| Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy | | | | | | | | | | DATE: February 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | | | | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | | | | | | | |
| **COST ($ in Millions)** | **FY 2011** | **FY 2012** | **FY 2013 Base** | **FY 2013 OCO** | **FY 2013 Total** | **FY 2014** | **FY 2015** | **FY 2016** | **FY 2017** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 27.321 | 1.739 | 15.695 | - | 15.695 | 39.885 | 55.572 | 27.969 | 58.573 | Continuing | Continuing |
| 0725: *Communication Automation* | 8.246 | 1.739 | 15.695 | - | 15.695 | 39.885 | 55.572 | 27.969 | 58.573 | Continuing | Continuing |
| 1083: *Shore To Ship Com System* | 19.075 | - | - | - | - | - | - | - | - | 0.000 | 19.075 |

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

The Communications Automation Program - This project is a continuing program that provides for automation and communications upgrades for fleet tactical users. It includes Battle Force Tactical Networks (BFTN) (formerly High Frequency Internet Protocol/Sub Network Relay), Maritime Aerial Layer Network (MALN) and Automated Digital Network System (ADNS).

MALN is the Navy solution set to support the Joint Aerial Layer Network (JALN) in accordance with the JALN Initial Capabilities Document dated 27 August 2009 and the JALN Analysis of Alternatives (AoA) Final Report dated 31 October 2011. Based on the JALN AoA, the Navy is implementing MALN (formerly MALN Inc. 1 and MALN Inc. 2) as one integrated solution.

MALN is an advanced wideband communications network which will transport intelligence data, non-traditional Intelligence, Surveillance, and Reconnaissance (ISR) communications, and backbone network traffic using IP-based connectivity to achieve GIG interoperability. MALN provides data connectivity for multiple Navy platforms in a variety of scenarios, including Anti-Access Area Denial (A2AD).

ADNS is the method by which tactical Navy units transfer Internet Protocol (IP) data to Navy and Department of Defense communities on the Global Information Grid (GIG). ADNS serves as a gateway to enable joint and coalition interoperability for these tactical assets and ensures GIG connectivity. ADNS allows unclassified, secret, top secret traffic, and various joint, allied, and coalition services to reconnect to the Defense Information Systems Network ashore via radio paths and pier connectivity.

FY13-17 ADNS funds have been realigned to Program Element 0303138N. FY13 MALN funds will be used for interface design development and integration for network application.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy | | | | | DATE: February 2012 |
|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | | | |
| **B. Program Change Summary ($ in Millions)** | **FY 2011** | **FY 2012** | **FY 2013 Base** | **FY 2013 OCO** | **FY 2013 Total** |
| Previous President's Budget | 26.894 | 1.739 | 1.058 | - | 1.058 |
| Current President's Budget | 27.321 | 1.739 | 15.695 | - | 15.695 |
| Total Adjustments | 0.427 | - | 14.637 | - | 14.637 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | 1.459 | - | | | |
| • SBIR/STTR Transfer | -0.849 | - | | | |
| • Program Adjustments | - | - | 14.642 | - | 14.642 |
| • Rate/Misc Adjustments | - | - | -0.005 | - | -0.005 |
| • Congressional General Reductions Adjustments | -0.183 | - | - | - | - |

**Change Summary Explanation**

Technical: Project Unit 1083 was realigned from Program Element 0204163N to 0101402N in FY12.
Technical: Project Unit 0725 (MALN)- Based upon the JALN AoA, the Navy is implementing MALN (formerly MALN Inc. 1 and MALN Inc. 2). ADNS was realigned from Program Element 0204163N to 0303138N in FY13 and out.

Schedule:
MALN: Implement MALN development beginning in 1QFY13.

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | | DATE: February 2012 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* | |

| COST ($ in Millions) | FY 2011 | FY 2012 | FY 2013 Base | FY 2013 OCO | FY 2013 Total | FY 2014 | FY 2015 | FY 2016 | FY 2017 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0725: *Communication Automation* | 8.246 | 1.739 | 15.695 | - | 15.695 | 39.885 | 55.572 | 27.969 | 58.573 | Continuing | Continuing |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Note**

Project 0725 Communication Automation Automated Digital Network System (ADNS) funding was realigned from PE 0204163N to CANES PE 0303138N in FY13 and out.

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

Maritime Aerial Layer Network (MALN) is the Navy solution set to support the Joint Aerial Layer Network (JALN) in accordance with the JALN Initial Capabilities Document dated 27 August 2009 and the JALN Analysis of Alternatives (AoA) Final Report dated 31 October 2011. Based on the JALN AoA, the Navy is implementing MALN (formerly MALN Inc. 1 and MALN Inc. 2) as one integrated solution.

MALN is an advanced wideband communications network which will transport intelligence data, non-traditional Intelligence, Surveillance, and Reconnaissance (ISR) communications, and backbone network traffic using IP-based connectivity to achieve GIG interoperability. MALN provides data connectivity for multiple Navy platforms in a variety of scenarios, including Anti-Access Area Denial (A2AD).

Operationally, MALN will provide Navy platforms with critical communication paths in an adverse Satellite Communications (SATCOM) denied environment. By repurposing existing technologies, MALN will provide an aerial network capable of transmitting data Beyond Line of Sight (BLOS), i.e. over the horizon at distances and date rates that traditionally require SATCOM paths. In this manner, MALN addresses an A2AD scenario.

In support of the JALN AoA, MALN will use the Extended Data Rate (XDR) waveform for intra-battlegroup communications. A Common Data Link (CDL) waveform will provide a high capacity cross-link capability, and a Ultra High Frequency Internet Protocol (UHF IP) capability will provide a backup data transport capability. MALN will provide a networking and routing capability, and will maintain Position, Navigation and Timing (PNT) in absence of traditional sources (Global Positioning System (GPS) constellation). The MALN payload will be capable of being hosted on a variety of airborne platforms, providing the Navy maximum flexibility to meet operational communications requirements.

FY13 funds will be used to develop MALN acquisition and system engineering documentation, conduct risk reduction activities, trade studies and prototype development.

Automated Digital Network System (ADNS) provides routing, switching, baseband, configuration and monitoring capabilities for interconnecting naval, coalition and joint enclaves worldwide. ADNS utilizes off the shelf equipment and network protocols as specified by the Joint Technical Architecture. ADNS Increment (INC) II provides capabilities of load balancing, radio frequency restoral, initial quality of service to include application prioritization, initial traffic management, and enhancements designed to maximize use of available bandwidth for surface, shore, and airborne platforms. ADNS INC III converges all Navy tactical voice, video, and data

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

requirements into a converged IP data stream. ADNS INC III interoperates with higher bandwidth satellites, supporting up to 25 mega bytes per second (Mbps) of throughput on unit level ships and up to 50 Mbps on force level ships. INC III architecture also incorporates an IPv4/IPv6 dual stack and a cipher text security architecture to align to joint and coalition networks, in addition to greater security utilizing the High Assurance Internet Protocol (IP) Encryptor (HAIPE) devices. ADNS INC III serves as the Navy tactical interface for IP Networking with Joint Tactical Radio System, and Advanced Extremely High Frequency to include Consolidated Afloat Networks Enterprise Services (CANES). ADNS will investigate emerging technologies to integrate with additional Department of Defense C4I Programs to improve interstrike group networking and extend the network to the tactical edge.

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|
| ***Title:*** Automated Digital Network System (ADNS) | 4.181 | 1.739 | - |
| ***Articles:*** | 0 | 0 | |
| ***FY 2011 Accomplishments:***<br>-Developed Traffic Engineering via Multiprotocol Label Switching/Virtual Private Networks (MPLS-VPNs) to support advance load distribution in ADNS INC III. ADNS INC III will enhance joint and coalition interoperability through new network routing architectures. Continued the Common Submarine Radio Room (CSRR) integration effort for ADNS INC III submarine systems, and conducted the Operational Assessment for ADNS INC III submarine systems. Evaluated technology insertion opportunities to provide ADNS with capabilities that will enhance network mobility for aircraft by developing a mobile ad hoc network architecture. ADNS INC II and III provides reduced size, weight and power designs for submarines, aircraft, and small vessels. Continued the development of updated system and subsystem interface designs for integration with new SATCOM and Radio Frequency (RF) paths, as they emerge. Continued the research and evaluation of emergent technology maturity for inclusion into ADNS systems based on defined capabilities requirements. Performed the INC II Airborne Developmental Testing (DT) and began INC II Airborne Operational Testing (OT) test events. | | | |
| ***FY 2012 Plans:***<br>-Complete the INC II Airborne OT test events. Complete the ADNS INC III system integration into the CSRR system. Conduct the DT, OT and Joint Interoperability Test Command (JITC) Certification of ADNS INC III Submarines. Finalize the INC II Airborne OT test report. Develop, integrate and test the Thin Line solution. Integration of SHF Split IP, MUOS and AMF/JTRS and CDL interfaces into ADNS system support. Test and integrate the evolving network applications as they are incorporated into the C4I architecture; actions will include examining and testing interfaces with Enterprise Network Management System, transition to IPv6, and final phase out of serial links. Continue the evaluation of technology insertion capabilities to the ADNS system to enhance network mobility for aircraft in a Joint-Aerial Layer Network (JALN) environment. | | | |
| ***Title:*** Maritime Aerial Layer Network (MALN) | - | - | 15.695 |
| ***Articles:*** | | | 0 |
| ***FY 2013 Plans:***<br>Develop acquisition and system engineering documentation in support of an RDT&E contract. Conduct analysis and risk reduction activities and prototype development in the routing, navigation, cross-link, and payload requirements. | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|
| Prototype development of the XDR payload. Trade studies and risk assessments will be completed in the areas of dynamic range and adjacent channel interference, XDR functionality, hardware RF options, security and information assurance, platform constraints, crosslink considerations, and acquisition and tracking. Risk reduction demonstrations will include a Doppler demonstration and a flight demonstration employing the MIT/LL satellite simulator on an aircraft communicating with a ground terminal. | | | |
| ***Title:*** Maritime Aerial Layer Network Inc 1<br>***Articles:***<br><br>***FY 2011 Accomplishments:***<br>Continued system development, testing, demonstration and technical assessment of various systems for consideration in Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA). Completion of AoA in support of JALN. | 0.902<br>0 | - | - |
| ***Title:*** Battle Force Tactical Network<br>***Articles:***<br><br>***FY 2011 Accomplishments:***<br>Continued test planning, test execution and associated report development (DT/OT) in support of a BFTN MS C decision in August 2011. | 0.743<br>0 | - | - |
| ***Title:*** Maritime Aerial Layer Network Inc 2<br>***Articles:***<br><br>***FY 2011 Accomplishments:***<br>Continued system development, testing, demonstration and technical assessment of various systems for consideration in Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA). Completion of AoA in support of JALN. | 2.420<br>0 | - | - |
| **Accomplishments/Planned Programs Subtotals** | 8.246 | 1.739 | 15.695 |

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

| Line Item | FY 2011 | FY 2012 | FY 2013 Base | FY 2013 OCO | FY 2013 Total | FY 2014 | FY 2015 | FY 2016 | FY 2017 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • OPN/3050/1: *Ship Comm Auto-ADNS* | 33.692 | 53.614 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • OPN/2915: *CANES/ADNS* | 0.000 | 0.000 | 57.770 | 0.000 | 57.770 | 44.470 | 46.134 | 40.262 | 42.492 | 0.000 | 231.128 |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

**D. Acquisition Strategy**

Maritime Aerial Layer Network (MALN) will address capability gaps as directed by the JALN AoA by integrating a suite of technical capabilities into a single payload. Technical and acquisition support will be provided to develop documentation necessary to conduct a full and open competition to procure EDMs.

Automated Digital Network System (ADNS): Evolutionary acquisition approach with overlapping development and implementation phases for defined Increment I, II, and III baselines. Increment I , II , and III will use competitively awarded contracts to implement changes consistent with acquisition initiatives. ADNS leverages Commercial Off The Shelf (COTS) products while capitalizing on acquisition reform initiatives to achieve material savings in the logistics, installation, integration and training areas. Where feasible, differing types of advantageous contract vehicles will be used to provide flexibility, decreased contract administrative costs, and encourage acquisition streamlining through the use of COTS products.

**E. Performance Metrics**

MALN - Successful risk reduction and demonstration of the XDR payload. Completion of the Capability Development Document (CDD).

ADNS - Included in the ADNS program goals are the improvements to bandwidth throughput, to connectivity to multiple Radio Frequency (RF) paths, greater security, and system capability delivered within a smaller form factor. The ADNS program will, at a minimum, provide bandwidth throughput enhancements resulting in an increase from 2 megabytes per second (Mbps) to 25 Mbps. ADNS will also provide the ability to transport data across multiple paths simultaneously vice the current limitations of single or secondary paths. ADNS will reduce the rack unit (U) requirement from 81U to 54U and investigate the ability to reduce this Unit allocation for smaller Navy platforms. ADNS will provide greater security posture by encrypting each enclave, and securing the core via cipher text.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary Hardware Development | PO | SSC:PAC/LANT | 1.025 | - | | - | | - | | - | 0.000 | 1.025 | |
| Primary Hardware Development | C/CPFF | Northrop Grumman:McLean, Virginia | 7.793 | - | | - | | - | | - | 0.000 | 7.793 | |
| Primary Hardware Development | C/CPFF | General Dynamics:Maryland | 17.601 | - | | - | | - | | - | 0.000 | 17.601 | |
| Primary Hardware Development | C/CPFF | SRA:San Diego | 0.016 | - | | - | | - | | - | 0.000 | 0.016 | |
| Primary Hardware Dev. - MALN Inc 2t | C/FFP | Boeing:Washington State | 1.245 | - | | - | | - | | - | 0.000 | 1.245 | |
| Primary Hardware/Software | C/CPFF | Air Force:Various | 2.078 | - | | - | | - | | - | 0.000 | 2.078 | |
| Primary Hardware/Software MALN Inc 1 | WR | SSC:PAC | 0.207 | - | | - | | - | | - | 0.000 | 0.207 | |
| Integration and Test -MALN Inc 1 | WR | SSC:PAC | 0.810 | - | | - | | - | | - | 0.000 | 0.810 | |
| Integration and Test - MALN Inc 2 | WR | SSC:PAC | 0.521 | - | | - | | - | | - | 0.000 | 0.521 | |
| Integration and Test | C/CPFF | VAR:Various | 0.079 | - | | - | | - | | - | 0.000 | 0.079 | |
| Systems Engineering-ADNS | WR | SSC:PAC/LANT | 22.114 | 0.275 | Nov 2011 | - | | - | | - | 0.000 | 22.389 | |
| Systems Engineering | Various | VAR:Various | 5.172 | - | | - | | - | | - | 0.000 | 5.172 | |
| Systems Engineering | MIPR | CECOM (MITRE):New Jersey | 0.585 | - | | - | | - | | - | 0.000 | 0.585 | |
| Systems Engineering-ADNS | WR | NUWC:Newport, RI | 1.414 | 0.450 | Dec 2011 | - | | - | | - | 0.000 | 1.864 | |
| Prime Mission Product | PO | SSC:PAC/LANT | 4.353 | - | | - | | - | | - | 0.000 | 4.353 | |
| Integration and Test-ADNS | WR | NUWC:Newport | 0.821 | 0.341 | Nov 2011 | - | | - | | - | 0.000 | 1.162 | |
| Systems Engineering | C/CPFF | Boeing:Washington State | 2.087 | - | | - | | - | | - | 0.000 | 2.087 | |
| Integration and Test-ADNS | WR | SSC:PAC/LANT | 0.459 | - | | - | | - | | - | 0.000 | 0.459 | |
| Systems Engineering-ADNS | C/CPFF | Solute:San Diego | 0.253 | - | | - | | - | | - | 0.000 | 0.253 | |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System Engineering - MALN Inc 1 | WR | SSC:PAC | 0.207 | - | | - | | - | | - | 0.000 | 0.207 | |
| System Engineering - MALN Inc 2 | WR | SSC:PAC | 0.717 | - | | - | | - | | - | 0.000 | 0.717 | |
| System Engineering - MALN Inc 1 | SS/FPIF | Linquest:San Diego | 0.536 | - | | - | | - | | - | 0.000 | 0.536 | |
| System Engineering - BFTN | WR | SSC:PAC | 0.433 | - | | - | | - | | - | 0.000 | 0.433 | |
| Integration and Test - BFTN | C/FFP | COTF:Norfolk, VA | 0.257 | - | | - | | - | | - | 0.000 | 0.257 | |
| Primary Hardware Dev.- MALN | WR | SSC:PAC | - | - | | 1.653 | Nov 2012 | - | | 1.653 | 0.000 | 1.653 | |
| Primary Hardware/Software - MALN | C/FFP | MIT/Lincoln Lab:Lexington MA | - | - | | 7.024 | Jan 2013 | - | | 7.024 | 0.000 | 7.024 | |
| System Engineering -MALN | WR | VAR:Various | - | - | | 3.503 | Nov 2012 | - | | 3.503 | 0.000 | 3.503 | |
| System Engineering - MALN | C/CPFF | VAR:Various | - | - | | 1.650 | Jan 2013 | - | | 1.650 | 0.000 | 1.650 | |
| | | **Subtotal** | 70.783 | 1.066 | | 13.830 | | - | | 13.830 | 0.000 | 85.679 | |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Support | WR | SSC:PAC/LANT | 0.160 | - | | - | | - | | - | 0.000 | 0.160 | |
| Software Development | Various | VAR:Various | 7.250 | - | | - | | - | | - | 0.000 | 7.250 | |
| Integrated Logistics Support-ADNS | WR | SSC:PAC/LANT | 0.138 | - | | - | | - | | - | 0.000 | 0.138 | |
| Integrated Logistics Support | Various | VAR:Various | 1.150 | - | | - | | - | | - | 0.000 | 1.150 | |
| Documentation | Various | VAR:Various | 0.506 | - | | - | | - | | - | 0.000 | 0.506 | |
| Technical Data | Various | VAR:Various | 0.500 | - | | - | | - | | - | 0.000 | 0.500 | |
| Studies and Analysis | WR | SSC:PAC/LANT | 0.960 | - | | - | | - | | - | 0.000 | 0.960 | |
| Documentation- MALN Inc 1 | WR | SSC:PAC | 0.200 | - | | - | | - | | - | 0.000 | 0.200 | |
| Studies and Analysis - BFTN | WR | SSC:PAC | 0.048 | - | | - | | - | | - | 0.000 | 0.048 | |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Subtotal** | 10.912 | - | | - | | - | | - | 0.000 | 10.912 | |

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

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Developmental Test & Evaluation-ADNS | WR | SSC:PAC/LANT | 6.659 | - | | - | | - | | - | 0.000 | 6.659 | |
| Developmental Test & Evaluation-ADNS | MIPR | JTIC:Fort Huachuca, AZ | 0.374 | 0.075 | Nov 2011 | - | | - | | - | 0.000 | 0.449 | |
| Operational Test & Evaluation-ADNS | WR | COMOPTEVOR:Norfolk, VA | 1.377 | 0.176 | Nov 2011 | - | | - | | - | 0.000 | 1.553 | |
| Operational Test & Evaluation | Various | VAR:Various | 4.955 | - | | - | | - | | - | 0.000 | 4.955 | |
| Developmental Test & Evaluation-MALN INC I | WR | SSC:PAC | 0.148 | - | | - | | - | | - | 0.000 | 0.148 | |
| Developmental Test & Evaluation-MALN INC II | WR | SSC:PAC | 0.604 | - | | - | | - | | - | 0.000 | 0.604 | |
| | | **Subtotal** | 14.117 | 0.251 | | - | | - | | - | 0.000 | 14.368 | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contractor Engineering Support | Various | VAR:Various | 0.546 | - | | - | | - | | - | 0.000 | 0.546 | |
| Government Engineering Support | WR | SSC:PAC/LANT | 0.817 | - | | - | | - | | - | 0.000 | 0.817 | |
| Program Management Support | C/CPAF | VAR:Various | 8.363 | - | | - | | - | | - | 0.000 | 8.363 | |
| Program Management Support- MALN Inc 1and 2 | C/FPIF | BAH:San Diego, CA | 0.724 | - | | - | | - | | - | 0.000 | 0.724 | |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2012 Cost | FY 2012 Award Date | FY 2013 Base Cost | FY 2013 Base Award Date | FY 2013 OCO Cost | FY 2013 OCO Award Date | FY 2013 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acquisition Workforce MALN Inc 1 and 2 | WR | SSC:PAC | 1.243 | - | | - | | - | | - | 0.000 | 1.243 | |
| Contractor Engineering Support | C/CPFF | X-FEDS:San Diego | 0.130 | 0.121 | Oct 2011 | - | | - | | - | 0.000 | 0.251 | |
| Program Management Support | C/CPFF | Solute:San Diego | 0.244 | 0.301 | Nov 2011 | - | | - | | - | 0.000 | 0.545 | |
| Program Management Support | C/CPFF | TBD:TBD | - | - | | - | | - | | - | 0.000 | 0.000 | |
| Program Management - MALN | WR | SSC:PAC | - | - | | 0.700 | Nov 2012 | - | | 0.700 | 0.000 | 0.700 | |
| Acquistion Management - MALN | WR | SSC:PAC | - | - | | 0.075 | Nov 2012 | - | | 0.075 | 0.000 | 0.075 | |
| Program Management - MALN | C/FFP | TBD:TBD | - | - | | 1.090 | Nov 2012 | - | | 1.090 | 0.000 | 1.090 | |
| | | **Subtotal** | 12.067 | 0.422 | | 1.865 | | - | | 1.865 | 0.000 | 14.354 | |

| | Total Prior Years Cost | FY 2012 | | FY 2013 Base | | FY 2013 OCO | | FY 2013 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 107.879 | 1.739 | | 15.695 | | - | | 15.695 | 0.000 | 125.313 | |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

| Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>0725: *Communication Automation* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events by Sub Project** | **Quarter** | **Year** | **Quarter** | **Year** |
| ***MALN*** | | | | |
| MALN: Capability Development Document | 2 | 2013 | 2 | 2013 |
| MALN: Milestone B | 3 | 2013 | 3 | 2013 |
| MALN: Request for Proposal (RFP) | 3 | 2013 | 3 | 2013 |
| MALN: Preliminary Design Review (PDR) | 2 | 2014 | 2 | 2014 |
| MALN: Capability Design Review(CDR) | 1 | 2015 | 1 | 2015 |
| MALN: Capability Production Document (CPD) | 2 | 2017 | 2 | 2017 |
| MALN: Milestone C | 4 | 2017 | 4 | 2017 |
| MALN: EDM System Development | 4 | 2014 | 4 | 2015 |
| MALN: Test and Evaluation Master Plan | 3 | 2015 | 3 | 2015 |
| MALN: Flight Test and Evaluation/Certification | 1 | 2016 | 4 | 2016 |
| MALN: Developmental Testing/Operational Assessment | 4 | 2016 | 4 | 2016 |
| MALN: EDM Contract Award | 1 | 2014 | 1 | 2014 |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | | DATE: February 2012 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>1083: *Shore To Ship Com System* | |

| COST ($ in Millions) | FY 2011 | FY 2012 | FY 2013 Base | FY 2013 OCO | FY 2013 Total | FY 2014 | FY 2015 | FY 2016 | FY 2017 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1083: *Shore To Ship Com System* | 19.075 | - | - | - | - | - | - | - | - | 0.000 | 19.075 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

**Note**

Beginning in FY12, the efforts in this project are funded in PE 0101402N.

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

This program develops communication system elements which provide positive Nuclear Command, Control and Communications (NC3) from originator to shooter. This portfolio of programs provides design and development for shore-to-ship transmit and receive communications systems.

The Low Band Universal Communications System (LBUCS) is the modernization program that will upgrade the Transmit and Receive subsystems of the Fixed Submarine Broadcast System (FSBS) which are approaching their operational end of life. LBUCS will ensure operational capability through the Very Low Frequency (VLF) architecture by providing system life extension and flexibility of submarine broadcast traffic to the submarine in stealth posture. The flexibility includes enhanced throughput and anti-jam capability, ensuring more operational products are delivered to a submarine without risking mast exposure. The flexibility further includes simplified shore architecture to maintain capability while maximizing use of shore nodes (Broadcast Keying Sites). LBUCS also provides an upgrade to the VLF receive system to ensure continued compliance with Nuclear Technical Performance Criteria.

The Nuclear Command, Control and Communications (NC3) Long-Term Solution (LTS) will replace the shore-based, nuclear command and control (NC2) message dissemination infrastructure of the NC3 Hybrid Solution while addressing capability gaps identified in the NC3 LTS Capability Based Analysis. The mission of the NC3 LTS is to provide a reliable, secure, timely and robust messaging capability between Senior Leadership (The President of the United States, Secretary of Defense, and Chairman of the Joint Chiefs of Staff), Combatant Commanders and United States nuclear force elements. Specifically, the NC3 LTS shall support the dissemination of Emergency Action Messages and other NC2 messages.

The Strategic Communications Assessment Program /Continued Evaluation Program provides constant assessment of the effectiveness of the end-to-end Nuclear Command and Control network and analysis of system performance in various mission locations.

Concept Development/System Planning provides Network Enabled Operation (NEO) that addresses Allied interoperability issues for submarine communications in an Internet Protocol (IP) environment. As new technologies are realized, coalition architectures are developed and tested to ensure continued interoperability. Concept Development/System Planning also provides for the modeling of unique Very Low Frequency/Low Frequency (VLF/LF) submarine communications which include large physical shore broadcast antennas and underwater depth penetration studies. The results of Concept Development/System Planning are reflected in future Broadcast Control Authority /Operational Control planning tools. Technologies to improve high voltage insulators, helix house bushings and antenna components used in the Fixed VLF transmit systems are evaluated and tested through the High Voltage Improvement Program. Development of Information Assurance solutions for the Broadcast Control Authority (BCA) and Submarine Operating Authority Wide Area Network are being investigated to mitigate vulnerability concerns.

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>1083: *Shore To Ship Com System* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|
| ***Title:*** Low Band Universal Communication System (LBUCS) | 6.359 | - | - |
| ***Articles:*** | 0 | | |
| ***FY 2011 Accomplishments:***<br>-Completed Critical Design Review (CDR) for transmit terminal.<br>-Completed draft Capabilities Production Document (CPD).<br>-Commenced formal routing through Joint C4I Program Assessment Tool-Empowered (JCPAT-E).<br>-Continued development of acquisition documentation for Milestone C.<br>-Continued development of Information Support Plan (ISP) for transmit terminal.<br>-Continued Production Representative Article development. | | | |
| ***Title:*** Nuclear Command, Control, Communications Long Term Solution (NC3 LTS) | 7.402 | - | - |
| ***Articles:*** | 0 | | |
| ***FY 2011 Accomplishments:***<br>-Completed the Capabilities Development Document (CDD).<br>-Continued development of the Test and Evaluation Master Plan (TEMP).<br>-Continued preparation of Milestone B acquisition documentation.<br>-Based on updated acquisition and technical information, continued development of the Request for Proposal (RFP) and Systems Performance Specification (SPS). | | | |
| ***Title:*** Strategic Communications Assessment Program (SCAP)/Continuing Evaluation Program (CEP) | 3.600 | - | - |
| ***Articles:*** | 0 | | |
| ***FY 2011 Accomplishments:***<br>-Conducted mission analysis of E-6B Mercury aircraft transmission and Ship Submersible Ballistic Nuclear Submarine (SSBNs) Emergency Action Message (EAM) reception for all SSBN patrols.<br>-Provided reports on performance, adherence to delivery time requirements and shortfalls. | | | |
| ***Title:*** Concept Development/Systems Planning | 0.850 | - | - |
| ***Articles:*** | 0 | | |
| ***FY 2011 Accomplishments:***<br>-Conducted US/UK developmental testing of the Integrated Digital Network Exchange (IDNX) to validate Network Enabled Operations (NEO) interoperability concepts. | | | |
| ***Title:*** High Voltage Improvement Program | 0.486 | - | - |
| ***Articles:*** | 0 | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>1083: *Shore To Ship Com System* |

| B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each) | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|
| ***FY 2011 Accomplishments:***<br>-Completed Electrically Small Antenna Project.<br>-Continued dynamic tuning effort at Edgar Beauchamp High Voltage Test Facility.<br>-Completed examination of nanocrystalline ferrites, to reduce the loss and size of the VLF/LF Helix House enclosure.<br>-Commenced examination of partial-discharge for early detection of Helix House issues.<br>-Continued examination of outdoor Helix House effort.<br>-Commenced the examination of new ferrites for use in dynamic tuning elements for VLF transmit facilities, with the goal of lowering shore antenna frequencies allowing for greater broadcast signal in seawater depth penetration.<br>-Commenced the examination of aging laminated wood used in VLF/LF Helix Houses. | | | |
| ***Title:*** Broadcast Control Authority | 0.378 | - | - |
| ***Articles:*** | 0 | | |
| ***FY 2011 Accomplishments:***<br>-Continued development of water space management and messaging automation support tools.<br>-Tools were integrated into Submarine Operation Authority (SUBOPAUTH) toolset and delivered to the fleet. | | | |
| **Accomplishments/Planned Programs Subtotals** | 19.075 | - | - |

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

N/A

**D. Acquisition Strategy**

Low Band Universal Communications System (LBUCS): LBUCS is the modernization program that will upgrade the Transmit and Receive subsystems of the Fixed Submarine Broadcast System which are approaching their operational end of life. A cost plus incentive fee contract was awarded for Transmit subsystem development in 4Q FY09 with three sequential fixed price options Contract Line Item Numbers for production and deployment. The development of LBUCS Receive will commence in FY13.

The Nuclear Command, Control and Communications Long Term Solution (NC3 LTS): NC3 LTS will provide accurate and reliable delivery of time-critical messages for the nuclear forces by developing a Dedicated IP Network utilizing Defense Information Systems Network circuits. Milestone B for the program is projected in 2QFY13 with Milestone C occurring in 3QFY17. Contract planning activities commenced in 4QFY09, leading to a Request for Proposal release in 2QFY12 and corresponding contract award in 3QFY13. Full Operational Capability is expected in 4QFY19.

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy | | DATE: February 2012 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>1319: *Research, Development, Test & Evaluation, Navy*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0204163N: *Fleet Tactical Development* | PROJECT<br>1083: *Shore To Ship Com System* |

**E. Performance Metrics**

LBUCS: Complete LBUCS Transmit Developmental Testing (DT) and Operational Assessment (OA). Achieve LBUCS Transmit Milestone C. Complete LBUCS Receive Preliminary Design Review (PDR) and Critical Design Review (CDR).

NC3 LTS: Complete Milestone B. Award contract for system design and development.

Strategic Communications Assessment Program (SCAP)/Continuing Evaluation Program (CEP): Delivery of Submersible Ballistic Nuclear Submarine (SSBN) patrol reports.

Concept Development: Delivery of final Network Enabled Operations (NEO) report. Assessment report of US/UK Very Low Frequency (VLF) performance requirements and recommendation of best VLF concepts to pursue.

High Voltage Improvement Program (HVIP): Continue examination of aging for multi-conductor High-Q inductor cable. Commence examination of innovative lighting methods for high voltage VLF/LF towers.

Broadcast Control Authority: Delivery of design options to incorporate Information Assurance (IA) capability.