OE) and Total Ownership Cost (TOC)

• Awarded in June ‘02 to *Integrated Coast Guard Systems* (Joint Venture – Lockheed Martin and Northrop Grumman)

• Four **Domains**
  – * Surface  * Air
  – * C4ISR  * Logistics

• Multiple **Assets** (e.g. Cutters, Aircraft, Small Boats, Shore Facilities) deployed over 25 years

• Focus on COTS/CANDI
System Solution – Assets

Maritime Patrol Aircraft (MPA) 35
High Altitude Endurance UAV 7
HC-130 6

VTOL Unmanned Air Vehicle (UAV) 69
VTOL Recovery and Surveillance Aircraft 34
Multi-Mission Cutter Helicopter 93

Maritime Security Cutter Medium (WMSM) 25

Modified 123’ Patrol Boat 49

Fast Response Cutter (FRC) 58
Short Range Prosecutor 82

Long Range Interceptor 42

Maritime Security Cutter Large (WMSL) 8
System of Systems at Year 5

- Fully Interoperable C4ISR Network-Centric Architecture
- Low Risk Transition to Full Capability
The Surface Assets

- **New Cutters Designed With Mission and Capability Growth**
- **Provisions for Interchangeable Mission Modules to Enhance Flexibility Tailored to Missions**
- **Stern Ramps on All Cutters and Upgraded Patrol Boats Enhance Small Boat Launch and Recovery Operations With Less Crew**
- **Dramatically Improved Habitability Features Include 2/4 Person Staterooms, Fitness Centers, Lounges, and Learning Centers**

- 49 123’ Patrol Boats
- 58 Fast Response Cutters
- 8 National Security Cutters
- 42 Long Range Interceptors
- 25 Offshore Patrol Cutters
- 82 Short Range Prosecutors
Surface Capabilities

**Communications**
- Automated Comms Systems
- Software Radios (Combine HF/VHF/UHF)
- Military SATCOM
- Enhanced Dual INMARSAT-B (256 kbps)
- Wireless Internal Comms
- Data Links
- SIPRNET/CGDN+
- Cryptological Devices

**Sensors**
- Air Search Radar 3D-Air Search
- SPS-73 Surface/Nav Radar
- Fire Control Radar
- IFF
- Electronic Surveillance Measures
- Electro Optic/Infrared

**Weapons**
- 57mm Gun
- 30mm Gun
- 50cal Guns
- Decoy System

**Integrated C2**
- Integrated Bridge System
- Common C2 System
- Multi-Operational Consoles
- C2 Local Area Network
- Local Tactical Picture
- Common Tactical Picture
- Common Operational Picture (COP)
The Aviation Story

**Capability Improvements**

- All Aviation Assets Include Night/All-weather Capability With Radar and EO/IR Sensors
- Increased Communications and Common Operating Picture Capability
- MPA and VUAV Introduced in First Five Years Support Early Retirement of High-Cost-to-Operate Legacy Aircraft

**Time (Year)**

02 05 10 15 20

**Effectiveness**

- HC-235
- AB-139
- RQ-4A
- MCH
- HV-911

**Notional Curve**

- RPs

**6 Long Range Surveillance**

- 35 Maritime Patrol Aircraft

**93 Multi-mission Cutter Helicopter**

- 34 VTOL Recovery and Surveillance Aircraft

**7 High Altitude Endurance**

- 69 VTOL Unmanned Air Vehicle
Aviation Capabilities

**Communications**
- Military SATCOM
- INMARSAT-B
- COMSATCOM
- HF/VHF/UHF radios
- Tactical Data Links
- SIPRNET & CGDN+
- Crypto Devices

**Sensors**
- Surface/Air/Weather/ISAR radars
- (Near Future - Multi-Mode Radar)
- Radio Direction Finding
- Electro-Optical / Infrared
- Night Vision Goggles

**Integrated C2**
- Common C2 System
- Multi-Operational Consoles
- Local Tactical Picture
- Common Tactical Picture

New C2 and Sensors on MCH are Common With The VRS

Range Endurance Allows Operation from Only 2 Sites

MPA Features a Palletized Fully Integrated Tactical System

VRS is Shipboard Deployable on The NSC, OPC, and Major Legacy Cutters

Each NSC or OPC Carries Up to 4 VUAVs
The C4ISR Capability

Common Command and Control Systems is Fully Integrated With All Sensors, Communications, and Legacy Interfaces

Interoperability and Maritime Domain Awareness Established by IDS Assets and National Sources

Imbedded Technical Refresh to Obviate Future Obsolescence

Early Increased Situational Awareness, Surveillance, and Command is Provided through a Common Operating Picture to Answer Homeland Security Requirements
Manpower and ILS Enhancements

- *Capability Improvements*
  - Increased Automation Reducing Operator Workload, Training Requirements, and Enables Condition-based Monitoring
  - Integrated Product Data Environment (IPDE) Maintains a Single, Authoritative Data Set Program-wide for Program Performance and Metrics
  - Equipment Selection, Sparing, and Training Based on RMA Improves Readiness, Availability, and Supports System Response Reducing Operating Expenses

---

**Increased Automation and State-of-the-Art Technology, Decreased Manpower Requirements and Reduced Total Ownership Cost**

- Asset Introduction Training
- Condition-Based Maintenance
- Personal Digital Assistant (PDA) Maintenance Support
- Modernization and Technology Insertion
- Computer-Based Training
CONOPS Summary

1 HAEUAV Wide Area Surveillance
2 MPA Prosecution
3 NSC Interoperability
4 Multi Asset Operation
5 Over-the-Horizon Operations
6 Shore-based Command Center
Test Methodology

- Incremental blocks from the bottom up
- Common testing architecture and integration of test efforts
- Capitalize on other sources and pre-existing data
- Extensive use of M&S
- Mission/capabilities based testing (operationally relevant DT)
Operational and Test Environment
Challenges

• **Resource and schedule constraints**
  – Access to assets
  – Expense of real world testing
  – Training of users
  – Trade-offs

• **Data for M&S**
  – More
  – Better

• **Translation of COTS manuals and manufacturing data into usable products**

• **Phased implementation**

• **Stovepiping**

• **Complex C4ISR integration issues**
Current Developments and Lessons Learned

- Slight lag to technology curve not all bad!
- Assumption of risk is inevitable, take educated risk
- Look to other sources for test data
  - QA
  - Certification
  - Production
- Technology Refreshment Plan
- Force structure and testing must be capability based
- Technology isn’t limited to equipment
Conclusion

- Proven technology may be preferable to leading edge technology where test and training dollars are both precious and scarce
- Operational environment will change quicker than we think in ways we don’t expect – our focus must be to field effective capabilities/assets to operate within it. Good M&S programs can greatly aid our decision processes.
- M&S is a multi-dimensional tool which supports:
  - Battlespace Operations
  - Acquisition Decisions
  - Mission Effectiveness Measures
- A common and integrated testing architecture is required
- POC: Mr. Walt Dickey, Director, T&E (G-DPM-1) for any questions: (571) 218-3287; wdickey@comdt.uscg.mil
INTEGRATED DEEPWATER SYSTEM

Check us out:  www.uscg.mil/deepwater