Agenda

• **Family of Systems Overview**

• **STUAS/Tier II**
  – System Description
  – Requirements Overview
  – Acquisition Strategy

• **VTUAV**
  – System Overview
  – System Description
  – Air Vehicle Performance
  – Payload Spiral Integration
  – Initial Weapon Selection Criteria
Naval UAS Family of Systems

Family of Systems
- Interoperable
- Affordable
- Commonality in:
  - Software
  - Parts
  - Training
  - Interfaces

Navy UCAS Demo
USN

Navy UCAS
USN

Global Hawk Maritime Demo
USN

BAMS
USN

VTUAV
USN

VUAS AoA
USMC

Competitive Joint Tier II / STUAS

Enablers
- Open/Scalable Systems
- Standardized Interfaces
- Total Force Strategy

Increasing Reach, C2 Integration, & Complexity

Approved for Public Release; Distribution Unlimited. Per PEO (W) Release Authorization #07-0235
System Description

• Small, organic, high duration UAS that operates runway independent for ground and maritime ISR missions. (10 hours+)

• 1 system = 1 ground control station, 3 airframes, 3 payloads and ground support equipment.

• Current payload set = EO/IR, comm relay, selected INT payloads.

• Ground control station integrated with Navy and USMC C2 systems in later spirals.

• Remote terminal included for “disadvantaged user”. Interoperable w/ ROVER III/OSRVT and others in later spirals.
Requirements Overview

• Proposed IOC FY 10

• ICD Approved Jan 2007; includes SOCOM, USAF, USMC, and USN Requirements

• AoA underway; estimated completion Aug 2007. USMC will maintain lead, PEO(W) & NAVAIR 4.10 will participate.

• CDD will establish capability requirements, including any needed incremental/spiral approach.
  – Potential need for min development, OTS/NDI acquisition strategy to meet initial IOC requirement.

• Follow on system capabilities to be defined per spiral/incremental acquisition approach. Definition of follow-on spirals
  – Increment 0 – off-the-shelf.
  – Increment 1 – C2 integration, comm relay, heavy fuel engine.
  – Increment 2 – payload enhancement.
Acquisition Approach

- Combined single acquisition program for USN and USMC requirement
- N86: USN resource sponsor, Command Element: USMC resource sponsor
- ACAT III Program
  - PEO(W) is the MDA.
- PMA 263 – Program Lead
  - MarCorSysCom personnel assisting with MAGTF C2 integration.
- Full and Open competition for Baseline System for minimum development OTS/NDI system. Grow capability at planned increments after initial fielding.
- MS B targeted for FY 08
- IOC – FY 10
  - Desire to phase out current USMC and USN ISR services contracts.
VTUAV System Overview
VTUAV System Description

Fully Autonomous Air Vehicle

- Fully Digital, Dual Redundant Control System
- Based on Schweizer 333 Commercial Helicopter

Brite Star II EO/IR Laser Designation/Range Finder Payload

- Collect imagery
- Relative range and LOS to target for precision target coordinates
- Laser designate target on command
VTUAV System Description
Ancillary Equipment

Fully Encrypted, Digital Data Links

- Tactical Common Data Link (TCDL)
  - Air Vehicle Command and Control
  - Imagery and data downlink
- 3 ARC-210 UHF/VHF Radios integrated on Air Vehicle provide control and Communications Relay Capability

Interoperable Ground Control Station with Tactical Control System (TCS) software integrated

- GCCS-M, JDISS, AFATDS, CCTV & JSIPS-N
- NATO STANAG 4586 Compliant
- Multi-Vehicle control
- Open Architecture

Designed for both Land and Sea Based Operations

- UCARS-V2 for Ship Launch/Recovery
- NATO-standard Pressure Refueling (JP-5, 8)
- Harpoon and Grid Ship Deck Restraint
MQ-8B Air Vehicle Performance

• Service Ceiling – 20,000’
• Airspeed - >80 knots
  – Currently 107 knots
• Combat Radius – 110nm with 5 hour loiter
• All Weather Day/Night capable
  – Certified lighting system
  – Ambient air temperatures ranging from –29C to +50C
  – Operate in precipitation measuring 1.5 inch per hour for one hour
  – Capable of detecting and transiting through light icing conditions
  – Protected from and resistant to degrading effects of sand, dust and salt laden air
• Electromagnetic Environmental Effects Qualified
  – Shipboard and land based environments
VTUAV Payload Spiral Integration

Current FY-07/08

- BRITE Star II
  - EO/IR/LDRF
  - COBRA
  - Coastal Battlefield Reconnaissance and Analysis Block I, II & III

Block I

- RADAR
  - Maritime Multi-Mode Radar
  - Weapons
  - Precision Weapons

- AIS
  - Ship Based IFF
  - JTF WARNET
  - Data Relay

Future

- CVLWT
  - Compact Very Light Weight Torpedo
  - Specialty Payloads
    - Chem/Bio/Nuclear Detect
    - Homeland Security
    - EW/SIGINT

Modular Payload Architecture

- Swap Payloads between missions (Load & Go)
- System recognizes payload and automatically loads software module
- Easily accommodate new payloads via defined interface specifications and open architecture
- Minor control changes to HW/SW on Air Vehicle and GCS for new payloads
Initial Weapons Selection Criteria

- **Weapon Weight < 250lbs**
  - Weight of weapon is a tradeoff with usable fuel which equates to range/time on station
  - Low cost/sufficiently lethal weapons typically lightweight

- **Precision Guidance or Projectiles**

- **Warhead applicable to Fast Attack Craft threat**

- **In Production or Final Stage Development**

- **Qualitative assessment between the types of weapons to select the “best” candidate for integration.**
  - Integration Complexity (launcher, software control, Operator/Mission Control)
  - Stable Flight Dynamics of Air Vehicle
  - Standoff Range/Off-axis Shot / Fire Scout Survivability
  - Shipboard Considerations (build-up, storage, certification)
Questions?