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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 3: <i>Advanced Technology Development (ATD)</i>	R-1 ITEM NOMENCLATURE PE 0603729N: <i>Warfighter Protection Adv Tech</i>
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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
Total Program Element	51.062	18.076	18.119	-	18.119	23.213	23.126	30.019	34.250	Continuing	Continuing
2914: <i>Warfighter Protection Adv Tech</i>	17.701	18.076	18.119	-	18.119	23.213	23.126	30.019	34.250	Continuing	Continuing
9999: <i>Congressional Adds</i>	33.361	-	-	-	-	-	-	-	-	0.000	33.361

A. Mission Description and Budget Item Justification

The efforts described in this Program Element (PE) are based on investment directions as defined in the Naval S&T Strategic Plan approved by the S&T Corporate Board (Feb 2009). This 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 provides the vision and key objectives for the essential science and technology efforts that will enable the continued supremacy of U.S. Naval forces in the 21st century. The Strategy focuses and aligns Naval S&T with Naval missions and future capability needs that address the complex challenges presented by both rising peer competitors and irregular/asymmetric warfare.

This program supports the development and demonstration of field medical equipment, diagnostic capabilities and treatments; technologies to improve warfighter safety and to enhance personnel performance under adverse conditions; and systems to prevent occupational injury and disease in hazardous, deployment environments. Navy investment in these areas is essential because Navy/USMC mission needs are not adequately addressed by the civilian sector or other Federal agencies. For example, civilian emergency medicine does not address casualty stabilization during long transit times to definitive care. The National Institutes of Health (NIH) focuses on the basic science of disease processes and not product development. Programs are coordinated with other Services through the Armed Services Biomedical Research Evaluation Management (ASBREM) Committee to prevent duplication of effort. This project funds the Force Health Protection program a Future Naval Capability (FNC) that will provide technology options for future Navy and Marine Corps capabilities and supports the "Sea Warrior" component of the Naval Transformation Roadmap, medical logistics aspects of "Sea Basing" and expeditionary force medical support associated with "Sea Strike".

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 (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	51.893	18.076	18.379	-	18.379
Current President's Budget	51.062	18.076	18.119	-	18.119
Total Adjustments	-0.831	-	-0.260	-	-0.260
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.284	-			
• SBIR/STTR Transfer	-0.513	-			
• Program Adjustments	-	-	-0.255	-	-0.255
• Section 219 Reprogramming	-0.033	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.005	-	-0.005
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

Project: 9999: Congressional Adds

Congressional Add: *Naval Special Warfare Performance and Injury Prevention Program*

Congressional Add: *CW Bill Young Marrow Donor Program*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	1.992	-
	31.369	-
	33.361	-
	33.361	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				PROJECT			
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603729N: <i>Warfighter Protection Adv Tech</i>				2914: <i>Warfighter Protection Adv Tech</i>			
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
2914: <i>Warfighter Protection Adv Tech</i>	17.701	18.076	18.119	-	18.119	23.213	23.126	30.019	34.250	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports the development and demonstration of field medical equipment, diagnostic capabilities and treatments; technologies to improve warfighter safety and to enhance personnel performance under adverse conditions; and systems to prevent occupational injury and disease in hazardous, deployment environments. Navy investment in these areas is essential because Navy/USMC mission needs are not adequately addressed by the civilian sector or other Federal agencies. For example, civilian emergency medicine does not address casualty stabilization during long transit times to definitive care. The NIH focuses on the basic science of disease processes and not product development. Programs are coordinated with other Services through the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee to prevent duplication of effort. This project funds the Force Health Protection program a Future Naval Capability (FNC) that will provide technology options for future Navy and Marine Corps capabilities and supports the "Sea Warrior" component of the Naval Transformation Roadmap, medical logistics aspects of "Sea Basing" and expeditionary force medical support associated with "Sea Strike".

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

	FY 2010	FY 2011	FY 2012
<p>Title: BONE MARROW RESEARCH</p> <p>Description: The goal of the Bone Marrow program is to test, develop and evaluate military contingency capabilities in order to improve care for casualties of marrow-toxic substances. This program will research efforts to refine and correctly identify matched marrow and matched platelets for casualties as well as military members with medical injuries including combat trauma.</p> <p>FY 2010 Accomplishments: - Initiated and completed the Bone Marrow Research.</p>	0.909	-	-
<p>Title: CASUALTY CARE AND MANAGEMENT</p> <p>Description: The goal of Casualty Care and Management is to maximize the continuum of care with lifesaving interventions as close to the battlespace as possible. This is in an increasingly lethal battlespace, with reduced infrastructure and logistics.</p> <p>FY 2011 to FY 2012 funding increase is due to the development of the Automated Critical Care System (ACCS), FNC efforts in the activity.</p> <p>FY 2010 Accomplishments: - Continued study to demonstrate selectivity/specificity of biomarkers for mild & moderate RNT in appropriate pre-clinical model. - Continued efforts to develop advanced technologies for First Responders.</p>	5.288	5.287	8.750

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012
<ul style="list-style-type: none"> - Continued efforts to develop advanced technologies to support the Forward Resuscitative Surgical System/ Expeditionary Resuscitative Surgical Systems (FRSS/ERSS). - Continued program to develop advanced technologies to support En Route Care of casualties. - Continued preclinical study to evaluate use of vasopressin to manage traumatic brain injury (TBI). - Continued efforts to develop prototype technology for closed-loop resuscitation for USMC En Route Care system. - Continued program to examine comorbidity of traumatic brain injury. (Continuation of similar effort funded in Healthy and Fit Force Activity.) - Continued pharmacologic research studies to support an FDA Investigational New Drug (IND) application. - Continued efforts to develop advanced technologies to support Rapid Blood Treatment. (Previously identified as First Responder.) - Continued efforts to develop advanced technologies to support Advanced Forward Care. (Previously identified as FRSS/ERSS.) - Continued efforts to develop advanced technologies to support Warfighter Restoration. (Previously identified as En Route Care.) - Completed clinical trial evaluating safety of vasopressin for treatment of trauma patients. - Completed efforts to develop a novel fibrinogen-like bandage using nanotechnology for hemorrhage control (internal and external). <p>FY 2011 Plans:</p> <ul style="list-style-type: none"> - Continue all efforts of FY 2010 less those noted as completed above. - Initiate development of multifunctional blood substitute program. <p>FY 2012 Plans:</p> <ul style="list-style-type: none"> - Continue all efforts of FY 2011. - Initiate development of the Automated Critical Care System (ACCS) 				
Title: CASUALTY PREVENTION		5.730	7.186	6.374
<p>Description: Casualty Prevention includes protecting the warfighter from environmental, occupational and battlefield threats.</p> <p>FY 2010 to FY 2011 funding increase is due to the initiation of emerging technologies that support delivery of approved FNC enabling capabilities and to increased investments for the Human Injury and Treatment (HIT) model and Warfighter Restoration FNC efforts in this activity.</p> <p>FY 2011 to FY 2012 funding decrease is due to the realignment of funding to support the development of the Automated Critical Care System FNC enabling capabilities effort.</p>				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012
<p><i>FY 2010 Accomplishments:</i></p> <ul style="list-style-type: none"> - Continued efforts to mitigate the effects of environmental and other threats to health. - Continued efforts to reduce operational injuries. - Continued research to determine the safety and efficacy of perfluorocarbons in treating decompression sickness and arterial gas embolism. - Continued development of tools to prevent psychological stress and PTSD. - Continued efforts to model head and neck injuries due to accelerated forces; operational injuries. - Initiated research to enhance force readiness by mitigating the impact of environmental stressors. - Initiated development of Human Injury and Treatment (HIT) model to assess personnel survivability, optimal personnel treatment, and restoration of ship operational capabilities. <p><i>FY 2011 Plans:</i></p> <ul style="list-style-type: none"> - Continue all efforts of FY 2010. - Complete research to determine the safety and efficacy of perfluorocarbons in treating decompression sickness and arterial gas embolism. <p><i>FY 2012 Plans:</i></p> <ul style="list-style-type: none"> - Continue all efforts of FY 2011 less those noted as completed above. 				
<p><i>Title:</i> NAVAL NOISE-INDUCED HEARING LOSS (NIHL)</p> <p><i>Description:</i> The goal of this program is to reduce the incidence of NIHL by nearly 100%. This program employs a total systems engineering approach that includes advancements in medical technology, jet engine physics, personal protective equipments, and mitigation analyses. Similar/related research was previously funded within this PE.</p> <p>This is a new effort in FY 2010 in support of applied research efforts.</p> <p>FY 2011 to FY 2012 funding decrease is due to the realignment of research efforts to support development of Jet Noise Reduction initiatives (now funded in PE 0602236N)</p> <p><i>FY 2010 Accomplishments:</i></p> <ul style="list-style-type: none"> - Initiated advanced research in medical prevention and treatment of NIHL and tinnitus (ringing in the ears). - Initiated advanced research to reduce noise at the source, i.e. jet engine quieting and flight deck noise reduction. - Initiated advanced research to improve personal protective equipment technology. 		5.774	5.603	2.995

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2010	FY 2011	FY 2012
- Initiated advanced research to study the incidence and susceptibility of NIHL and tinnitus, and to evaluate mitigation strategies. FY 2011 Plans: - Continue all efforts of FY 2010. FY 2012 Plans: - Continue all efforts of FY 2011. - Initiate research to reduce noise at the source, i.e., shipboard, jet engine quieting and flight deck noise reduction.			
Accomplishments/Planned Programs Subtotals	17.701	18.076	18.119

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 0602236N: <i>WARFIGHTER PROTECTION WARFIGHTER SUSTAINMENT APPLIED RESEARCH</i>	3.770	5.059	6.220	0.000	6.220	5.996	4.447	2.268	0.565	0.000	28.325

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

Efforts within this PE are measured at two levels. At the lower level, each is measured against technical and financial milestones on a monthly basis. Annually, each project is reviewed in depth for technical and transition performance by the Chief of Naval Research (CNR).

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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
9999: <i>Congressional Adds</i>	33.361	-	-	-	-	-	-	-	-	0.000	33.361

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: Naval Special Warfare Performance and Injury Prevention Program	1.992	-
FY 2010 Accomplishments: This effort provided research in support of Navy SEAL Special Boat Team 22 to strategically maximize human capital by reducing the rate of unintentional musculoskeletal injury, sharpen battlefield performance, optimize military readiness, extend the tactical life cycle of the Operator, and enhance quality of life of the Operator after service.		
Congressional Add: CW Bill Young Marrow Donor Program	31.369	-
FY 2010 Accomplishments: This effort supported the research of the C.W. Bill Young Bone Marrow Donor Recruitment and Research Program.		
Congressional Adds Subtotals	33.361	-

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.