| **Exhibit R-2, RDT&E Budget Item Justification** | **DATE:** February 2006 |
|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | **R-1 ITEM NOMENCLATURE**<br>Long Haul Communications PE 0303126K |

| COST (in millions) | FY05 | FY06 | FY07 | FY08 | FY09 | FY10 | FY11 |
|---|---|---|---|---|---|---|---|
| Total Program Element | 10.158 | 1.449 | 1.523 | 1.555 | 1.591 | 1.654 | 1.715 |
| DISN Systems Engineering Support/T82 | .965 | 1.449 | 1.523 | 1.555 | 1.591 | 1.654 | 1.715 |
| Presidential and National Voice Conferencing/PC01 | 9.193 | 0 | 0 | 0 | 0 | 0 | 0 |

A. Mission Description and Budget Item Justification: This Program Element (PE) funds system engineering for the Defense Information Systems Network (DISN) which provides defense-wide communications for the day-to-day operations of the DoD and serves as the core of DoD wartime communications for the President, the Secretary of Defense, the Joint Chiefs of Staff (JCS), the Combatant Commanders, and other critical users. PE 0303126K provides for the engineering to consolidate the operational communications networks into DISN and supports the transition of Service and DoD Agency connections into the GIG. This PE funds the critical and essential engineering required to use commercial equipment and service offerings, to implement rapidly advancing communications technology, to update the network design tools so as to continue providing cost savings, and to continue offering valuable new cost effective information technology capabilities and services to customers. It provides for the cost-effective development of needed information technology capabilities by targeting RDT&E efforts to DoD mission needs. This PE supports the military requirements identified by Joint Mission Needs Statement (JMNS) and Joint Capstone Requirements Document (JCRD). This PE is under Budget Activity 07 because it involves efforts supporting operational systems development.

B.

| Program Change Summary: | FY05 | FY06 | FY07 |
|---|---|---|---|
| Previous President's Budget | 10.789 | 1.470 | 1.502 |
| Current Submission | 10.158 | 1.449 | 1.523 |
| Total Adjustments | -.631 | -.021 | +.021 |

Change Summary Explanation:

FY 2005 change is due to below threshold reprogramming.

FY 2006 change is due to undistributed Congressional adjustment to Defense-Wide RDT&E appropriation.

FY 2007 change is due to revised fiscal guidance.

| **Exhibit R-2a, RDT&E Project Justification** | | | Date: February 2006 | | | | |
|---|---|---|---|---|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | | | **R-1 ITEM NOMENCLATURE**<br>Long Haul Communications/PE 0303126K | | | | |
| COST (in millions) | FY 05 | FY 06 | FY07 | FY08 | FY09 | FY10 | FY11 |
| DISN Systems Engineering Support/T82 | .965 | 1.449 | 1.523 | 1.555 | 1.591 | 1.654 | 1.715 |

A. Mission Description and Budget Item Justification: This Program Element (PE) funds system engineering for the Defense Information Systems Network (DISN) which provides defense-wide communications for the day-to-day operations of the DoD and serves as the core of DoD wartime communications for the President and Secretary of Defense, the Joint Chiefs of Staff (JCS), the Combatant Commanders, and other critical users. PE 0303126K provides the engineering to consolidate operational communications networks into DISN and supports the convergence of Service and Agency network services (i.e. telephony, video, etc) into the GIG. This PE funds the critical and essential engineering required to use commercial equipment and service offerings, to implement rapidly advancing communications technology, to update network design tools so as to continue providing cost savings, and to continue offering valuable new cost effective information technology capabilities and services to customers. It provides for the development of needed information technology capabilities by targeting RDT&E efforts to DoD mission needs.

B. Accomplishments/Planned Program:

| | FY 05 | FY 06 | FY 07 |
|---|---|---|---|
| Subtotal Cost | .684 | .718 | .742 |

Systems Engineering - Provide ongoing systems engineering to reduce the risks and delays of inserting new communications technologies into the DISN by performing assessments and proof of concept implementations. Engineer the insertion of technology into the DISN/GIG (e.g., Wave Division Multiplexing (WDM), intelligent optical networking, gigabit/terabit routers, Virtual Private Networks (VPNs), converged network/integrated services, Voice over Internet Protocol (VoIP), IP Class of Service/Quality of Service (CoS/QoS), cell encryption, broadcast quality video, and wireless/mobility services). Continue support of DISN/Global Broadcast System (GBS) risk reduction trials. Continue engineering support for on-going Network Engineering Assessment Facility (NEAF) testbed assessments, prototyping, and mission support. Provide technical leadership in implementing recommended solutions involving DISN services. New efforts involve supporting the transition from the DISN to the GIG, supporting integration of Services/Agencies networks into the GIG, developing overarching design for next generation routing/QoS/CoS, and IP enabled Services such as Telephony, IPv6 and Enterprise Applications.

| **Exhibit R-2a, RDT&E Project Justification** | | | Date: February 2006 | | | | |
|---|---|---|---|---|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | | | **R-1 ITEM NOMENCLATURE**<br>Long Haul Communications/PE 0303126K | | | | |
| COST (in millions) | FY 05 | FY 06 | FY07 | FY08 | FY09 | FY10 | FY11 |
| DISN Systems Engineering Support/T82 | .965 | 1.449 | 1.523 | 1.555 | 1.591 | 1.654 | 1.715 |

| | FY 05 | FY 06 | FY07 |
|---|---|---|---|
| Subtotal Cost | .281 | .731 | .781 |

Network Design - Provide ongoing development of the network topology design algorithms, heuristics, and software based on a DoD prioritized list which includes delivery of an IP Quality of Service modeling and simulation study relevant to future DoD converged services over Multi-Protocol Label Switching (MPLS) IP infrastructure. This initiative supports DoD transformational goals, global net-centricity, and the development of future Defense Information System Network (DISN) programs. Conduct modeling and simulation analyses of existing, emerging and future technologies and services. Focus efforts on assured service, MPLS, information assurance architecture impacts on network performance, and enterprise service management architecture impacts on network performance. Also, efforts focus on converged voice, video, and data services coexisting in a converged IP network that provides assured service in support of global net-centricity.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: Continue with the same acquisitions that include a Small Disadvantaged contractor under the DISN Global Services (DGS) contract and a sole-source contract. Procure test hardware and tools from a variety of Commercial Off-the-Shelf vendors.

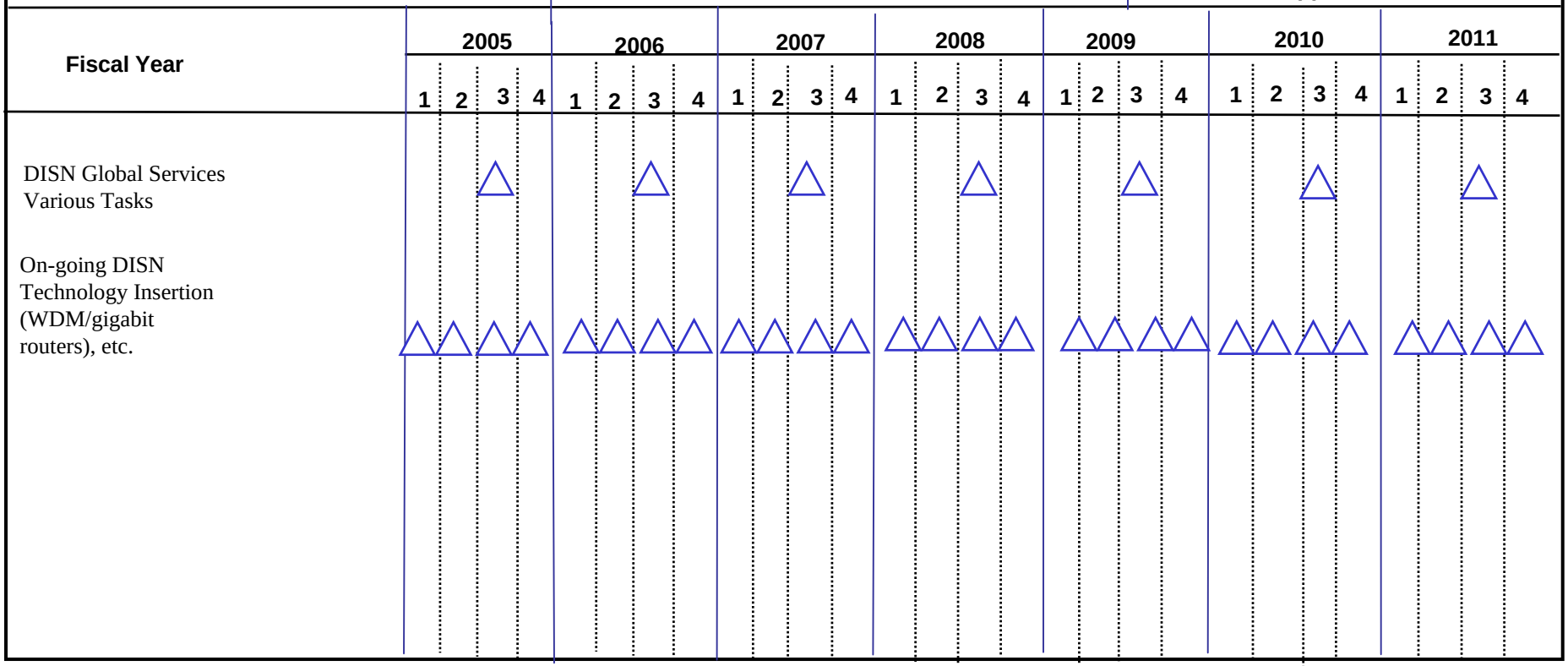
E. Performance Metrics:

1. Planned versus actual schedule (difference in days) for major milestones/deliverables.
2. Number of planned versus actual funds spent.
3. Adherence of contractor deliverables to SOW specifications.
4. Compliance with Performance Surveillance Plans contained in contracted efforts.

| Exhibit R-3 Cost Analysis | | DATE: February 2006 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | **PROGRAM ELEMENT**<br>Long Haul Communications / PE 0303126K | **PROJECT NAME AND NUMBER**<br>DISN Systems Engineering Support / T82 |

| Cost Category | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY06 Cost | FY06 Award Date | FY07 Cost | FY07 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|
| System Engineering | Various | Various performers | 1.679 | 1.449 | 06/06 | 1.523 | 06/07 | Contg | Contg | N/A |

| Exhibit R-4 Schedule Profile | | | Date: February 2006 |
|---|---|---|---|
| Appropriation/Budget Activity<br>RDT&E, Defense-Wide/07 | | Program Element Number and Name<br>Long Haul Communications/PE 0303126K | Project Number and Name<br>DISN Systems Engineering Support/T82 |



| **Exhibit R-4a Schedule Detail** | | **DATE:** February 2006 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | **PROGRAM ELEMENT**<br>Long Haul Communications/<br>PE 0303126K | **PROJECT NAME AND NUMBER**<br>DISN Systems Engineering Support/ T82 |

| Schedule Profile | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|---|---|---|---|
| DISN Global Services Tasks | 3Q | 3Q | 3Q | 3Q | 3Q | 3Q | 3Q |
| On-going DISN Tech Insertion (Wave Division Multiplexing (WDM)/gigabit routers) Convergence Network/ Integrated Service Assessments & Pilots, etc. | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| On-going Development and Application of Network Design, Analysis, Modeling & Simulation Tools | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |

| Exhibit R-2a, RDT&E Project Justification | | DATE: February 2006 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>RDT&E, Defense-Wide/07 | PROGRAM ELEMENT<br>Long Haul Communications / PE 0303126K | PROJECT NAME AND NUMBER<br>Presidential and National Voice Conferencing/PC01 |

| Cost (in millions) | FY05 | FY06 | FY07 | FY08 | FY09 | FY10 | FY11 |
|---|---|---|---|---|---|---|---|
| Presidential and National Voice Conferencing/PC01 | 9.193 | 0 | 0 | 0 | 0 | 0 | 0 |

A. Mission Description and Budget Item Justification: As the Presidential and National Voice Conferencing (PNVC) program lead and system engineer, this project funds system engineering, planning, development, integration, installation, and testing of new baseband (cryptographic and voice encoder/vocoder) equipment needed to provide survivable, near toll-quality voice conferencing capability for the President and other national/military leaders. This project funds the critical and essential engineering required to develop a new voice processing algorithm, as well as the development of new vocoder and cryptographic equipment by taking advantage of ongoing RDT&E efforts by another Defense component. These baseband devices implement new technology capabilities such as multi-stream cryptography/vocoding and information technology capabilities such as baseband Ethernet interfaces supporting baseband Internet Protocol (IP) addressing. This project supports the Joint Staff's requirement to fully implement the recommended Advance Extreme High Frequency (AEHF) PNVC improvements no later than FY 2010 for all PNVC participants.

B. Accomplishments/Planned Program:

| | FY 05 | FY 06 | FY 07 |
|---|---|---|---|
| Subtotal Cost | 9.193 | 0 | 0 |

The primary effort in FY 2005 was development of the PNVC system design description, engineering and technical analysis and associated engineering developmental model prototypes to develop the crypto/vocoder definition and production and technical specifications to meet the goal of beginning production at the start of FY 2007. PNVC product integration, installation, and testing is scheduled to start in FY 2008 and be completed in FY 2010. Initial Operational Capability (IOC) has been tentatively scheduled for the end of FY 2009 and is defined to be the deployment of the first CONUS AEHF satellite and the PNVC initiative implemented at the principal conferees' locations.

C. Other Program Funding Summary: None

D. Acquisition Strategy: The PNVC program involves the development of new baseband equipment (vocoder and crypto) requiring the services of NSA for the design development and certification. Engineering support services for the PNVC

| Exhibit R-2a, RDT&E Project Justification | | DATE: February 2006 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>RDT&E, Defense-Wide/07 | PROGRAM ELEMENT<br>Long Haul Communications / PE 0303126K | PROJECT NAME AND NUMBER<br>Presidential and National Voice Conferencing/PC01 |

| Cost (in millions) | FY05 | FY06 | FY07 | FY08 | FY09 | FY10 | FY11 |
|---|---|---|---|---|---|---|---|
| Presidential and National Voice Conferencing/PC01 | 9.193 | 0 | 0 | 0 | 0 | 0 | 0 |

is provided by contract and FFRDC support. Although some limited in-house government capability exists, the expertise necessary to fulfill the mission and responsibilities of the PNVC does not exist. Full and open competition is used for the acquisition of support through existing DISA contracts.

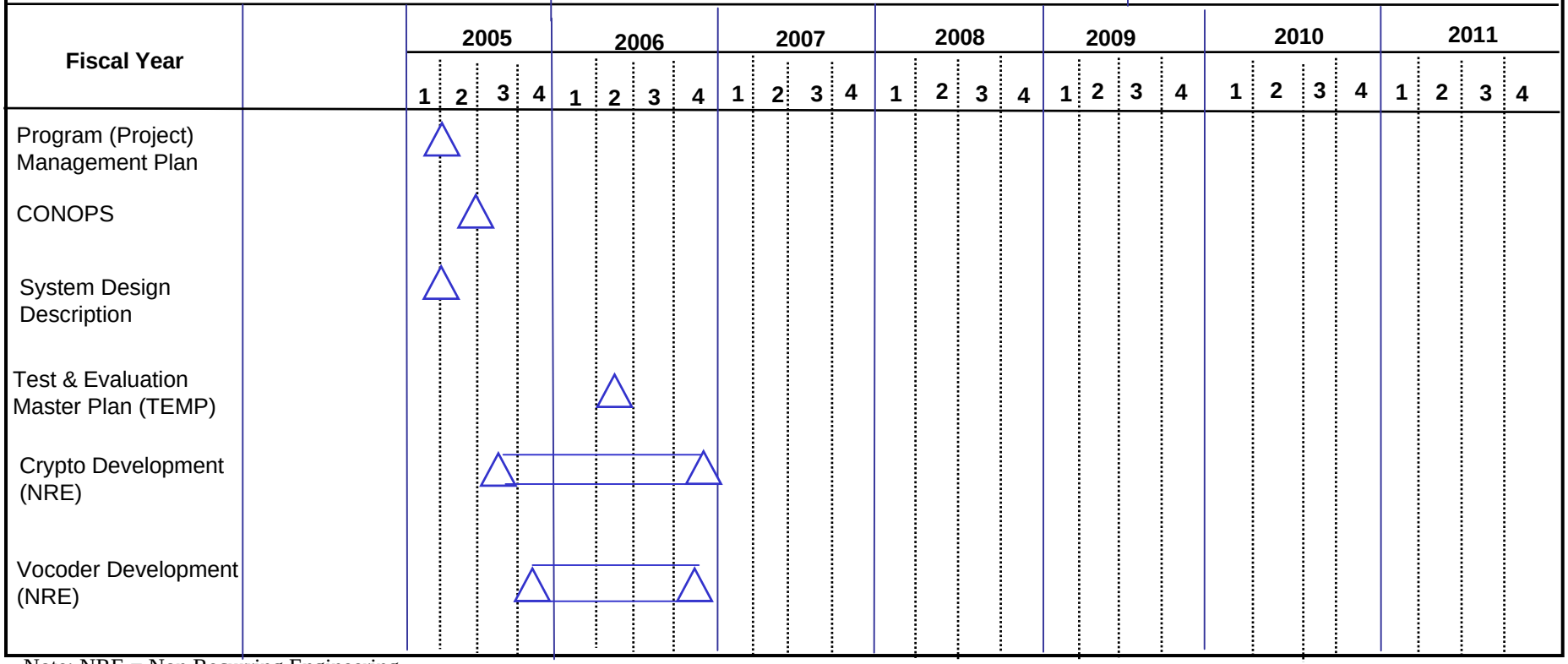
E. Performance Metrics: PNVC Program metrics track the development of various documents: Program Management Plan (PMP), Concept of Operations (CONOPS), Test and Evaluation Master Plan (TEMP), and other specifications needed to manage the program. Milestone metrics (schedule (actual vs. planned)) are used for the Non-Recurring Engineering (NRE) and certification effort to deliver to DISA the vocoder and crypto design specification documents, PMP, CONOPS, and TEMP. The Program also uses the funding obligation rate (planned vs. actual) and financial reporting requirements as metrics throughout the life cycle of the program.

| **Exhibit R-3 Cost Analysis** | | **DATE:** February 2006 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | **PROGRAM ELEMENT**<br>Long Haul Communications / PE 0303126K | **PROJECT NAME AND NUMBER**<br>Presidential and National Voice Conferencing (PNVC)/PC01 |

| Cost Category | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY06 Cost | FY06 Award Date | FY07 Cost | FY07 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|
| FFRDC Engineering /Technical Spt | CPAF | Aerospace Fld Ofc Falls Church, VA | 1.556 | 0 | N/A | 0 | N/A | 0 | 1.556 | 1.556 |
| System Engineering & Technical Assistance (SETA) Support | CPAF | Booz Allen Hamilton (BAH), Tysons Corner, VA | .300 | 0 | N/A | 0 | N/A | 0 | 0.300 | 0.300 |
| NSA Engineering/Technical Support | TBD | NSA | 7.337 | 0 | N/A | 0 | N/A | 0 | 7.337 | 7.337 |
| Total | | | 9.193 | 0 | | 0 | | 0 | | |

| Exhibit R-4 Schedule Profile | Date: February 2006 |
|---|---|

| Appropriation/Budget Activity | Program Element Number and Name | Project Number and Name |
|---|---|---|
| RDT&E, Defense-Wide/07 | Long Haul Communications / PE 0303126K | Presidential and National Voice Conferencing (PNVC)/PC01 |




Note: NRE = Non Recurring Engineering

| Exhibit R-4a Schedule Detail | | DATE: February 2006 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>RDT&E, Defense-Wide/07 | **PROGRAM ELEMENT**<br>Long Haul Communications / PE 0303126K | **PROJECT NAME AND NUMBER**<br>Presidential and National Voice Conferencing (PNVC)/PC01 |

| Schedule Profile | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|---|---|---|---|
| MIPR funds to NSA | 1Q | | | | | | |
| MIPR funds to SMC (Aerospace Support) | 1Q | | | | | | |
| NexGen SETA Task order Award | 1Q | | | | | | |
| MOU/MOA with NSA for crypto/vocoder development | 1Q | | | | | | |
| Crypto & Vocoder Systems Requirements Reviews (SRP) | 2Q | | | | | | |
| Crypto & Vocoder Trade Studies | 3Q | | | | | | |
| Crypto & Vocoder Critical Design Reviews (CDR) | | 2Q | | | | | |
| PNVC Test and Evaluation Master Plan (TEMP) | | 2Q | | | | | |
| Crypto & Vocoder Design Specification Delivery | | 3Q | | | | | |