| Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy | | | | | | | | | | DATE: February 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | | | | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | | | | | | | |
| **COST ($ in Millions)** | **FY 2010** | **FY 2011** | **FY 2012 Base** | **FY 2012 OCO** | **FY 2012 Total** | **FY 2013** | **FY 2014** | **FY 2015** | **FY 2016** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 35.295 | 35.212 | 9.353 | - | 9.353 | 9.072 | 8.441 | 8.608 | 8.736 | Continuing | Continuing |
| 0117: *Reef Point* | - | 0.093 | - | - | - | - | - | - | - | 0.000 | 0.093 |
| 2478: *Tactical Control System* | 8.795 | 8.767 | 9.353 | - | 9.353 | 9.072 | 8.441 | 8.608 | 8.736 | Continuing | Continuing |
| 2501: *Medium Endurance Marinized UAS Technology Demonstration* | - | 26.352 | - | - | - | - | - | - | - | 0.000 | 26.352 |
| 3332: *CARGO UAS* | 26.500 | - | - | - | - | - | - | - | - | 0.000 | 26.500 |

**A. Mission Description and Budget Item Justification**

Tactical Unmanned Aerial Vehicle is a Joint Military Intelligence Program

This Program Element (PE) includes non-lethal joint tactical Unmanned Aerial Vehicle system support for DoD to provide the warfighters with the capability for day/ night aerial Reconnaissance, Surveillance and Target Acquisition, intelligence, communications/data relay, and minefield detection in limited adverse weather. This PE includes the Tactical Control System (TCS) which provides a multi-level, scalable, and flexible control of the air vehicles and payloads, as well as direct receipt of unmanned aerial vehicles imagery.

| B. Program Change Summary ($ in Millions) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 8.834 | 35.212 | 10.147 | - | 10.147 |
| Current President's Budget | 35.295 | 35.212 | 9.353 | - | 9.353 |
| Total Adjustments | 26.461 | - | -0.794 | - | -0.794 |
| • Congressional General Reductions | | - | | | |
| • Congressional Directed Reductions | | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | | - | | | |
| • Congressional Directed Transfers | | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Program Adjustments | 26.500 | - | -0.712 | - | -0.712 |
| • Section 219 Reprogramming | -0.039 | - | - | - | - |
| • Rate/Misc Adjustments | - | - | -0.082 | - | -0.082 |

| Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy | DATE: February 2011 |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* |

**Change Summary Explanation**

Schedule:
Tactical Control System (TCS):

All of the acquisition milestones listed below have been adjusted due to software and flight test delays:

- Initial Operational Capability moved from 2Q FY10 to 1Q FY12
- Completion of Operational Evaluation OT-C-1 moved from 2Q FY10 to 4Q FY11
- Completion of Engineering and Manufacturing Development moved from 2Q FY10 to 4Q FY11
- Completion of MQ-8 ECP Integration Test (title changed from Radar Sensor Integration) moved from 4Q FY11 to 1Q FY15
- Completion of LINUX Transition/LCS Integration moved from 3Q FY12 to 4Q FY12

The name of TCS 4.0 effort was updated from Enhanced Multi Vehicle Control to Service Oriented Architecture to show the updated alignment of the TCS program with OSD direction on commonality amongst UAS control systems architecture.

Technical:
Not Applicable

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | | DATE: February 2011 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>0117: *Reef Point* | |

| COST ($ in Millions) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0117: *Reef Point* | - | 0.093 | - | - | - | - | - | - | - | 0.000 | 0.093 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Note**

A new start project for FY11.

**A. Mission Description and Budget Item Justification**

The Reef Point Sonochute Unmanned Aerial Vehicle (UAV) will provide an expendable organic UAV that can be launched from a P-3/P-8 Sono Buoy Launcher to support the host aircraft by 1) extending its on-station time, 2) extending on-board sensor range and 3) affording a margin of crew and platform safety not currently available to Maritime Surveillance Aircraft community. The system supports the P-8A Multi-Mission Maritime Aircraft Adjunct Unmanned Aerial Vehicle requirement of level II UAV command and control (threshold) to provide real-time receipt of UAV sensor data via direct link as well as the objective goal for later production blocks of P-8A for Level IV UAV command and control to enable on-board command and control of UAVs operating as remote sensors and Command, Control, Communication, Computers and Intelligence, Surveillance and Reconnaisance collection. This system supports the P-8A design for deployable systems; which, accommodates for the stowage, control, and dispensing of various non-lethal expendables for use in search, localization, tracking, classification/identification tasks, for enhancing survivability, and for Search and Rescue. The system supports Naval missions such as Maritime Interdiction. Naval Air Warfare Center, Aircraft Division (NAWCAD) will support the systems engineering.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| ***Title:*** Engineering and Maintenance | - | 0.093 | - | - | - |
| ***Articles:*** | | 0 | | | |
| ***Description:*** Government Technical Engineering Support and travel. | | | | | |
| ***FY 2011 Plans:***<br>FY11 funds this new start effort to provide an expendable organic UAV that can be launched from a P-3/P-8 Sono Buoy Launcher. Funding will support government engineering support and related travel requirements. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | - | 0.093 | - | - | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>0117: *Reef Point* |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**D. Acquisition Strategy**

The project strategy is to develop and demonstrate an expendable organic sonochute launched UAV (SLUAV) for P-3/P-8 maritime missions. The demonstration project will support requirements developed and refined for input into the formal requirements Joint Capabilities Integration Development System process and documentation. NAWCAD will provide government engineering support and manage the demonstration effort using the developers of SLUAVs currently under contract.

**E. Performance Metrics**

Attainment of a sonochute launched expendable organic UAV for use on P-3/P-8 aircraft.

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | | DATE: February 2011 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2478: *Tactical Control System* | |

| COST ($ in Millions) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2478: *Tactical Control System* | 8.795 | 8.767 | 9.353 | - | 9.353 | 9.072 | 8.441 | 8.608 | 8.736 | Continuing | Continuing |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**A. Mission Description and Budget Item Justification**

This program supports the Tactical Control System (TCS), a standards-based system that provides interoperability and commonality for Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interfaces, and Command and Control of Naval Unmanned Aircraft Systems (UAS). Capability to provide Interoperability across the Naval UAS Family of Systems through use of TCS software operating on Ground Control Station hardware utilizing North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAG)-4586 architecture communicating across a Tactical Common Data Link.

TCS provides a full range of scalable UAS capabilities from passive receipt of air vehicle and payload data to full air vehicle and payload command and control. TCS offers the war fighter a common core operating environment to simultaneously receive, process, and disseminate data from different UAS types for reconnaissance, surveillance, and combat assessment.

This program supports enhancements and updates to TCS in order to continue to meet supported air vehicle enhancements, incorporation of new technologies that will be used to enhance overall system performance, incorporate new payloads and payload capabilities (such as advanced sensors and weapons), incorporate Multi-Vehicle Control, incorporate NATO STANAG-4586 and Command, Control, Communications, Computers and Intelligence enhancements, and alignment with OSD direction for UAS control segments.

TCS software will be incorporated into the MQ-8 Vertical Take-off and Landing Tactical Unmanned Air Vehicle (VTUAV) system, and will reach Initial Operational Capability in conjunction with MQ-8. TCS software addresses MQ-8 requirements validated by the Joint Requirements Oversight Council in the VTUAV Capability Production Document (May 2007). TCS software will be used to support the Medium Endurance Maritime UAS (MEMUAS) demonstration and will form the core control system for any future UAS program that starts from the demonstration. TCS and VTUAV Control Station will be modified to support the new Medium Range Maritime UAS program.

TCS maximizes the use of contractor and government off-the-shelf hardware and software whenever possible and incorporates software/hardware enhancements where appropriate to maintain growth potential and minimize hardware and operating system dependence. TCS software is interoperable, and is compliant with the OSD Command and Control, Communications, Intelligence Joint Technical Architecture, and Distributed Common Ground System standards, and NATO standards.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| ***Title:*** TCS Development and Integration | 7.631 | 7.924 | 8.592 | - | 8.592 |
| ***Articles:*** | 0 | 0 | 0 | | 0 |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2478: *Tactical Control System* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| ***FY 2010 Accomplishments:***<br>Continued TCS integration with MQ-8 development. Continued new TCS capabilities to support requirements for Littoral Combat Ship (LCS) integration. Continued TCS NATO STANAG-4586 compliance. Continued TCS C4ISR interface testing for MQ-8 systems. Continued hardware and operating system independence initiatives.<br>***FY 2011 Plans:***<br>Continue TCS integration with MQ-8 development. Continue new TCS capabilities to support requirements for LCS integration. Continue TCS NATO STANAG 4586 compliance. Continue TCS C4ISR interface testing for MQ-8 systems. Continue hardware and operating system independence initiatives. Start preliminary MRMUAS design.<br>***FY 2012 Base Plans:***<br>Continue TCS integration with MQ-8 development. Continue new TCS capabilities to support requirements for LCS integration. Continue TCS NATO STANAG 4586 compliance. Continue TCS C4ISR interface testing for MQ-8 systems. Continue hardware and operating system independence initiatives. Start modifications for UAS weapons control. Continue preliminary MRMUAS design studies. | | | | | |
| ***Title:*** Technical and Engineering Services | 1.164 | 0.843 | 0.761 | - | 0.761 |
| ***Articles:*** | 0 | 0 | 0 | | 0 |
| ***FY 2010 Accomplishments:***<br>Continued government engineering support, contractor support, program support, and travel for the TCS program.<br>***FY 2011 Plans:***<br>Continue government engineering support, contractor support, program support, and travel for the TCS program.<br>***FY 2012 Base Plans:***<br>Continue government engineering support, contractor support, program support, and travel for the TCS program. | | | | | |
| **Accomplishments/Planned Programs Subtotals** | 8.795 | 8.767 | 9.353 | - | 9.353 |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2478: *Tactical Control System* |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**D. Acquisition Strategy**

The TCS program is developing Government owned, non-proprietary software that supports multiple UAS control. The TCS program continues under the FY04 Congressionally-directed restructure of the program to focus on Navy requirements and standards based on interoperability. Navy requirements for TCS include supporting fielding of the Navy MQ-8 and MRMUAS aboard the LCS, FFG, DDG, the addition of plug-and-play payloads, and implementation of NATO Standardization Agreement for Standard Interfaces of Unmanned Aircraft Vehicle (UAV) Control System for NATO UAV Interoperability.

**E. Performance Metrics**

Successfully achieve Initial Operational Capability. Successfully complete Coastal Battlefield Reconnaissance and Analysis Integration. Support MQ-8 Engineering Change Proposal (ECP) Integrated test. Successfully complete LCS Ship Integration. Successfully complete Operational Test. Successfully complete MQ-8 Weapons Rapid Deployment Capability.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2478: *Tactical Control System* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary Software Development | C/CPAF | Raytheon:Falls Church,VA | 120.827 | 7.449 | Nov 2010 | 8.077 | Nov 2011 | - | | 8.077 | 0.000 | 136.353 | 136.525 |
| Award Fees | C/CPAF | Raytheon:Falls Church,VA | 9.631 | 0.475 | Jul 2011 | 0.515 | Jul 2012 | - | | 0.515 | 0.000 | 10.621 | 10.449 |
| | | **Subtotal** | 130.458 | 7.924 | | 8.592 | | - | | 8.592 | 0.000 | 146.974 | 146.974 |

**Remarks**

Awarded 85.6% of award fees in past award fee periods.

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Test and Evaluation | WR | Various:Various | 1.164 | 0.030 | Nov 2010 | 0.030 | Nov 2011 | - | | 0.030 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 1.164 | 0.030 | | 0.030 | | - | | 0.030 | | | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contractor Engineering Support | Various | Various:Various | 2.515 | 0.213 | Nov 2010 | 0.213 | Nov 2011 | - | | 0.213 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | Various:Various | 8.031 | 0.280 | Nov 2010 | 0.255 | Nov 2011 | - | | 0.255 | Continuing | Continuing | Continuing |
| Program Management Support | Various | Various:Various | 3.531 | 0.275 | Nov 2010 | 0.218 | Nov 2011 | - | | 0.218 | Continuing | Continuing | Continuing |
| Travel | WR | NAVAIR:PAXRV, MD | 0.188 | 0.045 | Oct 2010 | 0.045 | Oct 2011 | - | | 0.045 | Continuing | Continuing | Continuing |
| | | **Subtotal** | 14.265 | 0.813 | | 0.731 | | - | | 0.731 | | | |

**Remarks**

Travel Contract Type is TO.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy | | | DATE: February 2011 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2478: *Tactical Control System* | |

| | Total Prior Years Cost | FY 2011 | | FY 2012 Base | | FY 2012 OCO | | FY 2012 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 145.887 | 8.767 | | 9.353 | | - | | 9.353 | | | |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>2478: *Tactical Control System* |

| Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>2478: *Tactical Control System* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Tactical Control System*** | | | | |
| Acquisition Milestones: VTUAV Milestones: Initial Operational Capability (IOC) | 1 | 2012 | 1 | 2012 |
| Acquisition Milestones: VTUAV Milestones: Full Rate Production (FRP) | 2 | 2015 | 2 | 2015 |
| Acquisition Milestones: VTUAV Milestones: MQ-8 ECP Initial Operational Capability (IOC) | 1 | 2015 | 1 | 2015 |
| Acquisition Milestones: MRMUAS Milestones: MRMUAS MSA | 1 | 2013 | 1 | 2013 |
| Acquisition Milestones: MRMUAS Milestones: MRMUAS MSB | 2 | 2016 | 2 | 2016 |
| Systems Development: Engineering and Manufacturing Development: VTUAV | 1 | 2010 | 4 | 2011 |
| Systems Development: Engineering and Manufacturing Development: Coastal Battlefield Reconnaissance and Analysis (COBRA) Integration | 1 | 2010 | 4 | 2011 |
| Systems Development: Engineering and Manufacturing Development: MQ-8 ECP | 3 | 2011 | 1 | 2015 |
| Systems Development: Engineering and Manufacturing Development: Weapons | 3 | 2011 | 3 | 2012 |
| Systems Development: Engineering and Manufacturing Development: Payload, Obsolescence, Software Studies and Analysis | 1 | 2010 | 4 | 2016 |
| Reviews: MQ8 ECP: System Readiness Review | 4 | 2011 | 4 | 2011 |
| Reviews: MQ8 ECP: Preliminary Design Review | 2 | 2012 | 2 | 2012 |
| Reviews: MQ8 ECP: Critical Design Review | 3 | 2012 | 3 | 2012 |
| Reviews: MQ8 ECP: Military Utility Assessment | 3 | 2014 | 3 | 2014 |
| Reviews: WEAPONS: System Requirement Review | 3 | 2011 | 3 | 2011 |
| Reviews: WEAPONS: Preliminary Design Review | 3 | 2011 | 3 | 2011 |
| Reviews: WEAPONS: Critical Design Review | 4 | 2011 | 4 | 2011 |
| Reviews: WEAPONS: Quick Reaction Assessment | 3 | 2012 | 3 | 2012 |
| Reviews: MRMUAS: System Requirement Review | 3 | 2013 | 3 | 2013 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>2478: *Tactical Control System* |

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| Reviews: MRMUAS: System Functional Review | 2 | 2014 | 2 | 2014 |
| Reviews: MRMUAS: Preliminary Design Review | 1 | 2015 | 1 | 2015 |
| Reviews: MRMUAS: Critical Design Review | 1 | 2016 | 1 | 2016 |
| Test & Evaluation: Technical Evaluation: COBRA IT-D-1 | 3 | 2011 | 4 | 2011 |
| Test & Evaluation: Operational Evaluation: OT-C1 OPEVAL | 3 | 2011 | 4 | 2011 |
| Test & Evaluation: Operational Evaluation: LCS Integration | 1 | 2010 | 4 | 2012 |
| Production Milestones: Software Updates: TCS 3.0 | 1 | 2010 | 3 | 2012 |
| Production Milestones: Software Updates: TCS 4.0 | 2 | 2012 | 3 | 2015 |
| Production Milestones: Software Updates: TCS 5.0 | 2 | 2015 | 4 | 2016 |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | | DATE: February 2011 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2501: *Medium Endurance Marinized UAS Technology Demonstration* | |

| COST ($ in Millions) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2501: *Medium Endurance Marinized UAS Technology Demonstration* | - | 26.352 | - | - | - | - | - | - | - | 0.000 | 26.352 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Note**

A new start program for FY11.

**A. Mission Description and Budget Item Justification**

The Medium Endurance Marinized Unmanned Aircraft System (UAS) Technology Demonstration - This demonstration was going to evaluate medium endurance Vertical Take Off and Landing (VTOL) UAS at sea. On August 10, 2010 the CNO signed a Utilization Plan for FY11 Medium Endurance Maritime Unmanned Air System (MEMUAS) Demonstration funding in conjunction with the initiation of a new start Medium Range Maritime UAS (MRMUAS) follow-on program. MRMUAS will provide the long term capability for the Beyond Line of Sight SOF and Navy Missions. MRMUAS is a potential joint program with the Army.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| ***Title:*** Hardware and System Development<br>***Articles:***<br><br>***FY 2011 Plans:***<br>Commence planning and execution of an Analysis of Alternatives (AoA) for the MRMUAS program. Commence drafting of the MRMUAS Concept of Operations. Prepare and award up to five (5) studies and analysis contracts in support of MRMUAS concept refinement. Data received from these contracts will be used to support AoA analyses and drafting of initial Key Performance Parameters/Key System Attributes for the MRMUAS Capability Development Document. | - | 14.500<br>0 | - | - | - |
| ***Title:*** Engineering and Technical Services<br>***Articles:***<br><br>***FY 2011 Plans:***<br>Begin engineering management, program technical management, and management support. Begin preparation of Milestone A required documentation. Begin program office personnel travel and contract support services. | - | 11.852<br>0 | - | - | - |
| **Accomplishments/Planned Programs Subtotals** | - | 26.352 | - | - | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2501: *Medium Endurance Marinized UAS Technology Demonstration* |

**C. Other Program Funding Summary ($ in Millions)**

| Line Item | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • RDT&E, 0305237N: *Medium Range Maritime UAS* | 0.000 | 0.000 | 15.000 | 0.000 | 15.000 | 160.900 | 270.500 | 271.000 | 311.000 | Continuing | Continuing |

**D. Acquisition Strategy**

Conduct full and open competition for up to five (5) Trade Studies and analysis contracts. Initiated industry trade studies and AOA. Transition to MRMUAS PE 0305237N.

**E. Performance Metrics**

Successfully complete trade studies and analysis.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>2501: *Medium Endurance Marinized UAS Technology Demonstration* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analysis of Alternatives Support | SS/FFP | Systems Plan:Alexandria, VA | - | 2.000 | Apr 2011 | - | | - | | - | 0.000 | 2.000 | 10.900 |
| Analysis of Alternatives | WR | NAWCAD:Patuxent River, MD | - | 2.000 | Jan 2011 | - | | - | | - | 0.000 | 2.000 | |
| CONOPS Development | TBD | TBD:TBD | - | 0.500 | Mar 2011 | - | | - | | - | 0.000 | 0.500 | |
| Study Contracts (Up to 5) | TBD | TBD:TBD | - | 10.000 | May 2011 | - | | - | | - | 0.000 | 10.000 | |
| | | **Subtotal** | - | 14.500 | | - | | - | | - | 0.000 | 14.500 | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Government Engineering Support | WR | NAWCAD:Patuxent River, MD | - | 7.602 | Jan 2011 | - | | - | | - | 0.000 | 7.602 | |
| Program Management Support | WR | NAWCAD:Patuxent River, MD | - | 4.000 | Feb 2011 | - | | - | | - | 0.000 | 4.000 | |
| Travel | WR | NAVAIR:Patuxent River, MD | - | 0.250 | Jan 2011 | - | | - | | - | 0.000 | 0.250 | |
| | | **Subtotal** | - | 11.852 | | - | | - | | - | 0.000 | 11.852 | |

**Remarks**

Travel Contract Type is TO.

| | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 26.352 | | - | | - | | - | 0.000 | 26.352 | |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>2501: *Medium Endurance Marinized UAS Technology Demonstration* |

| Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>2501: *Medium Endurance Marinized UAS Technology Demonstration* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Medium Endurance Marinized UAS Technology Demonstration*** | | | | |
| Acquisition Milestones: Milestones: Gate 1 | 2 | 2011 | 2 | 2011 |
| Acquisition Milestones: Milestones: Material Development Decision (MDD) | 3 | 2011 | 3 | 2011 |
| Acquisition Milestones: Milestones: Gate 2 | 2 | 2012 | 2 | 2012 |
| Acquisition Milestones: Milestones: Gate 3A | 4 | 2012 | 4 | 2012 |
| System Engineering Development: Analysis of Alternatives: Analysis of Alternatives (AOA) | 2 | 2011 | 2 | 2012 |
| System Engineering Development: Concept Design Studies: Concept Design (CD) | 3 | 2011 | 4 | 2012 |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | | DATE: February 2011 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>3332: *CARGO UAS* | |

| COST ($ in Millions) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3332: *CARGO UAS* | 26.500 | - | - | - | - | - | - | - | - | 0.000 | 26.500 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Note**

CARGO UAS is funded under Program Element 0305204N Project Unit 3332, initiated upon receipt of FY10 Overseas Contingency Operations Supplemental Surge II funding in the amount of $26.5M, and a Special Operation Forces Rotary Wing Aviation Above Threshold Reprogramming of $25.0M (not reflected in FY10 total in this exhibit), for 4 proof of concept air vehicles, 6 Forward Operating Bases(FOB) Ground Control Stations, non-recurring engineering and testing efforts.

**A. Mission Description and Budget Item Justification**

The Cargo UAS will address the immediate Marine Corps need as described in the Joint Urgent Operational Needs Statement (CC-0375) for combat re-supply of remote FOBs without unnecessary risk to Marine Corps personnel or high volume logistics assets. This need has been filled by ground transportation (truck convoys) and with manned assault support cargo rotary wing assets. Both alternatives expose unnecessary risk to Marine Corps personnel, and impact the availability of the aviation assets for other combat support missions. The Cargo UAS service will apply to the deployed I Marine Expeditionary Force (I MEF), Forward, deployed in Afghanistan. The current concept of operations is to provide support from one Main Operating Base to three FOBs.

Current combat operations have highlighted the vulnerability and effectiveness of existing modes of resupply. To mitigate this threat, it is imperative that alternative methods to resupply remote Spokes (also called FOBs) be employed. A vertical lift Cargo UAS is required to augment existing resupply methods in Afghanistan and is required immediately to fulfill war fighter needs. Special Operations Command will monitor the program to help determine their future requirements.

A Cargo UAS is comprised of air vehicles, Ground Control Stations and associated spares and support equipment. The system will support the I MEF, Forward while operating from selected FOBs. The air vehicles and remote terminal control stations are procured by the government, and the Cargo UAS is operated as a Government Owned, Contractor Operated system.

The Cargo UAS was granted Rapid Deployment Capability (RDC) program status by the Assistant Secretary of the Navy for Research, Development and Acquisition on 17 May 2010. The RDC program designation number is to be assigned.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| ***Title:*** Hardware and System Development | 23.388 | - | - | - | - |
| ***Articles:*** | 4 | | | | |
| ***FY 2010 Accomplishments:*** | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>3332: *CARGO UAS* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total |
|---|---|---|---|---|---|
| Acquisition of fully compliant Immediate CARGO UAS for sustained operations in Operation Enduring Freedom. Procure 4 air vehicles and 6 FOB ground control stations. | | | | | |
| ***Title:*** Development Testing<br>***Articles:***<br>***FY 2010 Accomplishments:***<br>Component and flight testing in support of NAVAIR flight clearance. | 2.137<br>0 | - | - | - | - |
| ***Title:*** Engineering and Technical Services<br>***Articles:***<br>***FY 2010 Accomplishments:***<br>Reliability improvements and associated Non-recurring Engineering. Continued government engineering support, contractor support, program support, and travel for the CARGO UAS program. | 0.975<br>0 | - | - | - | - |
| **Accomplishments/Planned Programs Subtotals** | 26.500 | - | - | - | - |

**C. Other Program Funding Summary ($ in Millions)**

| Line Item | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO | FY 2012 Total | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • 0708018N: *Operations and Maintenance, Marine Corp* | 0.000 | 0.000 | 0.000 | 53.900 | 53.900 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 53.900 |
| • 1160482BB: *Special Operations Forces (SOF) Rotary Wing Aviation* | 25.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 25.000 |

**D. Acquisition Strategy**

Awarded two Firm Fixed Price Contracts and will down select to a single contractor for deployment. The deployment services are supported with O&M,MC OCO funding.

**E. Performance Metrics**

Cargo UAS Availability, Pounds of Cargo delivered per day.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>3332: *CARGO UAS* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary Hardware Development | C/FFP | Frontier Systems:Irvine, CA | 12.444 | - | | - | | - | | - | 0.000 | 12.444 | 41.000 |
| Primary Hardware Development | C/FFP | Lockheed Martin:Owego NY | 10.944 | - | | - | | - | | - | 0.000 | 10.944 | 10.944 |
| | | **Subtotal** | 23.388 | - | | - | | - | | - | 0.000 | 23.388 | 51.944 |

**Remarks**

FY10 Primary Hardware Development contracts will increase by $12.5M each, once the $25M SOF Rotary Wing Aviation Above Threshold Reprogramming is included in the controls.

**Test and Evaluation ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Test & Evaluation | Various | Various:Various | 2.137 | - | | - | | - | | - | 0.000 | 2.137 | 4.000 |
| | | **Subtotal** | 2.137 | - | | - | | - | | - | 0.000 | 2.137 | 4.000 |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2011 Cost | FY 2011 Award Date | FY 2012 Base Cost | FY 2012 Base Award Date | FY 2012 OCO Cost | FY 2012 OCO Award Date | FY 2012 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Program Management Support | WR | NAWCAD:Patuxent River, MD | 0.875 | - | | - | | - | | - | 0.000 | 0.875 | |
| Travel | WR | NAVAIR:Patuxent River, MD | 0.100 | - | | - | | - | | - | 0.000 | 0.100 | |
| | | **Subtotal** | 0.975 | - | | - | | - | | - | 0.000 | 0.975 | |

**Remarks**

Travel contract type is TO.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | PROJECT<br>3332: *CARGO UAS* |

| | Total Prior Years Cost | FY 2011 | | FY 2012 Base | | FY 2012 OCO | | FY 2012 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 26.500 | - | | - | | - | | - | 0.000 | 26.500 | |

**Remarks**

CARGO UAS is funded under Program Element 0305204N Project Unit 3332, initiated upon receipt of FY10 OCO Supplemental Surge II funding in the amount of $26.5M and a SOF Rotary Wing Aviation ATR of $25.0M for 4 proof of concept air vehicles, 6 FOB Ground Control Stations, non-recurring engineering and testing efforts.

| Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>3332: *CARGO UAS* |

| Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy | | DATE: February 2011 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0305204N: *Tactical Unmanned Aer Vehicles* | **PROJECT**<br>3332: *CARGO UAS* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***Proj 3332*** | | | | |
| Acquisition Milestones: Milestones: Milestone Decision Authority Decision | 4 | 2011 | 4 | 2011 |
| Acquisition Milestones: Milestones: Cargo Demo Contract Award | 1 | 2011 | 1 | 2011 |
| Acquisition Milestones: Milestones: Deploy (OM,MC Funded) | 1 | 2012 | 4 | 2012 |
| Systems Development: Engineering and Manufacturing Development: Non-recurring Engineering for System Improvements | 1 | 2011 | 4 | 2011 |
| Systems Development: Engineering and Manufacturing Development: Development | 1 | 2011 | 4 | 2011 |
| Test and Evaluation: Technical Evaluation: Test and Evaluation | 4 | 2011 | 4 | 2011 |
| Test and Evaluation: Technical Evaluation: Development Testing | 4 | 2011 | 4 | 2011 |
| Test and Evaluation: Operational Evaluation: Operational Testing | 4 | 2011 | 4 | 2011 |
| Production Milestones: Deliveries: 4 Air Vehicles (AV) | 4 | 2011 | 4 | 2011 |