**CLASSIFICATION:**

| EXHIBIT R-2, RDT&E Budget Item Justification | | DATE: **May 2009** |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | R-1 ITEM NOMENCLATURE<br>**PE 0101221N Strategic Sub & Weapons System Support** | |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Total PE Cost | 64.292 | 78.537 | 74.939 | | | | | |
| J2228 Technology Applications Program | 40.903 | 45.344 | 45.637 | | | | | |
| J3158 Enhanced Special Weapons | 5.771 | 0.932 | 5.850 | | | | | |
| S0004 TRIDENT Submarine Systems Improvement | 0.271 | 0.347 | 0.386 | | | | | |
| J3198 Underwater Launch Missile System | 0.000 | 9.973 | 0.000 | | | | | |
| J3196 Advanced Technologies for Arming, Fuzing, & Firing (AF&F) Systems | 14.455 | 0.000 | 0.000 | | | | | |
| 9E10A Advanced Technology for Mk5 AF&F | 0.000 | 9.973 | 0.000 | | | | | |
| 0951 Joint Warhead Fuze Sustainment | 0.000 | 0.000 | 23.066 | | | | | |
| 9C47A /9999 Advanced LINAC Facility | 2.892 | 3.191 | 0.000 | | | | | |
| 9E08A Adelos National Security Sensor System | 0.000 | 1.995 | 0.000 | | | | | |
| 9E09A Enhanced Special Weapons/Nuclear Weapons Security | 0.000 | 1.596 | 0.000 | | | | | |
| 9E11A Covert Robust Location Aware Wireless Network | 0.000 | 1.596 | 0.000 | | | | | |
| 9E12A Maritime Security- Surface and Sub-Surface Surveillance | 0.000 | 3.590 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Technology Applications Program supports the TRIDENT II (D5) Submarine Launched Ballistic Missile (SLBM) that provides the U.S. a weapon system with greater accuracy and payload capability as compared to the TRIDENT I (C4) system. TRIDENT II enhances U.S. strategic deterrence providing a survivable sea-based system capable of engaging the full spectrum of potential targets with fewer submarines. This Program Element supports investigations into new technologies which would help mitigate the program impact due to component obsolescence and a rapidly decreasing manufacturing support base. These efforts include Reentry System Applications and Guidance System Applications.

The Enhanced Special Weapons effort supports the Nuclear Weapons Security program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landslide at Naval Submarine Base, Kings Bay, or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The Chief of Naval Operations (CNO) has assigned the Strategic Systems Programs, the FBM program manager, with mission responsibility for the safeguard of FBM nuclear technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies focusing on land and waterside requirements, including both surface and underwater. Collectively, these efforts will improve countermeasure technologies addressing detection, delay and denial.

The TRIDENT Submarine System Improvement Program develops and integrates command and control improvements needed to maintain TRIDENT Submarine operational capability through the life cycle of this vital strategic asset. The program conducts efforts needed to maintain strategic connectivity, ensure platform invulnerability, and reduce lifecycle costs through Obsolete Equipment Replacement (OER) and commonality.

The Underwater Launch Missile System (ULMS) effort develops capabilities definitions and assessments, science & technology development strategies, and conceptual work to prepare for R&D and future prototyping.

The Advanced Technologies for Arming, Fuzing, and Firing (AF&F) program supports efforts to develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs. The focus is on technologies that have multi-service (Navy and Air Force) and Multi-Nation (US and UK) applicability. $10.0M of FY 2008 funds supports a working group of engineers (USN, USAF, and UK) to identify, prioritize, develop, proof, and demonstrate future AF&F applications. $10M of 2009 funding was appropriated as a Congressional add to support advance technologies for the Mk5 Arming, Fuzing, and Firing (AF&F). The Joint Warhead Fuze Sustainment Program will begin in FY2010 as a development and studies program which integrates modern technologies into the Arming, Fuzing, and Firing (AF&F) development and modernization to improve reliability, safety and security, and develop common fuze components adaptable to current and future warheads.

The Advanced LINAC Facility Program seeks to develop and complete the design for an advanced Linear Accelerator Facility to perform radiation simulation of transient dose rate events. This facility will perform with advanced capabilities to overcome limitations of existing facilities, allowing for greater efficiency in testing and reducing costs.

The Adelos National Security Sensor System effort develops an advanced fiber optic sensor systems for counterterrorism and antiterrorism operations to meet rigorous performance metrics necessary for nuclear facility, material, and weapons protection. The Adelos component will evaluate the use of advanced classification algorithms for reduction of false positive detections of objects in proximity to fiber optic sensing elements. Adelos program also seeks to expand the application of a unique fiber optic sensor system designed to provide covert surveillance and intelligence gathering of potential threats to our nation's nuclear activity.

The Enhanced Special Weapons/Nuclear Weapons Security effort supports the development of the Adelos fiber optic sensor system for the advanced detection, tracking, and classification of potential threat targets by employing advanced digital acoustic watermarking algorithms within a secure network for steganographic techniques to convey the classification and location information within the digital audio signal produced by the Adelos application software.

The Covert Robust Location Aware Wireless Network (CROWN) program develops a key foundation technology enabler to provide communication between multiple assets for a covert network capability that could be used on the submarine as a wireless network, and as a method to improve relative terminal accuracy that cannot be met today, especially in jammed or spoofed battlefields. The CROWN program provides the military precision relative location determination, tracking in a jammed environment, and high data rate communications with a low probability of being detected or intercepted by adversaries.

The Maritime Security- Surface and Sub-Surface Surveillance effort supports the development of the Quad-S Seaport Security System. The Quad-S Program develops a tactical surveillance and reconnaissance system in support of real-time monitoring of the complete spectrum of the maritime domain – underwater, surface, air, associated landside environments and individuals within those environments. This funding will also develop a needed year-round test bed, to evaluate and test emerging maritime technologies against the operational capabilities needed by the U.S. Navy.

**CLASSIFICATION:**

| EXHIBIT R-2, RDT&E Budget Item Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | R-1 ITEM NOMENCLATURE<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** |

**B. (U) Program Change Summary:**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| Previous President's Budget (FY 2009 President's Controls) | 67.758 | 80.120 | 56.699 |
| Current FY 2010 President's Budget | 64.292 | 78.537 | 74.939 |
| Total Adjustments | -3.466 | -1.583 | 18.240 |

Summary of Adjustments

| | | | |
|---|---|---|---|
| Congressional Recessions | 0.000 | 0.000 | 0.000 |
| Congressional Adjustments | 0.000 | -1.559 | 0.000 |
| SBIR/STTR/FTT Assessment | -0.464 | 0.000 | 0.000 |
| Program Adjustments | -3.000 | 0.000 | 19.328 |
| Rate/Misc Adjustments | -0.002 | -0.024 | -1.088 |
| Subtotal | -3.466 | -1.583 | 18.240 |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**Technology Applications J2228** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost J2228 Technology Applications | 40.903 | 45.344 | 45.637 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project supports implementation of a coordinated Navy/Air Force Reentry System Applications Program (RSAP), and a coordinated Navy/Air Force Strategic Guidance Applications Program (GAP). Reentry vehicle and guidance technolog had been rapidly eroding beyond the point of being capable to respond to increasing aging phenomena and future requirements. The December 2001 DOD Nuclear Posture Review determined that infrastructure is a critical part of the new triad and these efforts form part of the infrastructure that supports the nuclear force structure.

The RSAP program, through sustainment of the reentry vehicle technology base, will maintain confidence in the dependability and reliability of strategic SLBM and ICBM weapon systems over the long term when no new systems will be in development. Critical and unique attributes necessary for the design, development and in-service support of current and modernized SLBM reentry systems have been defined and will be maintained to insure a functioning readiness application technical capability in reentry is preserved. Working closely with the Air Force, Navy and Air Force requirements have been integrated into a comprehensive program. The program maintains close coordination with the DOD Science and Technology (S&T) community in order to: leverage S&T programs, ensure system driven technology base requirements are considered in contract awards, eliminate duplication of effort and provide an opportunity to demonstrate appropriate emerging technologies through a reentry flight test evaluation process.

The GAP program provides a minimum strategic guidance core technology development capability consistent with the Strategic Advisory Group (SAG) recommendations to COMSTRATCOM. The SAG recommended that SSP establish a program which preserves this critical design and development core. It is a basic bridge program which develops critical guidance technology applicable to any of the existing Air Force/Navy strategic missiles. The objective is to transition from current capability to a long term readiness status required to support deployed systems. Air Force and Navy guidance technology requirements are integrated and needs prioritized. Efforts are focused on alternatives to technologies identified as system "weak links." Currently system accuracy and functionality depends upon key technologies which provide radiation hardened velocity, attitude and stellar sensing capabilities. As the underlying technologies that currently provide thes capabilities age and are no longer technically supportable, modern alternatives must be made available in order to allow for orderly replacement. There is no commercial market for these technologies and their viability depends on the strategic community.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Technology Applications J2228** |

**B. (U) Accomplishments/Planned Program**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| Reentry Systems Application Program (RSAP) | 24.445 | 28.059 | 24.053 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN
(U) ($24.445) Continue Reentry System Applications Program.
FY 2008 efforts include:
(U) Maintain the current capability and support the planned service life extension of Navy reentry systems.
(U) Continue development and ground testing of reentry vehicle candidate heat shield and nose tip materials including those available from Science & Technology (S&T)
(U) Flight test alternative low-cost heat shield and replacement nose tip material.
(U) Flight test operationally aged heat shields to support aging trends and replacement materials assessments.
(U) Complete development and flight test advanced reentry instrumentation such as inertial sensor and avionics computer, encapsulated on the updated engineering instrumentation package.
(U) Maintain RSAP technical program plan, conduct system assessments and continue Vulnerability & Hardening certification process development in absence of Nuclear Under Ground Testing (UGT)
(U) Continue Reentry Body material development and advanced flight test instrumentation activities.
(U) Continue development of advanced GPS receiver.
(U) Ground test advanced reentry material systems and advanced instrumentation components.
(U) Develop test instrumentation to demonstrate D5LE missile reentry body interface compatibility.
(U) Continue to develop the capability to produce Thermocouple (TC) Plugs at significantly reduced cost to the Government.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Technology Applications J2228** |

**B. (U) Accomplishments/Planned Program**

(U) FY 2009 PLAN

(U) ($28.059) Continue Reentry System Applications Program.

FY 2009 efforts include:

(U) Maintain the current capability and support the planned service life extension of Navy reentry systems.
(U) Continue development and ground testing of reentry vehicle candidate heat shield and nose tip materials including those available from Science & Technology (S&T)
(U) Flight test alternative low-cost heat shield and replacement nose tip material.
(U) Flight test operationally aged heat shields to support aging trends and replacement materials assessments.
(U) Complete development and flight test advanced reentry instrumentation such as inertial sensor avionics computer, encapsulated on the updated engineering instrumentation package.
(U) Maintain RSAP technical program plan, conduct system assessments and continue Vulnerability & Hardening certification process development in absence of Nuclear Under Ground Testing (UGT) facilities.
(U) Continue Reentry Body material development and advanced flight test instrumentation activities.
(U) Continue development of advanced GPS receiver.
(U) Ground test advanced reentry material systems and advanced instrumentation components.
(U) Develop test instrumentation to demonstrate D5LE missile reentry body interface compatibility.

(U) FY 2010 PLAN

(U) ($24.053) Continue Reentry System Applications Program.

FY 2010 efforts include:

(U) Maintain the current capability and support the planned service life extension of Navy reentry systems.
(U) Continue development and ground testing of reentry vehicle candidate heat shield and nose tip materials including those available from Science & Technology (S&T)
(U) Flight test alternative low-cost heat shield and replacement nose tip material.
(U) Flight test operationally aged heat shields to support aging trends and replacement materials assessments.
(U) Maintain RSAP technical program plan, conduct system assessments and continue Vulnerability & Hardening certification process development in absence of Nuclear Under Ground Testing (UGT) facilities.
(U) Continue Reentry Body material development and advanced flight test instrumentation activities.
(U) Continue development of advanced GPS receiver.
(U) Ground test advanced reentry material systems and advanced instrumentation components.
(U) Develop test instrumentation to demonstrate D5LE missile reentry body interface compatibility.

**CLASSIFICATION:**

EXHIBIT R-4, Schedule Profile

DATE: **May 2009**

APPROPRIATION/BUDGET
**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7**

PROGRAM ELEMENT NUMBER AND NAME:
**PE 0101221N Strategic Sub & Wpns Sys Spt**

Project Name and Name:
**Technology Applications RSAP J2228**

| Fiscal Year | CY-2008 | | | | 2009 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Contract Go-ahead and Milestones | △ Contract Award | | | | △ Contract Award | | | △ Contract Award | | | | |
| Common Technology, Component, and Interface studies (Tech Dev Phase) | | | | | | | | | | | | |
| System Development & Demonstration Phase | | | | | | | | | | | | |
| Systems Engineering Reviews | | △ CDR | | | △ MRR | △ FRR | | | △ SRR | | △ PDR | |
| System Integration Test - Mock up | | | | | | | | | | | | |
| Systems Integration Test - Engineering Development Units | | | | | | | | | | | | |
| Long Lead Items | | | | | | | | | | | | |
| Systems Integration Test - Production Proofing Units Including LRIP | | | | | | | | | | | | |
| Production and Deployment Phase | | | | | | | | | | | | |
| System Test | | | | | | | | △ Flight Test | | | | |

**CLASSIFICATION:**

| EXHIBIT R-4a, Schedule Detail | | | | | DATE: **May 2009** | | | |
|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | | PROGRAM ELEMENT NUMBER AND NAME:<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | | | Project Number and Name<br>**Technology Applications J2228** | | | |
| **Fiscal Year** | **CY-2008** | **2009** | **2010** | | | | | |
| Contract Award -ahead and Milestones | **1Q** | **1Q** | **1Q** | | | | | |
| Common Technology, Component, and Interface studies | | | | | | | | |
| System Development & Demonstration | **1-2Q** | | | | | | | |
| Initial Production Baseline | | | | | | | | |
| Production and Deployment | | | | | | | | |
| Systems Engineering Reviews | **2Q** | **1-2Q** | **1Q - 4Q** | | | | | |
| System Integration Test - Mock-up | **3-4Q** | | | | | | | |
| Systems Integration Test - Engineering Development Units | **2-4Q** | **1-2Q** | | | | | | |
| Systems Integration Test - Production Proofing Units | | | | | | | | |
| System Test | | **4Q** | | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Technology Applications J2228** |

**B. (U) Accomplishments/Planned Program**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| Guidance Application Program (GAP) | 16.458 | 17.285 | 21.584 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN

(U) ($16.458) Continue Strategic Guidance Applications Programs (GAP).

FY 2008 efforts include:

(U) Production and Qualification (P&Q) of telecom-based components for use in strategic grade gyros (e.g. fiber light source, integrated optics chip, couplers).

(U) Production and Qualification (P&Q) of reduced cost, long life Pendulous Integrating Gyro Accelerometer (PIGA) sensor.

(U) Utilize the capabilities of the Virtual System Simulation (VSSim) to conduct system trade studies that support precision guidance application for boost phase and boost-thru-reentry scenarios.

(U) Complete the development of alternate sources for critical components required to support D5LE emergent sensors.

(U) Conduct investigations to improve circumvention and recovery performance.

(U) Silicon Oscillating Accelerometer (SOA). Continue design, build, evaluate and demonstrate SOA as a potential strategic grade accelerometer.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Technology Applications J2228** |

**B. (U) Accomplishments/Planned Program**

(U) FY 2009 PLAN

(U) ($17.285) Continue Strategic Guidance Applications Programs (GAP).

FY 2009 efforts include:

(U) Develop new architectures using telecom-based optical components for high-precision strategic gyro.

(U) Continue to evaluate emergent alternate sensor technologies, (accelerometer, gyro, and stellar) with an emphasis on providing existing performance in a significantly reduced form factor.

(U) Assess feasibility of advanced stellar sensor technologies for use a strategic application; specifically, active pixel and camera-on-a-chip architectures will be evaluated.

(U) Utilize the capabilities of the Virtual System Simulation (VSSim) to conduct system trade studies that support precision guidance application for boost phase and boost-thru-reentry scenarios.

(U) Conduct investigations to improve circumvention and recovery performance.

(U) Continue design, build, evaluate and demonstrate SOA as a strategic grade accelerometer.

(U) FY 2010 PLAN

(U) ($21.584) Continue Strategic Guidance Applications Programs (GAP).

FY 2010 efforts include:

(U) Develop new architectures using telecom-based optical components for high-precision strategic gyro.

(U) Continue to evaluate emergent alternate sensor technologies, (accelerometer, gyro, and stellar) with an emphasis on providing existing performance in a significantly reduced form factor.

(U) Assess feasibility of advanced stellar sensor technologies for use a strategic application; specifically, active pixel and camera-on-a-chip architectures will be evaluated.

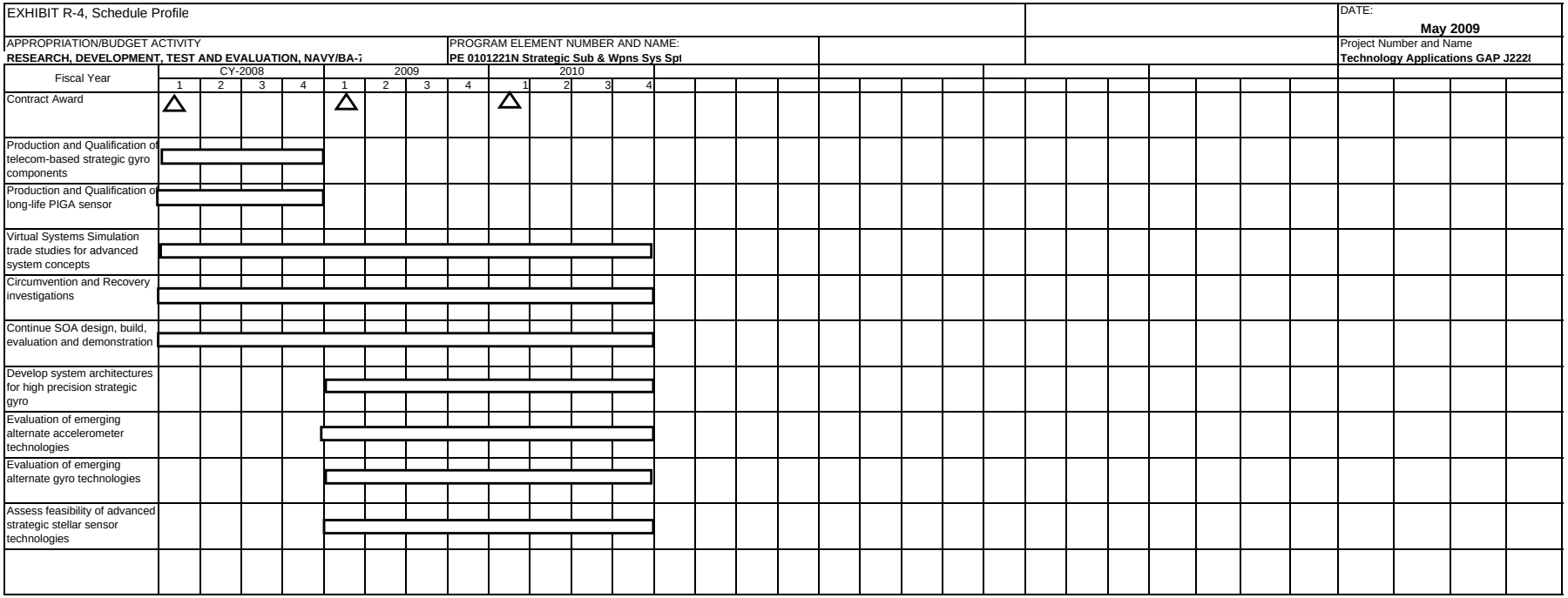
(U) Utilize the capabilities of the Virtual System Simulation (VSSim) to conduct system trade studies that support precision guidance application for boost phase and boost-thru-reentry scenarios.

(U) Conduct investigations to improve circumvention and recovery performance.

(U) Continue design, build, evaluate and demonstrate SOA as a strategic grade accelerometer.

**CLASSIFICATION:**

| EXHIBIT R-4, Schedule Profile | | | DATE: **May 2009** |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT NUMBER AND NAME:<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | | Project Number and Name<br>**Technology Applications GAP J222** |



**CLASSIFICATION:**

| EXHIBIT R-4a, Schedule Detail | | | DATE: **May 2009** | | | | | |
|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | | PROGRAM ELEMENT NUMBER AND NAME:<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | | | | Project Number and Name<br>**Technology Applications J2228** | | |
| **Fiscal Year** | **CY-2008** | **2009** | **2010** | | | | | |
| Contract Award | **1Q** | **1Q** | **1Q** | | | | | |
| Production and Qualification of telecom-based strategic gyro components | **1-4Q** | | | | | | | |
| Production and Qualification of long-life PIGA sensor | **1-4Q** | | | | | | | |
| Virtual Systems Simulation trade studies for advanced system concepts | **1-4Q** | **1-4Q** | **1-4Q** | | | | | |
| Circumvention and Recovery investigations | **1-4Q** | **1-4Q** | **1-4Q** | | | | | |
| Continue SOA design, build, evaluation and demonstration | **1-4Q** | **1-4Q** | **1-4Q** | | | | | |
| Develop system architectures for high precision strategic gyro | | **1-4Q** | **1-4Q** | | | | | |
| Evaluation of emerging alternate accelerometer technologies | | **1-4Q** | **1-4Q** | | | | | |
| Evaluation of emerging alternate gyro technologies | | **1-4Q** | **1-4Q** | | | | | |
| Assess feasibility of advanced strategic stellar sensor technologies | | **1-4Q** | **1-4Q** | | | | | |
| | | | | | | | | |

CLASSIFICATION:

| EXHIBIT R-2a, RDT&E Project Justification | DATE: May 2009 |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Technology Applications J2228** |

**C. (U) Other Program Funding Summary: (Dollars in Millions)**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| WPN BA1/1250/PE 0101228N | 1,044.192 | 1,085.057 | 1,060.504 |

**D. (U) Acquisition Strategy:**

Contracts will continue to be awarded to those sources who were engaged in the TRIDENT II (D5) development program and are currently engaged in the production and/or operational support of the deployed D5 Strategic Weapons Systems on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

**E. (U) Major Performers:**

- LMMS/CA - Reentry Body Systems Integration (RSAP)
- NSWC/VA - Heat shield Nose tip materials development (RSAP)
- ITT/CO - Vulnerability and hardness technologies (RSAP)
- CSDL/MA - Reentry Systems flight test instrumentation (RSAP)
- DOE/NM - Advanced fuzing technology (RSAP)
- CSDL/MA - Guidance Application program support (GAP)

**CLASSIFICATION:**

EXHIBIT R-3, Cost Analysis | DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY: **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7**

PROGRAM ELEMENT: **PE 0101221N Strategic Sub & Wpns Sys Spt**

Project Number and Name: **Technology Applications J2228**

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award | FY 10 Cost | FY 10 Award Date | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | | |
| Technology Applications | SS-CPFF | LMSS/CA | 109.000 | 13.083 | 12-07 | 11.500 | 10-08 | 13.000 | 10-09 | | | | | |
| Technology Applications | WR | NSWC/VA | 63.100 | 5.366 | 10-07 | 5.377 | 10-08 | 0.000 | | | | | | |
| Technology Applications | MIPR | DOE/NM | 25.200 | 0.618 | 10-07 | 1.000 | 10-08 | 1.000 | 10-09 | | | | | |
| Technology Applications | SS-CPFF | CSDL/MA | 17.700 | 0.000 | N/A | 0.000 | 10-08 | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | ITT/CO | 7.700 | 0.000 | 10-07 | 1.946 | 10-08 | 1.946 | 10-09 | | | | | |
| Technology Applications | SS-CPFF | CSDL/MA | 193.600 | 16.336 | 10-07 | 21.871 | 12-08 | 26.279 | 10-09 | | | | | |
| Technology Applications | SS-CPFF | LMMSC/CA | 55.800 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | WR | NAWC/CA | 3.400 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | WR | NSWC/VA | 2.553 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | CSDL/MA | 21.600 | 5.366 | 02-08 | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | HI/FL | 22.100 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | NGMS/CA | 2.500 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | AERO | 3.000 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | BAE/MD | 1.800 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | SS-CPFF | INTERSIL | 3.500 | 0.000 | | 0.000 | | 0.000 | | | | | | |
| Technology Applications | VARIOUS | VARIOUS | 13.000 | 0.134 | VARIOUS | 3.650 | VARIOUS | 3.412 | VARIOUS | | | | | |
| Subtotal Product Development | | | 545.553 | 40.903 | | 45.344 | | 45.637 | | | | | | |

Remarks:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Total Cost | | | 545.553 | 40.903 | | 45.344 | | 45.637 | | | | | | |

Remarks:

**R-1 SHOPPING LIST - Item No. 160 - 13 of 48**

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**Enhanced Special Weapons J3158** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost J3158 Enhanced Special Wpns | 5.771 | 0.932 | 5.850 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Enhanced Special Weapons effort supports the Nuclear Weapons Security program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landside at Naval Submarine Base, Kings Bay or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The Chief of Naval Operations (CNO) has assigned the Strategic Systems Programs, the FBM program manager, with mission responsibility for the safeguard of FBM nuclear assets. More specifically, the mission includes landside and pier operations as well as transits to and from the dive point, each of which present challenges to personnel as well as existing technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies focusing on land, waterside, and in transit requirements, including both surface and underwater. Collectively, these efforts will improve countermeasure technologies addressing detection, delay and denial.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Enhanced Special Weapons J3158** |

**B. (U) Accomplishments/Planned Program**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| Project Cost J3158 Enhanced Special Weapons | 4.932 | 0.000 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN
(U) ($4.932) Enhanced Special Weapons/SSBN Escort Mission.

FY 2008 efforts include:
(U) Continue prototype development and test program for the Palletized Protection System. Once the prototypes are completed, plans are to continue with follow-on tests and proofing as a lead in to future production . Participants in the program will continue to be TARDAC and MIT as the technical and scientific experts and SPA as management's support in addition to the winner of the FY 2007 prototype competition.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Enhanced Special Weapons J3158** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY2010 |
|---|---|---|---|
| Project Cost J3158 Enhanced Special Weapons | 0.839 | 0.932 | 5.850 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN

(U) ($0.839) Enhanced Special Weapons/Nuclear Weapons Security program.

FY 2008 efforts include:

(U) Underwater Close-in Defense: This effort is focused on developing an advanced underwater vehicle and diver detection and deterrence system for the protection of high value maritime assets while they are in port. The conceptual system involves a physical net-like barrier that combines use of fiber-optic sensing and alerting technology to provide an extremely high positive detection rate and extremely low false alarm rate. The concept design also includes increased alert time to improve positive identification of intruders and for activation of response systems.

(U) Technology Reviews: The program is investigating high frequency subsurface sensors, video motion detection, taut wire defeat barriers. A design effort is underway for the underwater denial system and assessing lethality of proposed systems.

(U) FY 2009 PLAN

(U) ($0.932) Enhanced Special Weapons/Nuclear Weapons Security program.

FY 2009 efforts include:

(U) Underwater Close-in Defense: This effort is focused on developing an advanced underwater vehicle and diver detection and deterrence system for the protection of high value maritime assets while they are in port. The conceptual system involves a physical net-like barrier that combines use of fiber-optic sensing and alerting technology to provide an extremely high positive detection rate and extremely low false alarm rate. The concept design also includes increased alert time to improve positive identification of intruders and for activation of response systems.

(U) Technology Reviews: The program investigating subsurface sensors in multi-sensor configurations, continuing taut wire defeat barrier research and researching low frequency subsurface sensors. The underwater denial system design is ongoing and lethality testing will begin.

(U) FY 2010 PLAN

(U) ($5.580) Enhanced Special Weapons/Nuclear Weapons Security program.

FY 2010 efforts include:

(U) Continue efforts focused on developing an advanced underwater vehicle and diver detection and deterrence system, and enhanced underwater and surface barriers.

(U) Develop advanced technologies for Site-Wide Nuclear Weapons Security Systems including a secure wireless command network and enhanced automated security systems.

(U) Develop advanced technologies for Limited Area/Convoy Route Nuclear Weapons Security Systems including extended perimeter detection, vehicle barrier systems at entry control points, and enhanced tracking capabilities.

(U) Technology Reviews: The systems will undergo further testing prior to production decisions.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Enhanced Special Weapons J3158** |

**C. (U) Other Program Funding Summary: (Dollars in Millions)**

| **Nuclear Weapons Security** | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| MILCON (CNI) | 39.750 | 56.830 | 154.711 |
| OPN BA7/PE various | 53.111 | 52.703 | 42.524 |
| O&MN BA1/1D2D/PE Various | 72.128 | 78.043 | 75.425 |
| **Transit/Escort** | | | |
| MILCON (CNI) | 0.000 | 0.000 | 0.000 |
| OPN BA1/1210/PE 0101228N | 0.000 | 0.000 | 10.010 |
| WPN BA4/4217/PE 0101228N | 6.999 | 45.223 | 0.000 |
| O&MN BA1/1D2D/PE 0208147N | 73.400 | 90.139 | 138.062 |

**D. (U) Acquisition Strategy:**

Procurements are being executed through a combination of private contractors (large and small business), government Centers of Excellence (COEs), other government agencies and the Naval Submarine Bases, Kitsap and Kings Bay. Contract awards are based upon "best value" determinations, and where practical will be performance based or include incentive provisions.

**E. (U) Major Performers:**

- BAE - Marinization of Integrated Army Active Protection System (IAAPS) and deliver two (2) operational prototype units.
- NFESC/CA - Underwater Close-in defense
- DOE/NM - Technology Reviews
- APL/MD - Remotely Operated Weapons technologies; final denial technologies.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | Project Number and Name<br>**Enhanced Special Weapons J3158** |

| Cost Categories | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | | |
| Enhanced Special Weapons | CPFF | BAE | 35.000 | 2.849 | 02-08 | 0.000 | N/A | 0.000 | N/A | | | | | |
| Enhanced Special Weapons | WR | NFESC/CA | 3.000 | 0.102 | 02-08 | 0.495 | 12-08 | 0.500 | 10-09 | | | | | |
| Enhanced Special Weapons | MIPR | DOE/NM | 2.000 | 0.000 | N/A | 0.000 | N/A | 0.000 | N/A | | | | | |
| Enhanced Special Weapons | CPFF | APL/MD | 1.100 | 0.000 | N/A | 0.000 | N/A | 0.000 | N/A | | | | | |
| Enhanced Special Weapons | WR | PNSW/FL | 0.000 | 0.000 | N/A | 0.100 | 11-08 | 0.000 | N/A | | | | | |
| Enhanced Special Weapons | VARIOUS | VARIOUS | 0.763 | 2.820 | 02-08 | 0.337 | 02-09 | 5.350 | 10-09 | | | | | |
| | | | | | | | | | | | | | | |
| Subtotal Product Development | | | 41.863 | 5.771 | | 0.932 | | 5.850 | | | | | | |

Remarks:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Total Cost | | | 41.863 | 5.771 | | 0.932 | | 5.850 | | | | | | |

Remarks:

**CLASSIFICATION:**

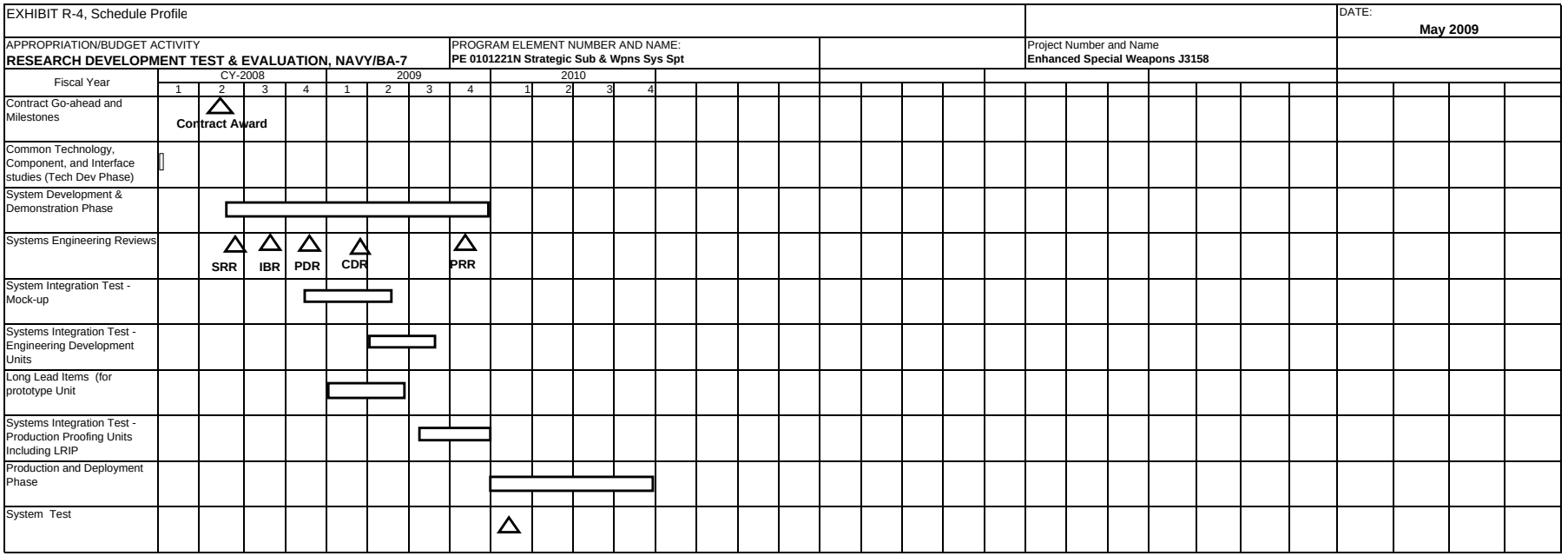
EXHIBIT R-4, Schedule Profile

DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY
**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7**

PROGRAM ELEMENT NUMBER AND NAME:
**PE 0101221N Strategic Sub & Wpns Sys Spt**

Project Number and Name
**Enhanced Special Weapons J3158**



**CLASSIFICATION:**

| EXHIBIT R-4a, Schedule Detail | | | | | | | | DATE: May 2009 |
|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | | PROGRAM ELEMENT NUMBER AND NAME:<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | | | Project Number and Name<br>**Enhanced Special Weapons J3158** | | | |
| **Fiscal Year** | **CY-2008** | **2009** | **2010** | | | | | |
| Contract Award -ahead and Milestones | **2Q** | | | | | | | |
| Common Technology, Component, and Interface studies | **1Q** | | | | | | | |
| System Development & Demonstration | **2-4Q** | **1-4Q** | | | | | | |
| Initial Production Baseline | | **4-Q** | | | | | | |
| Production and Deployment | | | **1-4Q** | | | | | |
| Systems Engineering Reviews | **2-4Q** | **1Q - 4Q** | | | | | | |
| System Integration Test - Mock-up | **4Q** | **1-2Q** | | | | | | |
| Systems Integration Test - Engineering Development Units | | **2-3Q** | | | | | | |
| Systems Integration Test - Production Proofing Units | | **3-4Q** | | | | | | |
| System Test | | | **1Q** | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**Advanced Technologies for Arming, Fuzing, and Firing (AF&F) Systems J3196** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost J3196 Advanced Technologies for Arming, Fuzing, and Firing (AF&F) Systems | 14.455 | 0.000 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Advance Technologies for Arming, Fuzing, and Firing (AF&F) program supports the development, proofing, and demonstration of advanced technologies that will be leveraged and incorporated into future AF&Fs. The focus is on technologies that have multi-service (Navy and Air Force) and Multi-Nation (US and UK) applicability. $10.0M of FY 2008 funds supports a working group of engineers (USN, USAF, and UK) to identify, prioritize, develop, proof, and demonstrate future AF&F applications. Examples of the technologies investigated are advance safety systems architectures, improved radar performance, multi-chip radar integration, radiation hardened electronics, radiation hardened non-volatile memory, advance power systems, identification of component qualification techniques, and preliminary testing of alternative components (primarily circuit elements.)

$4.5M of FY 2008 funding was used by the Department of Defense to fund the Congressional Commission on Strategic Posture of the United States.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**Advanced Technologies for Arming, Fuzing, and Firing (AF&F) Systems J3196** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Advanced Technologies for Arming, Fuzing, & Firing (AF&F) Systems | 14.455 | 0.000 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN

(U) ($10.0) Identify, prioritize, develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs.

FY 2008 efforts include:

(U) Support of USN, USAF, and UK engineer working group.

(U) Define Technical and Safety Requirements.

(U) Assess and Develop an Above Ground Testing Plan.

(U) Instrument, assemble, and perform three light initiated high explosive spray tests and complete summary reports.

(U) ($4.5M) Department of Defense funding to support the Congressional Commission on Strategic Posture of the United States.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | Project Number and Name<br>**Advanced Technologies for Arming, Fuzing, and Firing (AF&F) Systems J3196** |

| Cost Categories | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | | |
| Advanced Technologies for future AF&F Systems | MIPR | DOE / NM | 0.000 | 9.955 | 08-08 | 0.000 | N/A | 0.000 | N/A | | | | | |
| Congressional Commission on Strategic Posture of the US. | MIPR | USIP/DC | 0.000 | 4.500 | 08-08 | 0.000 | N/A | 0.000 | N/A | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Remarks:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Total Cost | | | | 14.455 | | 0.000 | | 0.000 | | | | | | |

Remarks:

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9E10A Advanced Technology for Mk5 AF&F** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9E10A Advanced Technology for Mk5 AF&F | 0.000 | 9.973 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The FY2009 funding is to support the development and studies program, Advanced Technologies for Mk5 Arming, Fuzing, and Firing (AF&F). The Advance Technologies for AF&F program supports the development, proofing, and demonstration of advanced technologies that will be leveraged and incorporated into future AF&Fs. The focus will be on technologies that have multi-service (Navy and Air Force) and Multi-Nation (US and UK) applicability. Examples of the technologies to be investigated are advance safety systems architectures, improved radar performance, multi-chip radar integration, radiation hardened electronics, radiation hardened non-volatile memory, advance power systems, identification of component qualification techniques, and preliminary testing of alternative components (primarily circuit elements.)

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9E10A Advanced Technology for Mk5 AF&F** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9E10A Advanced Technology for Mk5 AF&F | 0.000 | 9.973 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($9.973) Identify, prioritize, develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs.

FY 2009 efforts include:

(U) Continue work in support of advanced technologies.
(U) Support USN, USAF, and UK engineer working group.
(U) Complete Light Initiated High Explosives proof of concept and generate test report.
(U) Complete the down selection of new path length sensor technology.
(U) Generate a Facilities Readiness Document.
(U) Define Reentry Body/Reentry Vehicle Safety and Systems Architecture and Investigate Safety Architecture Trades.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**9E10A** | Project Number and Name<br>**Advanced Technology for Mk5 AF&F** |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Advanced Technology Mk5 AF&F | MIPR | DOE/NM | 0.000 | 0.000 | N/A | 9.973 | 04-09 | 0.000 | N/A | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 9.973 | | 0.000 | | | | | |

Remarks:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 9.973 | | 0.000 | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**0951 Joint Warhead Fuze Sustainment** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 0951 Joint Warhead Fuze Sustainment | 0.000 | 0.000 | 23.066 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Joint Warhead Fuze Sustainment Program is a development and studies program which integrates modern technologies into the Arming, Fuzing, and Firing (AF&F) development and modernization to improve reliability, safety and security, and develop common fuze components adaptable to current and future warheads. and with joint service and country applicability. The Joint Warhead Fuze Sustainment Program will focus on technologies that have multi-service (Navy and Air Force) and Multi-Nation (US and UK) applicability. Examples of the technologies to be investigated are advance safety systems architectures, improved radar performance, multi-chip radar integration, radiation hardened electronics, radiation hardened non-volatile memory, advance power systems, identification of component qualification techniques, and preliminary testing of alternative components (primarily circuit elements.)

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**0951 Joint Warhead Fuze Sustainment** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 0951 Joint Warhead Fuze Sustainment | 0.000 | 0.000 | 23.066 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2010 PLAN
(U) ($23.066) Identify, prioritize, develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs.

FY 2010 efforts include:

(U) Develop, proof, and demonstrate identified advanced technologies for future AF&Fs.
(U) Support USN, USAF, and UK engineer working group.
(U) Perform component level testing of potential arming/fuzing devices and technologies.
(U) Develop approach to address radiation hardening issues in electronic AF&F components.
(U) Down select Mk5 Life Extension Program Designs.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**0951 Joint Warhead Fuze Sustainment** | Project Number and Name |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Joint Warhead Fuze Sustainment | TBD | TBD | 0.000 | 0.000 | N/A | 0.000 | N/A | 23.066 | TBD | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 0.000 | | 23.066 | | | | | |

Remarks:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 0.000 | | 23.066 | | | | | |

CLASSIFICATION:

| EXHIBIT R-4, Schedule Profile | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT NUMBER AND NAME:<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Name<br>**0951 Joint Warhead Fuze Sustainment** | |

| Fiscal Year | CY-2008 | | | | 2009 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Contract Go-ahead and Milestones | | | | | | | | | | △ | | |
| Define Technical Requirements | | | | | | | | | | ▭ | ▭ | ▭ |
| Technology Development Strategies | | | | | | | | | | ▭ | ▭ | ▭ |
| Design Demonstration | | | | | | | | | | | | ▭ |
| Assembly Level Testing | | | | | | | | | | | | ▭ |
| Capabilities Assessment | | | | | | | | | | ▭ | ▭ | ▭ |
| General JCIDS Support | | | | | | | | | | ▭ | ▭ | ▭ |
| General Acquisition Planning Support | | | | | | | | | | ▭ | ▭ | ▭ |

R-1 SHOPPING LIST - Item No. 160 - 30 of 48

**CLASSIFICATION:**

| EXHIBIT R-4a, Schedule Detail | | | | | | | | DATE: **May 2009** |
|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | | | | | | Project Number and Name<br>**0951 Joint Warhead Fuze Sustainment** | | |
| **Fiscal Year** | **CY-2008** | **2009** | **2010** | | | | | |
| Contract Go-ahead and Milestones | | | **2Q** | | | | | |
| Define Technical Requirements | | | **2-4Q** | | | | | |
| Technology Development Strategies | | | **2-4Q** | | | | | |
| Design Demonstration | | | **4Q** | | | | | |
| Assembly Level Testing | | | **4Q** | | | | | |
| Capabilities Assessment | | | **2-4Q** | | | | | |
| General JCIDS Support | | | **2-4Q** | | | | | |
| General Acquisition Planning Support | | | **2-4Q** | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**J3198 Underwater Launch Missile System** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost J3198 Underwater Launch Missile System | 0.000 | 9.973 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Underwater Launch Missile System (ULMS) effort develops capabilities definitions and assessments, science & technology development strategies, and conceptual work to prepare for R&D and future prototyping.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**J3198 Underwater Launch Missile System** |

**B. (U) Accomplishments/Planned Program**

| | FY2008 | FY2009 | FY2010 |
|---|---|---|---|
| Project Cost J3198 Underwater Launch Missile System | 0.000 | 9.973 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($9.973) The Underwater Launch Missile System (ULMS)

FY 2009 efforts include:

(U) Develop Joint Capabilities Integrated Development System (JCIDS) required Capabilities-based Assessments to achieve an approved Initial Capabilities Document (ICD).

(U) Develop technology assessments and roadmap leading to approved Technology Development Strategy (TDS).

(U) Develop concepts for top-level integration studies, to analyze performance and cost drivers, and to begin analysis of alternatives.

(U) Develop, update and exercise design and modeling tools including cost modeling methodology for total-ship integration.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | | | | | | | | | | DATE: May 2009 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | | | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | | | | | | Project Number and Nar<br>**J3198 Underwater Launched Missile Study** | | Project Number and Name | | |
| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
| Support & Management | | | | | | | | | | | | | |
| Underwater Launched Missile | MIPR | WHS/DC | 0.000 | 0.000 | NA | 2.200 | 01-09 | 0.000 | NA | | | | |
| Underwater Launched Missile | CPFF | NSEA/DC | 0.000 | 0.000 | NA | 0.457 | 01-09 | 0.000 | NA | | | | |
| Underwater Launched Missile | CPFF | NSEA/DC | 0.000 | 0.000 | NA | 0.100 | 01-09 | 0.000 | NA | | | | |
| Underwater Launched Missile | WR | NSWC/VA | 0.000 | 0.000 | NA | 0.550 | 12-08 | 0.000 | NA | | | | |
| Underwater Launched Missile | CPFF | GDEB/CT | 0.000 | 0.000 | NA | 4.000 | 03-09 | 0.000 | NA | | | | |
| Underwater Launched Missile | Various | Various/TBD | 0.000 | 0.000 | NA | 2.666 | TBD | 0.000 | NA | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 9.973 | | 0.000 | | | | | |
| Remarks: | | | | | | | | | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 9.973 | | 0.000 | | | | | |
| Remarks: Contracted effort will be for Program Management Support, JCIDS, Acquisition Decision Documentation Support, studies, and analysis to support early acquisition decisions and milestones. Support will be contracted from SSP prime contractors, support contractors, and national laboratories. | | | | | | | | | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9C47A Advanced Linear Accelerator ( LINAC) Facility** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9C47A Advanced Linear Accelerator (LINAC) Facility | 2.892 | 3.191 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Free Electron Laser Program is for advanced capability Linear Accelerator (LINAC) to include a three stage accelerator section and an electron storage ring that will reduce the main limitations (electrical noise and micro-beam structure) of current LINAC technology. The enhanced LINAC will allow future large chips to be tested while meeting strategic test requirements.
This Congressional add belongs to SSP.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9C47A Advanced Linear Accelerator ( LINAC) Facility** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9C47A Advanced Linear Accelerator (LINAC) Facility | 2.892 | 3.191 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2008 PLAN

(U) ($2.892)The Free Electron Laser Program is for advanced capability Linear Accelerator (LINAC) to include a three stage accelerator section and an electron storage ring that will reduce the main limitations (electrical noise and micro-beam structure) of current LINAC technology. The enhanced LINAC will allow future large chips to be tested while meeting strategic test requirements. This Congressional Add belongs to SSP.

FY 2008 efforts include:

(U) Continue work on the Free Electron Laser Program and the advanced capability Linear Accelerator (LINAC).

(U) FY 2009 PLAN

(U) ($3.191)The Free Electron Laser Program is for advanced capability Linear Accelerator (LINAC) to include a three stage accelerator section and an electron storage ring that will reduce the main limitations (electrical noise and micro-beam structure) of current LINAC technology. The enhanced LINAC will allow future large chips to be tested while meeting strategic test requirements. This Congressional Add belongs to SSP.

FY 2009 efforts include:

(U) Continue work on the Free Electron Laser Program and the advanced capability Linear Accelerator (LINAC).

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**9C47A** | Project Number and Name<br>**Advanced Linear Accelerator ( LINAC) Facility** |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Advanced Linear Accelerator | RCP | CNSW | 0.000 | 2.892 | 05-08 | 3.191 | 04-09 | 0.000 | N/A | | | | |
| Subtotal Product Development | | | 0.000 | 2.892 | | 3.191 | | 0.000 | | | | | |

Remarks:

| Total Cost | | | 0.000 | 2.892 | | 3.191 | | 0.000 | | 0.000 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9E08A Adelos National Security Sensor System** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9E08A Adelos National Security Sensor System | 0.000 | 1.995 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Adelos National Security Sensor System effort develops an advanced fiber optic sensor systems for counterterrorism and antiterrorism operations to meet rigorous performance metrics necessary for nuclear facility, material, and weapons protection. The Adelos component will evaluate the use of advanced classification algorithms for reduction of false positive detections of objects in proximity to fiber optic sensing elements. Adelos program also seeks to expand the application of a unique fiber optic sensor system designed to provide covert surveillance and intelligence gathering of potential threats to our nation's nuclear activity.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9E08A Adelos National Security Sensor System** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9E08A Adelos National Security Sensor System | 0.000 | 1.995 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($1.995) The Adelos National Security Sensor System effort develops an advanced fiber optic sensor systems for counterterrorism and antiterrorism operations to meet rigorous performance metrics necessary for nuclear facility, material, and weapons protection. The Adelos component will evaluate the use of advanced classification algorithms for reduction of false positive detections of objects in proximity to fiber optic sensing elements. Adelos program also seeks to expand the application of a unique fiber optic sensor system designed to provide covert surveillance and intelligence gathering of potential threats to our nation's nuclear activity.

FY 2009 efforts include:

(U) Begin work to expand the application of the BLUE ROSE fiber optic sensor system to meet nuclear weapons and facilities metrics.

(U) Develop and test algorithms designed to classify identified targets and reduce false positive readings.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**9E08A Adelos National Security Sensor System** | Project Number and Name |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Adelos National Security Sensor System | MIPR | DOE/ID | 0.000 | 0.000 | N/A | 1.995 | 04-09 | 0.000 | N/A | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 1.995 | | 0.000 | | | | | |

Remarks:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 1.995 | | 0.000 | | | | | |

**R-1 SHOPPING LIST - Item No. 160 - 40 of 48**

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9E09A Enhanced Special Weapons Nuclear Weapons Security** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9E09A Enhanced Special Weapons Nuclear Weapons Security | 0.000 | 1.596 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Enhanced Special Weapons/Nuclear Weapons Security effort supports the development of the Adelos fiber optic sensor system for the advanced detection, tracking, and classification of potential threat targets by employing advanced digital acoustic watermarking algorithms within a secure network for steganographic techniques to convey the classification and location information within the digital audio signal produced by the Adelos application software.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9E09A Enhanced Special Weapons Nuclear Weapons Security** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9E09A Enhanced Special Weapons Nuclear Weapons Security | 0.000 | 1.596 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($1.596) The Enhanced Special Weapons/Nuclear Weapons Security effort supports the development of the Adelos fiber optic sensor system for the advanced detection, tracking, and classification of potential threat targets by employing advanced digital acoustic watermarking algorithms within a secure network for steganographic techniques to convey the classification and location information within the digital audio signal produced by the Adelos application software.

FY 2009 efforts include:

(U) Begin work in support of communication capabilities to convey classification and location information produced by the Adelos application.

(U) Develop and test algorithms designed to transit data within a secure network using steganographic techniques.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9E11A Covert Robust Location Aware Wireless Network** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9E11A Covert Robust Location Aware Wireless Network | 0.000 | 1.596 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Covert Robust Location Aware Wireless Network (CROWN) program develops a key foundation technology enabler to provide communication between multiple assets for a covert network capability that could be used on the submarine as a wireless network, and as a method to improve relative terminal accuracy that cannot be met today, especially in jammed or spoofed battlefields. The CROWN program provides the military precision relative location determination, tracking in a jammed environment, and high data rate communications with a low probability of being detected or intercepted by adversaries.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9E11A Covert Robust Location Aware Wireless Network** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9E11A Covert Robust Location Aware Wireless Network | 0.000 | 1.596 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($1.596) The Covert Robust Location Aware Wireless Network (CROWN) program develops a key foundation technology enabler to provide communication between multiple assets for a covert network capability that could be used on the submarine as a wireless network, and as a method to improve relative terminal accuracy that cannot be met today, especially in jammed or spoofed battlefields. The CROWN program provides the military precision relative location determination, tracking in a jammed environment, and high data rate communications with a low probability of being detected or intercepted by adversaries.

FY 2009 efforts include:

(U) Begin work on the development of a key foundation technology enabler in support of the Covert Robust Location Aware Wireless Network.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**9E11A Covert Robust Location Aware Wireless Network** | Project Number and Name |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Covert Robust Location Aware Wireless network | SS-BOA | IEC/CA | 0.000 | 0.000 | N/A | 1.596 | 04-09 | 0.000 | N/A | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 1.596 | | 0.000 | | | | | |

Remarks:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 1.596 | | 0.000 | | | | | |

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME<br>**9E12A Maritime Security-Surface and Sub-surface Surveillance** |

| COST ($ in Millions) | FY2008 | FY2009 | FY2010 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Project Cost 9E12A Maritime Security-Surface and Sub-surface Surveillance | 0.000 | 3.590 | 0.000 | | | | | |
| RDT&E Articles Qty | 0.000 | 0.000 | 0.000 | | | | | |

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Maritime Security- Surface and Sub-Surface Surveillance effort supports the development of the Quad-S Seaport Security System. The Quad-S Program develops a tactical surveillance and reconnaissance system in support of real-time monitoring of the complete spectrum of the maritime domain – underwater, surface, air, associated landside environments and individuals within those environments. This funding will also develop a needed year-round test bed, to evaluate and test emerging maritime technologies against the operational capabilities needed by the U.S. Navy.

**CLASSIFICATION:**

| EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009** |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROJECT NUMBER AND NAME:<br>**9E12A Maritime Security-Surface and Sub-surface Surveillance** |

**B. (U) Accomplishments/Planned Program**

| | FY 2008 | FY 2009 | FY 2010 |
|---|---|---|---|
| Project Cost 9E12A Maritime Security-Surface and Sub-surface Surveillance | 0.000 | 3.590 | 0.000 |
| RDT&E Articles Quantity | 0.000 | 0.000 | 0.000 |

(U) FY 2009 PLAN

(U) ($3.590) The Maritime Security- Surface and Sub-Surface Surveillance effort supports the development of the Quad-S Seaport Security System. The Quad-S Program develops a tactical surveillance and reconnaissance system in support of real-time monitoring of the complete spectrum of the maritime domain – underwater, surface, air, associated landside environments and individuals within those environments. This funding will also develop a needed year-round test bed, to evaluate and test emerging maritime technologies against the operational capabilities needed by the U.S. Navy.

FY 2009 efforts include:

(U) Begin work in support of the Quad-S Seaport Security System.

(U) Develop a year round test bed to develop and test potential nuclear weapons security technologies.

**CLASSIFICATION:**

| EXHIBIT R-3, Cost Analysis | | | DATE: May 2009 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>**RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7** | PROGRAM ELEMENT<br>**PE 0101221N Strategic Sub & Wpns Sys Spt** | Project Number and Nam<br>**9E12A Maritime Security-Surface and Sub-surface Surveillance** | Project Number and Name |

| Cost Categories | Contract Method & Type | Performing Activity & | Total PYs Cost | FY 08 Cost | FY 08 Award Date | FY 09 Cost | FY 09 Award Date | FY 10 Cost | FY 10 Award Date | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Support & Management | | | | | | | | | | | | | |
| Advanced Linear Accelerator | RCP | NSWC/FL | 0.000 | 0.000 | N/A | 3.590 | 04-09 | 0.000 | N/A | | | | |
| Subtotal Product Development | | | 0.000 | 0.000 | | 3.590 | | 0.000 | | | | | |
| Total Cost | | | 0.000 | 0.000 | | 3.590 | | 0.000 | | | | | |

Remarks:

**R-1 SHOPPING LIST - Item No. 160 - 48 of 48**