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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 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603609N: <i>Conventional Munitions</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	4.087	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
0363: <i>Insensitive Munitions Adv. Development</i>	3.290	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797

A. Mission Description and Budget Item Justification

Insensitive Munitions Advanced Development (IMAD) (Project 0363) - Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet or fragment impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. IMAD is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship and platform survivability and satisfying performance and readiness requirements.

CONGRESSIONAL ADD - Improved Kinetic Energy Cargo Round (Project 10C120) - To design, develop, and demonstrate technologies and components for a kinetic energy payload for a 5-inch round. The Navy I-KEET program projectile features a forward expulsion mechanism to expel a multi-component kinetic energy payload with significantly increased on-target energy and expanded lethality footprint relative to its predecessor. The I-KEET round, considered to be a product-improved version of the MK182 I-KEET for ship self defense and force protection with higher lethality against a broader array of threats at a greater range.

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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	4.241	5.388	4.988	-	4.988
Current President's Budget	4.087	5.388	4.753	-	4.753
Total Adjustments	-0.154	-	-0.235	-	-0.235
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.118	-			
• Section 219 Reprogramming	-0.035	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.235	-	-0.235
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

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

Project: 9999: *Congressional Adds*

Congressional Add: *Improved Kinetic Energy Cargo Round*

	FY 2010	FY 2011
	0.797	-
Congressional Add Subtotals for Project: 9999	0.797	-
Congressional Add Totals for all Projects	0.797	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy									DATE: February 2011		
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				R-1 ITEM NOMENCLATURE PE 0603609N: <i>Conventional Munitions</i>				PROJECT 0363: <i>Insensitive Munitions Adv. Development</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
0363: <i>Insensitive Munitions Adv. Development</i>	3.290	5.388	4.753	-	4.753	5.288	5.526	5.785	5.901	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. The Insensitive Munitions (IM) Program is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship survivability and satisfying performance and readiness requirements. Each technology area is divided into subtasks addressing specific munition/munition class IM deficiencies. Energetic materials producibility is demonstrated to assure national capability to produce and load munitions systems. The program leverages are being closely coordinated with other Military Departments, North Atlantic Treaty organization (NATO) and allied countries to eliminate redundant efforts and maximize efficiency. A joint service IM requirement has been developed and through the IM Strategic Planning process, all PEO's are implementing IM in their priority munitions. Insensitive munitions are identified as a DoD critical technology requirement and considered as part of a weapon design. The Insensitive Munitions Advanced Development (IMAD) program matures the technology developed by a variety of Science and Technology (S&T) sources for program management integration into weapons systems to meet the IM technical deficiencies documented in the PEO IM Strategic Plans. IMAD provides the link between S&T programs and the PMs by optimizing IM technologies to meet Navy requirements. IMAD offers risk mitigation for the PMs in terms of IM technical knowledge, expertise and manpower with the State of the Art expertise across IM products. Each technology area is divided into subtasks addressing specific munition and munition class IM deficiencies.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2010	FY 2011	FY 2012
Title: Insensitive Munitions Adv. Development	3.290	5.388	4.753
Articles:	0	0	0
Description: Validate and assess weapon systems POA&M's for Insensitive Munitions (IM) compliance. Review Insensitive Munitions Strategic Plan (IMSP) for Navy Compile and analyze weapon system, energetic material and generic technology IM test data. Perform Threat Hazard Assessments (THAs). Perform analysis of Energetic Material properties logistic process. Review IM Certification and Waivers. Support Insensitive Munitions Council (IMC), Insensitive Munitions Coordination Group (IMCG), and IMC Working Group. Support and develop Insensitive Munitions Technology Tool (IMT2). Support North Atlantic Treaty Organization Standardization Agreement (NATO STANAG) and Advanced Operations (AOP) development. Support Insensitive Munitions Advanced Development (IMAD) program briefs. Support all Navy Joint Services Insensitive Munitions Technical Panel (JSIMTP) meetings. Support Explosive Safety Working Group (ESWG) meetings. Provide task management support for financial management, review of programmatic deliverables and overall task coordination.			

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603609N: <i>Conventional Munitions</i>	PROJECT 0363: <i>Insensitive Munitions Adv. Development</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
<p><i>FY 2010 Accomplishments:</i> Evaluate and Demonstrate IM gun propulsion systems which provide improved or comparable performance to in-service systems and have improved IM characteristics. Gun propellants are being formulated with less sensitive ingredients to decrease IM response, while still maintaining the energy and performance of the gun system. Less sensitive energetic solids are replacing part of the shock sensitive RDX in these formulations. In addition, less sensitive binder systems are being developed that help by partitioning the energy of the propellant system to help minimize IM response. Initial small-scale testing of a new propellant formulation to extend the range for the conventional 5" gun shows that these formulations are much less sensitive to shock initiation than currently fielded propellants. Cooperative effort with AGS Long Range Land Attack Projectile (LRLAP) program office to develop a new IM propellant, i.e. formulate, scale-up, test.</p> <p><i>FY 2011 Plans:</i> Evaluate and demonstrate IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combine candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications. Evaluated and demonstrated IM boost propellant formulation for future Tomahawk systems which provide improved and comparable performance to in-service systems and better IM characteristics. Combined candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Design a composite booster case for Tomahawk which will improve IM performance for cookoff and impact scenarios. Demonstrate new formulations that will self extinguish while maintaining performance for Advanced Medium-Range Air to Air Missile (AMRAAM), Sidewinder and other air launched systems. Look at new way to develop rocket propellant formulations that meet performance requirements and solve IM deficiencies. IM problems resolution using top down approach. Evaluate ordnance and container concepts. Model applications that reduce and enhance IM warhead design. Assess the operations utility of current and projected IM improvements to determine current state of IM and prioritize future funding for IM technology. Assess shielding evaluation of Tomahawk VLS storage canister. New cooperative effort with Advanced Gun System (AGS) LRLAP to review modeling to solve impact and cookoff with AUR pallet.</p> <p><i>FY 2012 Plans:</i> Evaluate and demonstrate IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combine candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications. Evaluated and demonstrated IM boost propellant formulation for future Tomahawk systems which provide improved and comparable performance to in-service systems and better IM characteristics. Combined candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Design a composite booster case for Tomahawk which will improve IM performance for cookoff and impact</p>			

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APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603609N: <i>Conventional Munitions</i>	PROJECT 0363: <i>Insensitive Munitions Adv. Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
<p>scenarios. Demonstrate new formulations that will self extinguish while maintaining performance for Advanced Medium-Range Air to Air Missile (AMRAAM), Sidewinder and other air launched systems. Look at new way to develop rocket propellant formulations that meet performance requirements and solve IM deficiencies. IM problems resolution using top down approach. Evaluate ordnance and container concepts. Model applications that reduce and enhance IM warhead design. Assess the operations utility of current and projected IM improvements to determine current state of IM and prioritize future funding for IM technology. Assess shielding evaluation of Tomahawk VLS storage canister. New cooperative effort with Advanced Gun System (AGS) LRLAP to review modeling to solve impact and cookoff with AUR pallet.</p>				
Accomplishments/Planned Programs Subtotals		3.290	5.388	4.753
C. Other Program Funding Summary (\$ in Millions)				
N/A				
D. Acquisition Strategy				
NOT APPLICABLE-				
<p>The Insensitive Munitions Advanced Development Program (IMAD) is assigned as a Non-ACAT program and therefore does not have program milestones like the ACAT I to IV programs. IMAD develops and evaluates IM technologies for use in Navy weapon systems and is not part of a particular weapon acquisition program.</p>				
E. Performance Metrics				
Quarterly Program Reviews				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PROPULSION DEV. AND EVAL.	WR	NAWC DIV/CHINA LAKE:WX	88.960	1.165	Nov 2010	1.050	Nov 2011	-		1.050	0.000	91.175	
EXPLOSIVES DEV. AND EVAL.	WR	NSWC/INDIAN HEAD DIV.:WX	73.406	1.600	Nov 2010	1.455	Nov 2011	-		1.455	0.000	76.461	
ORDNANCE DEV. AND EVAL.	WR	NSWC/DAHLGREN:WX	20.762	0.520	Nov 2010	0.450	Nov 2011	-		0.450	0.000	21.732	
GUN PROPULSION AND EVAL.	WR	NSWC/INDIAN HEAD DIV.:WX	1.749	1.203	Nov 2010	1.035	Nov 2011	-		1.035	0.000	3.987	
Subtotal			184.877	4.488		3.990		-		3.990	0.000	193.355	

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PROGRAM MANAGEMENT SUPT	WR	NOSSA:IN HEAD MD	5.112	0.115	Nov 2010	0.128	Nov 2011	-		0.128	0.000	5.355	
PROGRAM MANAGEMENT SUPPORT	MIPR	DTIC:FT BELVOIR VA	-	0.785	Nov 2010	0.635	Nov 2011	-		0.635	0.000	1.420	
Subtotal			5.112	0.900		0.763		-		0.763	0.000	6.775	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		189.989	5.388		4.753		-	4.753	0.000	200.130	

Remarks

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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>	0.797	-	-	-	-	-	-	-	-	0.000	0.797
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

To design, develop, and demonstrate technologies and components for a kinetic energy payload for a 5-inch round. The Navy I-KEET program projectile features a forward expulsion mechanism to expel a multi-component kinetic energy payload with significantly increased on-target energy and expanded lethality footprint relative to its predecessor. The I-KEET round, considered to be a product-improved version of the MK182 I-KEET for ship self defense and force protection with higher lethality against a broader array of threats at a greater range.

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

Congressional Add: Improved Kinetic Energy Cargo Round	FY 2010	FY 2011
<i>FY 2010 Accomplishments:</i> - Further develop payload expulsion, payload dispersion, projectile body design, base plug strengthening, and nose removal. - Demonstrate all components in full scale bench tests and in full scale integrated live-fire warhead tests.	0.797	-
Congressional Adds Subtotals	0.797	-

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

N/A

D. Acquisition Strategy

Congressional Add

E. Performance Metrics

Quarterly Program Reviews.