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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy

DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY
 1319: *Research, Development, Test & Evaluation, Navy*
 BA 1: *Basic Research*

R-1 ITEM NOMENCLATURE
 PE 0601153N: *Defense Research Sciences*

COST (\$ in Millions)	FY 2010	FY 2011	FY 2012	FY 2012	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
			Base	OCO	Total						
Total Program Element	423.623	429.767	446.123	-	446.123	459.221	482.591	503.415	525.618	Continuing	Continuing
0000: <i>Defense Research Sciences</i>	396.907	429.767	446.123	-	446.123	459.221	482.591	503.415	525.618	Continuing	Continuing
4027: <i>Naval Innovative Science and Engineering</i>	9.628	-	-	-	-	-	-	-	-	0.000	9.628
9999: <i>Congressional Adds</i>	17.088	-	-	-	-	-	-	-	-	0.000	17.088

A. Mission Description and Budget Item Justification

This program element (PE) sustains U.S. Naval Science and Technology (S&T) superiority, provides new technological concepts for the maintenance of naval power and national security, and helps avoid scientific surprise. It is based on investment directions as defined in the Naval Science & Technology Strategy approved by the S&T Corporate Board (Feb 2009). This new strategy is based on needs and capabilities from Navy and Marine Corps guidance and input from the Naval Research Enterprise (NRE) stakeholders (including the Naval enterprises, the combatant commands, the Chief of Naval Operations (CNO), and Headquarters Marine Corps). It exploits scientific breakthroughs and provides options for new Future Naval Capabilities (FNCs) and Innovative Naval Prototypes (INPs).

This PE addresses basic research efforts including scientific study and experimentation directed toward increasing knowledge and understanding in national security related aspects of physical, engineering, environmental and life sciences. Basic research efforts are developed, managed, and related to more advanced aspects of research on the order of a hundred technology and capability-related 'thrusters', which are consolidated into about fifteen research areas. These in turn support the major research areas of the Navy and Marine Corps: Autonomous Systems; Command, Control, Communications and Computers (C4); Countermeasures and Counterweapons; Marine as a System; Information Analysis and Decision Support; Intelligence, Surveillance and Reconnaissance; Logistics; Materials; Operational Environments; Platforms; Power and Energy Technology; Sensors and Electronics; Warrior Performance and Protection; Weapons and Support (Education and Outreach).

S&T investment in basic research also includes the National Naval Responsibilities (NNRs), fields upon which a wide range of fundamental Naval capabilities depend. There are currently four NNRs.

S&T investment in basic research also includes the Basic Research Challenge program which was established to competitively select and fund promising research programs in new areas not addressed by the current basic research program. The Basic Research Challenge Program stimulates new, high-risk basic research projects in multi-disciplinary and departmental collaborative efforts, and funds topics that foster leading edge science and attracts new principal investigators and organizations. Basic Research Challenge awards are for a period of four years.

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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	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
B. Program Change Summary (\$ in Millions)					
Previous President's Budget	429,107	429,767	443,593	-	443,593
Current President's Budget	423,623	429,767	446,123	-	446,123
Total Adjustments	-5,484	-	2,530	-	2,530
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-3,694	-	-	-	-
• SBIR/STTR Transfer	-8,350	-	-	-	-
• Program Adjustments	-	-	2,172	-	2,172
• Section 219 Reprogramming	6,573	-	-	-	-
• Rate/Misc Adjustments	-	-	0,358	-	0,358
• Congressional General Reductions Adjustments	-0,013	-	-	-	-

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: Congressional Adds

- Congressional Add: *Magnetic and Elec Fields in Ocean Env*
- Congressional Add: *Energetics S&T Workforce Development*
- Congressional Add: *Human Neural Cell-Based Biosensor*
- Congressional Add: *Next Generation Manufacturing Processes and Systems*
- Congressional Add: *ONAMI Initiatives*
- Congressional Add: *Shock and Vibration Modeling of Marine Composites*
- Congressional Add: *Texas Microfactory*
- Congressional Add: *Next Gen Renew Energy Sources*

	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999	17,088	-
Congressional Add Totals for all Projects	17,088	-

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Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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PROJECT
 9999: Congressional Addis

COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
	17.088	-	-	-	-	-	-	-	-	0.000	17.088

A. Mission Description and Budget Item Justification

Congressional Interest Items not included in other Projects.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011
Congressional Add: Magnetic and Elec Fields in Ocean Env	1.992	-
FY 2010 Accomplishments: This effort supported investigation of physical oceanographic and magnetic relationships via measurable physical and magnetic properties to determine how magnetic and electric fields respond to physical forcing under various oceanic conditions on a narrow continental shelf (deep water close to shore) off the east coast of the United States.		
Congressional Add: Energetics S&T Workforce Development	3.485	-
FY 2010 Accomplishments: This effort conducted applied research in the areas of energetic material synthesis, energetic systems engineering, traumatic brain injury, and autonomous technology.		
Congressional Add: Human Neural Cell-Based Biosensor	1.095	-
FY 2010 Accomplishments: This effort developed a monolayer culture of adherent human neural progenitor cells that can be reliably and quantitatively differentiated into primary cultures of human neurons.		
Congressional Add: Next Generation Manufacturing Processes and Systems	1.195	-
FY 2010 Accomplishments: This effort established a research and education program in flexible rapid response manufacturing which enhanced the manpower, technology and knowledge base for quick response, high technology precision manufacturing.		
Congressional Add: ONAMI Initiatives	3.824	-
FY 2010 Accomplishments: This effort provided basic research to explore novel measurement techniques and metrology tools to build and characterize nanostructures and devices. New nanometrology tools to image and measure the structure and composition of nanomaterial heterostructures and interfaces were studied and built, and techniques for evaluation of nanoscale devices for logic and biosensing applications were explored.		
Congressional Add: Shock and Vibration Modeling of Marine Composites	1.912	-

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PROJECT
 9999: Congressional Adds

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011
FY 2010 Accomplishments: This effort investigated and developed new composite materials, analytical tools and processing methods that can be used on all types of naval vessels. In particular, research was conducted into shock and vibration modeling of marine composites.		
Congressional Add: Texas Microfactory	1.593	-
FY 2010 Accomplishments: This effort supported Texas Microfactory research.		
Congressional Add: Next Gen Renew Energy Sources	1.992	-
FY 2010 Accomplishments: This effort funded basic research to support development of prototypes of next generation renewable energy systems for naval applications.		
Congressional Adds Subtotals	17.088	-

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

N/A

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

Congressional Interest Items not included in other Projects.