

UNCLASSIFIED

FY 2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: February 2008

BUDGET ACTIVITY: 03
PROGRAM ELEMENT: 0603758N
PROGRAM ELEMENT TITLE: NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS

COST: (Dollars in Thousands)

Project Number & Title	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
Total PE	49,191	40,612	70,216	55,988	71,407	73,590	70,343
2918 NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	49,191	40,612	70,216	55,988	71,407	73,590	70,343

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) addresses the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, Fleet Battle Experiments (FBE), Limited Objective Experiments (LOEs) and Sea Trial Exercises. The key aspects of this PE are divided into four areas: (1) SwampWorks develops and demonstrates newly invented or recently discovered technologies that address emergent and enduring operational problems in an accelerated timeframe; (2) Naval Warfare Experimentation develops prototypes of recent technology breakthroughs and provides them to the warfighter for experimentation during FBEs, LOEs or Sea Trials; (3) Tech Solutions resolves operational problems submitted by Sailors, Marines and Science Advisors via a collaborative working environment, applies scientific applications to solve these problems, and provides the solution to the sailor for evaluation and use; and (4) Operations Analysis provides the Navy and Marine Corps the means to identify capability needs that can be addressed with science and technology solutions.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

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B. PROGRAM CHANGE SUMMARY:

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
FY 2008/FY 2009 President's Budget Submission	41,146	41,196	47,209
Congressional Undistributed Reductions/Rescissions	0	-262	0
Execution Adjustments	8,709	0	0
Program Adjustments	0	0	23,133
Rate Adjustments	0	0	-126
SBIR Assessment	-664	-322	0
FY 2009 President's Budget Submission	49,191	40,612	70,216

PROGRAM CHANGE SUMMARY EXPLANATION:

Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

E. PERFORMANCE METRICS:

Overall metric goals are to transition the 6.3 advanced technology projects into acquisition programs of record, demonstrate successful technologies to enable new operational concepts, and enable the production of technology products such as proofs of concept and manufacturing packages. The performance of the work funded in this PE is reviewed at several levels to ensure that the investment is relevant and productive:

At the macroscopic level, the investment is coordinated with Navy Warfare Development Command (NWDC) and Commander, Fleet Forces Command (CFFC) to address the goals and objectives identified for Sea Trials and LOEs. At the microscopic level, the work funded in this PE is reviewed periodically by the Program Manager to ensure the investment is meeting the goals defined for each project. This review includes feedback collected from the warfighter community on all Sea Trials and LOE to support the Program Manager's assessment of the value and relevance of each investment. Furthermore, the entire program is reviewed yearly by the Chief of Naval Research.

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PROJECT NUMBER: 2918

PROJECT TITLE: NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS

COST: (Dollars in Thousands)

Project Number & Title	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
2918 NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	49,191	40,612	70,216	55,988	71,407	73,590	70,343

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project focuses on the development of recent technology breakthroughs to meet current operational needs from a subscale proof-of-principle into a full-scale prototype for warfighter experimentation during laboratory and operational demonstrations, Fleet Battle Experiments (FBE), Limited Objective Experiments (LOEs) and Sea Trial Exercises.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2007	FY 2008	FY 2009
NAVAL WARFARE EXPERIMENTATION	23,493	14,685	41,593

The objective of this project is to capitalize on recent technology breakthroughs to develop prototypes quickly and provide them to the warfighter for experimentation during laboratory and operational demonstrations, Sea Trials or LOEs. Current efforts include experimentation with a Coherent Stand-In Jamming (CSIJ) for unmanned air vehicles (UAVs), development of test simulation technology for ship affordability, technology to advance riverine warfare operations, an advanced sensor for Anti-Submarine Warfare (ASW) and technology investigation studies.

The funding level decrease from FY07 to FY08 is due to a realignment in support of Net-Centricity - Net-Enabled Command Capability, Maritime Domain Awareness and Operational Adaptation Technology Demonstration. The funding level increase in FY09 is due to additional experimentation with technologies developed in SwampWorks' power and energy initiative, the Maritime Domain Awareness (MDA) Initiative and the Operational Adaptation Technology Demonstration.

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FY 2007 Accomplishments:

- Continued concept based technology program efforts.
- Continued to identify other promising technology breakthroughs that can be prototyped and delivered to the warfighter for experimentation.
- Continued effort to experiment and demonstrate technology for riverine warfare.
- Completed investigation of operational areas that can be served with KM technologies.
- Completed the development of an unmanned aerial vehicle (UAV) with standoff jamming capability for Suppression of Enemy Air Defenses (SEAD) and IED initiatives.
- Completed experimentation with Fleet ASW Command to assess the effectiveness of the electromagnetic sensors in cueing in a real-time operational scenario.
- Initiated development and demonstration of real time situational awareness technologies.
- Initiated Ship Affordability program to examine ship designs and construction processes and develop technologies that can significantly reduce the costs to conceive, design and construct naval ships.
- Initiated effort to experiment and demonstrate technologies to improve warfighter survivability using electronic warfare systems.

FY 2008 Plans:

- Continue all FY 2007 efforts less those noted as completed above.
- Complete effort to experiment and demonstrate technologies to improve warfighter survivability using electronic warfare systems.
- Complete effort to experiment and demonstrate technology for riverine warfare.
- Complete program to develop technologies to enhance vehicle tactical situational awareness and fuse with intelligence products.

FY 2009 Plans:

- Continue all FY 2008 efforts less those noted as complete above.
- Complete Ship Affordability program and experimentation.
- Initiate experimentation efforts with technologies developed in SwampWorks power and energy initiative.
- Initiate effort to develop and demonstrate an integrated, affordable and minimally-manned warfighting sensor capability to provide adaptive persistent surveillance leading to Operational Adaptation by Naval forces in defeating the Asymmetric and Irregular Warfare threat.

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- Initiate effort to develop and demonstrate integrated intelligence, surveillance, observation, and navigation technologies into a common operation picture accessible throughout the U.S. Government.
- Initiate effort to demonstrate shipboard high temperature degaussing technologies.
- Initiate experiments to demonstrate shipboard high efficiency solid state lighting technologies.

	FY 2007	FY 2008	FY 2009
OPERATIONS ANALYSIS	0	2,904	2,923

The objective of this project is to provide operational analysis through studies, analyses, gaming and experimentation to identify Navy and Marine Corps capability needs that can be addressed with Science and Technology (S&T) solutions. The effort includes core analysis of S&T programs, military utility / capability gaps analyses, war gaming and fleet experimentation analysis. Recent work includes fleet operational readiness assessments, command and control operational performance assessments, participation in Maritime Domain Awareness Simulation Exercises (SIMEX), Sea Basing concept analysis and Electro-Magnetic Railgun S&T transition wargame and targeting analysis, and development of a Combating Terrorism Process Model, and wargaming with technology transfer innovation.

FY 2007 Accomplishments:

Previously funded in PE 0601153N.

FY 2008 Plans:

- Continue to conduct Military Utility Analyses (MUAs) of future naval capability technologies.
- Continue to conduct capability gaps analyses to identify areas that can be addressed with products from the science and technology portfolio.
- Continue to conduct war games focused on technical issues for S&T transitions to acquisition and the fleet.

FY 2009 Plans:

- Continue all FY 2008 efforts.

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	FY 2007	FY 2008	FY 2009
TECH SOLUTIONS	7,402	7,389	10,000

The objective of this program is to provide deckplate Sailors and Marines in the field with technical solutions to common operational problems and the Office of Naval Research Science Advisors with solutions to current technology gaps. The Sailors, Marines and Science Advisors provide their operational issues and technology gaps throughout the year via a collaborative working environment.

The funding increase in FY09 is due to the initiation and ramping up of a series of new science and technology programs focused on anti-terrorism and force protection as identified by Science Advisors and the Fleet/Force.

FY 2007 Accomplishments:

- Continued to obtain operational problems from the sailors via the web and developed, demonstrated and delivered technical solutions.
- Completed development of a portal for explosive detection that utilizes infrared detection.
- Completed development of a marker for search and rescue that does not interfere with Radio Frequency (RF) communications called a Search and Rescue Low Probability of Interference Marker.
- Completed development of ballistic goggles that provide eye protection for ground troops and are adaptive to changing light conditions.
- Completed development and testing of ballistic net protection system.
- Completed prototype of a Battlespace Simulation Trainer to provide 'immersive' simulation training to the warfighter.
- Initiated development of projects that provide solutions to problems identified by Science Advisors, as well as the Fleet/Force.

FY 2008 Plans:

- Continue all FY 2007 efforts less those noted as completed above.
- Initiate development of projects that provide solutions to problems identified by Science Advisors, as well as the Fleet/Force.

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FY 2009 Plans:

- Continue all FY 2008 efforts.
- Initiate development of projects that provide solutions to problems identified by Science Advisors, as well as the Fleet/Force.

	FY 2007	FY 2008	FY 2009
SWAMPWORKS	18,296	15,634	15,700

SwampWorks seeks to develop and demonstrate technologies that address emergent and enduring operational problems in an accelerated timeframe. Some of these technologies may end up in the hands of the warfighter for experimentation, or may culminate in a significant exercise that demonstrates capability then transitions into the Acquisition Program of Record (POR). Examples of recent successes are the half-length torpedo which led to the development of the SwampWorks Broadband Sonar and transitioned to the Mk 48 Advanced Capability (ADCAP) program and the Aircraft Carrier Situational Awareness System (ACSAS), which will be incorporated into a POR. Current efforts are the development and demonstration of jet noise mitigation technologies, blast resistant structures, a high resolution sonar for the new lightweight torpedo, the Combat Science and Technology Vehicle (CSTV), energy storage and reduced energy consumption technologies and technology investigation studies.

FY 2007 Accomplishments:

- Continued to identify enduring and emergent operational barriers identified by naval leadership and responded with relevant technology developments and demonstrations.
- Continued the development of new technologies that are responsive to Taskforce Antisubmarine Warfare (TF ASW), a recently developed Concept of Operation.
- Continued an investigation and development of technologies that reduce energy consumption losses during recent operations.
- Completed development of vehicle technologies to address survivability, fuel economies and blast mitigation.
- Completed test and demonstration of technology for F18 noise abatement.
- Initiated novel heavy fuel propulsion system development.
- Initiated and completed a sequencing array prototype for broad-spectrum pathogen surveillance within theatres of U.S. Naval operations.

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FY 2008 Plans:

- Continue all FY 2007 efforts less those noted as completed above.

FY 2009 Plans:

- Continue all FY 2008 efforts.
- Complete development of new technologies that are responsive to Taskforce Antisubmarine Warfare (TF ASW).
- Complete development of technologies that reduce energy consumption losses during recent operations.
- Initiate development of electronic warfare technologies that are responsive to fleet needs to counter emerging threats.

C. OTHER PROGRAM FUNDING SUMMARY - NAVY RELATED RDT&E:

Not applicable.

OTHER PROGRAM FUNDING SUMMARY - NON-NAVY RELATED RDT&E:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.