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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Office of Secretary Of Defense **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 6: <i>RDT&E Management Support</i>	R-1 ITEM NOMENCLATURE PE 0605799D8Z: <i>Force Transformation</i>
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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	21.421	23.787	19.701	0.000	19.701	20.890	21.139	21.477	21.813	Continuing	Continuing
P799: <i>Force Transformation</i>	21.421	23.787	19.701	0.000	19.701	20.890	21.139	21.477	21.813	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding request supports the development of emerging capabilities under the Director of Defense Research & Engineering's Rapid Reaction Technology Office (RRTO). These funds are used to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this PE incubates selected concepts and technologies of interest to joint warfighters and their interagency partners to provide mature options as capability needs emerge in and beyond the FYDP. This includes developing risk-reducing prototypes to demonstrate capabilities in response to joint warfighter and interagency partners' shared requirements; and informing the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations. Individual projects are developed and funded with interagency partners over a two to five year period – products are demonstrated and fielded in spirals within that project timeline – and generally do not include stand-alone studies. Funding for this PE permits support for four to five major projects per year. Typically, these projects support mid-term irregular warfare needs aligned with those of interagency partners. This program element has evolved from exclusive support of force transformation activities to the activities described above, more closely aligned with departmental goals.

B. Program Change Summary (\$ in Millions)

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	23.073	19.981	0.000	0.000	0.000
Current President's Budget	21.421	23.787	19.701	0.000	19.701
Total Adjustments	-1.652	3.806	19.701	0.000	19.701
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	-0.194			
• Congressional Adds		4.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-1.136	0.000			
• SBIR/STTR Transfer	-0.516	0.000			
• Other Program Adjustments	0.000	0.000	19.701	0.000	19.701

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

Project: P799: *Force Transformation*

Congressional Add: *Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican*

Congressional Add Subtotals for Project: P799

Congressional Add Totals for all Projects

	FY 2009	FY 2010
2.500	2.500	4.000
2.500	2.500	4.000
2.500	2.500	4.000

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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
<i>P799: Force Transformation</i>	21.421	23.787	19.701	0.000	19.701	20.890	21.139	21.477	21.813	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This funding request supports the development of emerging capabilities under the Director of Defense Research & Engineering's Rapid Reaction Technology Office (RRTO). These funds are used to advance technical capabilities in mutual areas of interest through focused partnerships and projects with other federal departments and agencies. In addition to supporting interagency cooperation, this Program Element (PE) incubates selected concepts and technologies of interest to joint warfighters and their interagency partners to provide mature options as capability needs emerge in and beyond the Future Year Defense Program (FYDP). This includes developing risk-reducing prototypes to demonstrate capabilities in response to joint warfighter and interagency partners' shared requirements; and informing the Joint Capabilities Integration & Development System (JCIDS) and acquisition system through technical demonstrations. Individual projects are developed and funded with interagency partners over a two to five year period – products are demonstrated and fielded in spirals within that project timeline – and generally do not include stand-alone studies. Funding for this PE permits support for four to five major projects per year. Typically, these projects support mid-term irregular warfare needs aligned with those of interagency partners. This program element has evolved from exclusive support of force transformation activities to the activities described above, more closely aligned with departmental goals.

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Project Wolf Pack Wolf Pack was a prototype development project focused on enhancing the combat effectiveness of Army/Marine Corps/coalition small ground units. The project was designed to find, coordinate, integrate, experiment with and test emerging but relatively mature concepts and technologies that could rapidly address capability gaps. Wolf Pack was intended to act as a force-multiplier for small units and to operate within existing force structure, command, doctrinal and equipment arrangements. The overall Wolf Pack capability combined a variety of mounted and dismounted technologies. Collectively, these technologies were assigned to one of the following subordinate capability elements: Situational	2.800	0.000	0.000	0.000	0.000

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>suitable for transition. These include completed operational assessments, equipment prototypes, or validated concepts which can be used to inform and drive formal procurement processes and/or policy decisions.</p> <p>Project Overwatch currently contains three subordinate projects: the Law Enforcement Capabilities Project, the Gunslinger Package for Advanced Convoy Security (GunPACS), and Interagency Border Security.</p> <ul style="list-style-type: none"> • Gunslinger Package for Advanced Convoy Security (GunPACS): The Gunslinger Package for Advanced Convoy Security is a system built on the USMC Medium Tactical Replacement Vehicle (MTVRs) platform that provides enhanced situational awareness and cooperative engagement capabilities for ground and combat logistics elements in Afghanistan. This technology provides accurate targeting solutions to small unit and logistics convoy vehicle crews enabling them to effectively engage hostile shooters with remote weapons while remaining under armor. The objective of this effort is to provide clear, unambiguous data on the location of hostile forces in the vicinity of the small unit equipped with the GunPACS system. GunPACS will utilize 360-degree camera coverage, acoustic shot detection, and networked data fusion technology to determine shooter location information. This information is used by the crew to designate targets for the remote weapons mount to enable vehicle crews to engage hostiles while remaining under armor. Networked data fusion allows for a cooperative engagement capability, providing for more accurate and effective return fires. Additionally, the ability of convoy units to defend themselves will reduce the need for additional combat support for logistics convoys, potentially freeing those assets for active combat operations. <p><i>FY 2009 Accomplishments:</i> The project was initiated late in the fiscal year. Primary accomplishments included detailed planning for the construction of the prototype vehicles based on anticipated user input as well as the purchase of multiple subcomponents. Several workshops were conducted to gather information from possible users' units. Their detailed feedback for desired capabilities of the vehicle was incorporated into vehicle design.</p>					

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> The primary output will be the completion of four prototype vehicles and the transfer of these vehicles to deploying Marine units. Prototype completion is expected by April 2010. Marine units will then conduct training with the vehicles and deploy with them to Afghanistan in the August/September 2010 timeframe.</p> <p><i>FY 2011 Base Plans:</i> The GunPACS system design will allow more advanced sensors to be incorporated as they become available, including high speed optical and infrared (IR) shot detection systems as well as Unmanned Aerial Vehicle (UAV) feeds. Modifications/improvements will be added as additional requirements are identified by users. Based on the current level of interest by the Marine Corps, it is anticipated this program will transition in FY 2011.</p>						
<p>Law Enforcement Capabilities Project (LECP) - (Overwatch)</p> <p>Overwatch is a new capability development effort which seeks to leverage technology and new ideas to fill ground combat and interagency capability gaps. Notably, Overwatch will build on the ground work and past successes of Project Wolf Pack by continuing to maximize the utilization of capabilities and technologies developed and transitioned under that program.</p> <p>Within this framework, Overwatch will be the umbrella project containing multiple initiatives seeking to aggressively cultivate and leverage emerging technologies and concepts to counter the current and future challenges characteristic of the irregular warfare environment. Projects will be oriented towards increasing war fighter effectiveness on the battlefield and/or the development/enhancement of "whole of government" irregular warfare capability.</p> <p>Specifically, the capability development effort will focus on two lines of operation to guide the growth of timely, sustainable, and deployable solutions for identified and anticipated requirements inside the formal acquisition process. The first line of operation will involve examination of interagency capabilities by pursuing concept experimentation/ validation, interoperability enhancements and</p>		1.050	1.580	0.000	0.000	0.000

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

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>systems) that provides Stiletto her R&D capability. The electronic keel was designed to be flexible, modular and re-configurable to support near plug-and-play installation of C4I equipment used as part of experimentation. In addition to testing C4I equipment, Stiletto is ideally suited for operational experimentation and has tested unmanned systems, mine clearance sensors, and coastal warfare concepts of operations for various commands and agencies. The Stiletto vessel is homeported in Norfolk, VA.</p> <p><i>FY 2009 Accomplishments:</i> During FY 09 the Stiletto project conducted 120 days of underway operations in support of experimentation for government labs, small businesses and academia. A 90 day experimentation and counter-narcotics deployment to the Caribbean in support of the Joint Interagency Task Force South (JIATF-S) was completed in the summer of 2009. This deployment expanded on the interagency cooperation that was established during the FY 08 deployment to Colombia. While Stiletto continued to support its traditional customers, the program expanded its customer base to other federal agencies. While deployed, Stiletto participated in SOUTHCOM's theater security cooperation operations in the eastern Caribbean. Stiletto also participated in Project Thunderstorm (see below) during FY09. Several equipment upgrades enhanced Stiletto's capabilities as both a test bed and as a deployable asset.</p> <p><i>FY 2010 Plans:</i> The Stiletto project will continue its operational experimentation through FY 2010 as well as the identification, design and execution of continued upgrades to Stiletto's equipment and hull; continue supporting combatant command (COCOM), service, and interagency experimentation. Specific experiments will be conducted in support of Joint Staff-led Joint Capabilities Technology Demonstrations (JCTDs) as well as Defense Advanced Research Projects Agency (DARPA) projects. Opportunities with US Northern Command and the Department of Homeland Security will be evaluated.</p>					

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2010 Plans:</i> Expand to include operational experiments in JIATF-S, but also supporting JTF-North on the Arizona/Mexico border area using developmental airborne ISR capabilities being evaluated for theater deployment. Use of the Southwest Border region replicates the terrain found in the Afghanistan/Pakistan border areas, making the area ideal for evaluating ISR systems</p> <ul style="list-style-type: none"> • November 2009: Demonstrated the utility of a Ground Moving Target Indicator (GMTI) system called Vehicle and Dismount Exploitation RADAR (VADER) on the Southwest Border, in cooperation with Customs and Border Protection (CBP) Predator and Border Agents. The operational demonstration was invaluable in helping VADER developers refine CONOPS prior to expected deployment to Afghanistan in late Spring 2010. • March 2010: Thunderstorm Spiral 3 will be conducted in the Eastern Pacific region near Panama. The focus will be to demonstrate proper sensor management of several multi-int capabilities and then fuse the data into a single display for JIATF-S analyst's evaluation. Participants include DHS S&T, CBP, USCG, CIA, NRO, NRL, NAVAIR, NAVSEA, DIA, and USAF <p>September 2010: Thunderstorm Spiral 4 will be conducted using Southwest Border region for multi-int operational demonstrations.</p> <p><i>FY 2011 Base Plans:</i> Expand Thunderstorm spirals to include all of SOUTHCOM (not just JIATF-S AOR and mission sets). Continue using southwest (and possibly Northern) border regions to evaluate Irregular Warfare ISR capabilities.</p>						
<p>Program Support</p> <p>Ongoing support to the office includes management and analysis of highly specialized defense research and engineering technologies and projects. Support includes technical, financial, administrative and programmatic analysis of current planned research and engineering projects as well</p>		0.300	0.300	0.300	0.000	0.300

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B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>as development of future plans and activities. Additional tasks include the development of outreach plans and activities in conjunction with individual projects and their milestones.</p> <p><i>FY 2009 Accomplishments:</i> Provided management and analysis of highly specialized defense research and engineering technologies. Support included technical, financial, administrative and programmatic analysis of current and planned research and engineering projects, including Wolf Pack, Stiletto, Pelican, and Law Enforcement Capabilities Project, as well as exploration of areas of future work.</p> <p><i>FY 2010 Plans:</i> Provide management and analysis of highly specialized defense research and engineering technologies. Support includes technical, financial, administrative and programmatic analysis of current and planned research and engineering projects, including Wolf Pack, Stiletto, Pelican, TLE, and ORS.</p> <p><i>FY 2011 Base Plans:</i> Provides management and analysis of highly specialized defense research and engineering technologies.</p>						
Accomplishments/Planned Programs Subtotals		18.921	19.787	19.701	0.000	19.701
		FY 2009	FY 2010			
Congressional Add: Prototype Rigid Aeroshell Variable Buoyancy (RAVB) Air Vehicle - Project Pelican <i>FY 2009 Accomplishments:</i> The government Pelican team conducted a Conceptual Design Review of the proposed RAVB air vehicle during FY 2009. Additionally, the DOD/NASA team approved the purchase of certain long-		2.500	4.000			

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

	FY 2009	FY 2010
<p>lead hardware and materials to enable risk-reducing prototype efforts. With NASA analytic support, the contractor delivered first prototypes and/or test components for the following critical sub-systems: the primary structural load path, truss frame elements, propulsion unit, buoyancy management components, low speed flight control system, landing system, cockpit layout, and vehicle control units. The rapid prototyping and test efforts underway will inform and shape the FY 2010 effort. Also in FY 2009, the contractor successfully completed a DARPA program for a "Buoyancy Assisted Air Vehicle," the primary components of which will serve as risk reducing prototypes for the Pelican project.</p> <p><i>FY 2010 Plans:</i> During FY 2010, the government team intends to conduct a Preliminary Design Review of the proposed RAVB air vehicle. Subsystem component prototyping and test iterations for the above systems will continue with the addition of the pneumatics, fuel, electrical, and avionics subsystems. At the end of FY 2010, the team will be in a position to conduct the Critical Design Review and begin major system assembly.</p>		
Congressional Adds Subtotals	2.500	4.000

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

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to the Rapid Reaction Fund (RRF) includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year. During FY 2009 Force Transformation achieved a transition rate of 100% exceeding the objective of 30%.

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