Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*							
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	13.427	20.556	24.771	-	24.771	27.458	28.219	31.436	32.385	Continuing	Continuing
P002: *Insensitive Munitions Advanced Technology*	13.427	17.034	19.720	-	19.720	21.360	21.384	23.086	23.779	Continuing	Continuing
P301: *Enabling Fuze Advanced Technology*	-	3.522	5.051	-	5.051	6.098	6.835	8.350	8.606	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program addresses advanced technology development associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by program managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus insuring the development of technology with the broadest applicability while avoiding duplication of efforts.

Munition Area Technology Groups (MATGs) and Fuze Area Technology Groups (FATGs) have been established for each munition and capability area and are tasked with 1) coordinating, establishing, and maintaining five, ten, and fifteen-year technology development plans and roadmaps, 2) coordinating biannual meetings to review technical and programmatic details of each funded and proposed effort, 3) developing and submitting Technology Transition Agreements in coordination with appropriate Program Executive Offices (PEO) for insertion in their Insensitive Munition (IM) Strategic Plans / Fuze Technology Development Plan, and 4) interfacing with other MATGs / FATGs and IM / fuze science and technology projects as appropriate. The Joint Insensitive Munitions Technical Program (JIMTP) and Joint Fuze Technical Program (JFTP) will utilize a Technical Advisory Committee (TAC) (consisting of senior DoD and DOE laboratory representatives and senior Munitions PEO representatives) to provide program oversight, policy, direction and priorities during its annual meeting.

The Insensitive Munitions effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

Under the JIMTP, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. Munition Area Technology Groups, under tri-service leadership, have developed technology roadmaps for each Munition Area which are used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

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The Enabling Fuze Advanced Technology effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development (GDF) of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into a munition configuration and its ability to address required capability needs can be validated. Mature fuze technology can be transitioned, thereby decreasing program costs and schedule risk and facilitating their spin-off into other munitions within their portfolios.

Under the JFTP, investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and will be validated by the PEOs and the Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.538	20.556	27.045	-	27.045
Current President's Budget	13.427	20.556	24.771	-	24.771
Total Adjustments	-10.111	-	-2.274	-	-2.274
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.087	-			
• Other Program Adjustments	-10.024	-	-	-	-
• Defense Efficiency - Baseline Review	-	-	-1.600	-	-1.600
• Defense Efficiency - Reports, Studies, Boards, and Commissions	-	-	-0.639	-	-0.639
• Economic Assumptions	-	-	-0.035	-	-0.035

Change Summary Explanation

Defense Efficiency – Baseline Review. As part of the Department of Defense reform agenda, implements a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions.

Defense Efficiency – Report, Studies, Boards and Commissions. As part of the Department of Defense reform agenda, reflects a reduction in the number and cost of reports, studies, DoD Boards and DoD Commissions below the aggregate level reported in the previous budget submission.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
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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
P002: *Insensitive Munitions Advanced Technology*	13.427	17.034	19.720	-	19.720	21.360	21.384	23.086	23.779	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program addresses advanced technology development associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop and demonstrate joint enabling technologies that can be used by program managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective, thus insuring the development of technology with the broadest applicability while avoiding duplication of efforts.

This effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions requirements established in United States Code, Title 10, Chapter 141, Section 2389 and DoDI 5000.1. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the PEO IM Strategic Plans. Mature demonstrated IM technology can be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other non-compliant munitions within their portfolios.

The Joint Insensitive Munitions Technology Program, investments are focused on five Munition Areas: High Performance Rocket Propulsion, Minimum Signature Rocket Propulsion, Blast and Fragmentation Warheads, Anti-Armor Warheads, and Large Caliber Gun Propulsion. Munition Area Technology Groups, under tri-service leadership, have developed technology roadmaps for each Munition Area which is used to guide investments based on goals consistent with the DoD IM Strategic Plan. These IM technologies, alone or in combination, will be incorporated in hardware, simulating real-world munitions, to demonstrate their utility and feasibility as part of Technology Transition Agreements with PEOs.

This effort will also demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the GDF, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority capabilities and technology needs identified and validated by the PEOs and the Heads of the Service Science and Technology (S&T) communities. In this way, promising multi-point initiation architectures, high reliability fuze architectures, survivable components, modular fuze packaging, and components produced based on ease of manufacturing can be integrated into a munition configuration and its ability to address required capability needs can be validated. Mature fuze technology can be transitioned, thereby decreasing program costs and schedule risk and facilitating their spin-off into other munitions within their portfolios.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: High Performance Rocket Propulsion	3.191	3.228	4.013
Description: High Performance Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of High Performance Propulsion (HPP) systems (rocket motors with Ammonium Perchlorate and with or without			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
a metal fuel) for rockets and missiles launched from air, ground and sea platforms. These technologies, when applied to rocket motors, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Operating conditions may be controlled or widely varying in both temperature and vibration. Technologies include, but are not limited to, rocket propellant ingredients (including synthesis, characterization and scale-up), reduced smoke or smokey propellants (including formulation, characterization and scale-up), rocket motor case design, materials for active and passive thermal mitigation, shock mitigation materials and techniques, passive and active coatings, active and passive venting techniques for motor cases or containers, ignition systems, sensors and thrust mitigation techniques. The 5-10-15 year goals of the HPP MATG are concentrated on solving the IM response of missile propulsions systems due to Fragment Impacts and Slow Cookoff for the majority of High Performance Propulsion rocket motors, and solving the Fast Cookoff response of very large High Performance Propulsion motors. ***FY 2010 Accomplishments:*** -Down-selected resins for composite case and manufactured rocket motor cases with venting technology in minimum signature and high-performance 5-10-inch class motors. Conducted static test of baseline propellant, plus bullet and fragment impact, and fast and slow cookoff tests with alternate propellant. -Scaled up high-performance composite propellant to 150-gal batch, and successfully processed in redundant 30 gal quantities. Conducted sub-scale IM demonstration in 8-inch composite rocket motors and subjected them to standard IM tests. Manufacturing large cases for future tests. ***FY 2011 Plans:*** -Conduct aging study and full scale IM demonstration tests on 21 inch new propellant filled rocket cases. Conduct 70 pound BATES motor static test firing to demonstrate propellant performance. Transition to Navy Insensitive Munitions Technology Transition Program. -Set for High length over diameter Steel Case Rocket Motors – Refine and integrate novel rocket motor design; fabricate motors and conduct IM testing to include bullet and fragment impact, and fast and slow cookoff. Transition to Navy Future Naval Capabilities. ***FY 2012 Plans:*** -Conduct full scale motor static tests of IM propellants. Demonstrate reduced sensitivity minimum signature propellant IM and ballistic properties in full scale test and transition to the 6.4 Insensitive Munition Technology Transition Program. -Conduct large motor IM demonstration.			
Title: Minimum Signature Rocket Propulsion	2.814	3.726	4.409

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Minimum Signature Rocket Propulsion is focused on the development and demonstration of technologies to improve the IM response of Minimum Signature Rocket Propulsion Technologies. The development and demonstration of minimum signature (MS) rocket technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Topics include but are not limited to MS rocket propellant formulations, ingredients for MS propellant formulations (including synthesis, characterization and scale-up), case and packaging design, active and passive venting techniques, rocket motor case design, ignition systems and thrust mitigation techniques. Of particular interest are technologies toward higher burning rate MS propellants with state-of-the-art energy and reduced shock sensitivity. The 5-10-15 year goals of the Minimum Signature Propulsion MATG are concentrated on solving the IM response of missile propulsion systems due to Fragment Impact, Slow Cook-Off, and Shaped Charge Jet threats. ***FY 2010 Accomplishments:*** -Conducted performance testing of two minimum signature propellant candidates in small scale and full scale tests for direct comparison with baseline propellant. ***FY 2011 Plans:*** -Conduct IM tests on composite and metal case motors using baseline propellant to benchmark composite case benefits. Conduct slow cookoff and fragment impact reliability testing of motor designs. -Prepare, load, and conduct aging and IM tests on propellant candidates in metal and composite cases, for direct comparison with baseline propellants. -Characterize the propellants and adapt design concepts for end-vent mechanisms to conduct slow cookoff testing. -Conduct aging and environmental tests of rocket motor thermal ring venting mechanism on live rocket motor assets. ***FY 2012 Plans:*** -Manufacture test motor hardware and conduct propellant down-select testing. -Demonstrate shaped memory cook-off solutions for minimum signature propellant in analog motors. -Modify containers with venting system and conduct fast and slow cookoff tests using inert as well as live rocket motors modified with the case venting mechanism to determine benefits of both systems.			
Title: Blast and Fragmentation Warheads ***Description:*** Blast and Fragmentation Warheads - Focused on the development and demonstration of technologies to improve the IM response of Blast / Fragmentation munitions. The development and demonstration of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance are of particular interest. Munition	5.154	6.956	6.983

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, bulk demolition charges, and bulk fills for blast and/or fragmentation charges. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the Blast and Fragmentation Warhead MATG are concentrated on solving the IM response of blast fragment warheads to the Sympathetic Detonation, Fast Cookoff and Shaped Charge Jet threats. ***FY 2010 Accomplishments:*** -Down selected explosive fill and liner materials. Completed full-scale liner environmental tests and readied assets for initial IM and performance tests of reactive liner in full-scale 500-lb bomb. Conducted series of full-scale environmental tests (thermal cycling, vibration, and drop tests) with the reactive liner and an inert fill. Tests were used to determine the effects that these types of environments have on items using liners, to ensure that the liner did not flow, shift or crack. -Down-selected formulation candidates and conducted IM tests using various manufacturing methods, comparing results to current fielded munitions. -Began demonstration of new initiation system for very insensitive main charge explosive fills. ***FY 2011 Plans:*** -Complete demonstration of low-sensitivity main-charge fill to prevent sympathetic detonation in 500-lb and greater bombs. Conduct full scale IM and performance tests. -Begin integrated demonstration of new initiation system with less-sensitive explosive fills. -Scale-up and manufacture explosive booster material in 30-40 pound batches to conduct pressing study and prepare pellets for testing. Conduct characterization tests to ensure purity and particle size of materials. -Perform high explosive testing to compare subject materials against baseline bomb fill materials. Use sympathetic reaction models to assess new IHE fills and select appropriate formulation for refinement. -Prepare and conduct sub-scale performance testing using candidate formulations to compare to baseline fills. ***FY 2012 Plans:*** -Complete initiation system environmental survivability testing, full scale initiation system tests and feasibility test, transitioning to a program of record. -Conduct environmental and IM tests to include full scale slow cookoff test in a 1000 pound warhead. -Conduct formulation refinements and subscale IM tests. Prepare assets for full-scale IM tests.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Integrate initiation designs with explosive fill candidate and conduct small-scale tests as well as full Bucket Test series.			
Title: Anti-Armor Warheads	1.775	1.579	2.237
Description: Anti-Armor Warheads is focused on the development and demonstration of explosive ingredients, explosives, warhead and fuze technologies for improving IM of Anti-Armor Warhead (AAW) munitions. The development of explosive ingredients, explosives and warhead and fuze technologies that, when applied to munitions, improve IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Munition operating conditions may be controlled or have widely varying environmental conditions, such as temperature and vibration, and other factors such as cost, availability, reliability may be critically important depending on the intended munition application. Applications vary but include high performance warhead fills, booster explosives, and all other technology to mitigate the violent response of Anti-Armor Warhead munitions to IM threats. Technologies include but are not limited to new ingredient synthesis and characterization, initial formulation development, scale-up, warhead/charge configuration, venting techniques for both munitions and their containers, protection / packaging materials and systems, shock mitigation liners, initiation devices, techniques, and technologies. The 5-10-15 year goals of the AAW MATG are concentrated on solving the IM response of anti-armor warheads to the Fragment Impact and Slow Cookoff threats and a 5 year goal of solving Sympathetic Detonation threats, with a 10-15 year goal of resolving the IM response to the Shaped Charge Jet threat.			
FY 2010 Accomplishments: -Demonstrated IM characteristics with no degradation in performance with liner venting and fragment impact mitigation sleeve technology on anti-armor missile warhead. Completed venting modeling and simulation work, for fast and slow cook-off, as well as fragment impact testing on Navy warhead. -Conducted Army warhead particle impact mitigation sleeve concept design and testing, ensuring no impact on warhead effectiveness.			
FY 2011 Plans: -Evaluation of Comp B replacement explosive and barriers in 40 pound shaped charge – Conduct modeling and simulation on candidate barrier materials and down-select. Conduct IM and performance tests to validate performance and finalize recommended solutions for transition to a program of record. -AAW IM Technology Integrated Demonstration & Transition – Integrate design and test hardware selection. Load large and small warheads and conduct fragment and bullet impact and fast and slow cookoff tests using selected explosives.			
FY 2012 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
-Optimize designs based upon small and large warhead tests; fabricate optimized design, and conduct engineering and penetration testing.			
Title: Large Caliber Gun Propulsion	0.493	1.545	2.078
Description: Large Caliber Gun Propulsion (LCGP) is focused on the development and demonstration of technologies in the area of Gun Propulsion Technologies. The development and demonstration of gun propulsion technologies, that when applied to munition systems, will improve munition IM response to one or more threats, while not degrading the response to other IM threats and at least maintaining munition performance. Topics include but are not limited to gun propellant formulations, ingredients for gun propellant formulations (including synthesis, characterization and scale-up), cartridge case and packaging design, active and passive venting techniques, reduced sensitivity primer propellant and primer systems and robust primers for insensitive propellants. Applications vary, but include both large and medium caliber munitions. Operating requirements vary, and other factors such as barrel life and operation over varying environmental conditions may be critically important depending on the intended munition application. The 5-10-15 year goals of the LCGP MATG are concentrated on solving the IM response of gun propulsion munitions to Fragment Impact, Shaped Charge Jet, and Slow Cookoff threats. ***FY 2010 Accomplishments:*** -Optimized propellant formulations and conducted initial safety tests using new propellant formulation. ***FY 2011 Plans:*** -Optimize and manufacture primer and conduct aging studies. Conduct propellant initial IM and gun testing with full scale representative articles. ***FY 2012 Plans:*** -Conduct final IM testing of propellant and primer optimization formulations less sensitive to fragment impact, shaped charge jet impacts and slow cookoff.			
Accomplishments/Planned Programs Subtotals	13.427	17.034	19.720

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C. Other Program Funding Summary ($ in Millions)

Line Item	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
• 0602000D8Z P000: *BA2 Insensitive Munitions*	14.990	14.392	14.334		14.334	14.661	14.916	15.246	15.696	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA Technical Readiness Level (TRL) scale.
2) MATG Technology Roadmaps are prepared, evaluated, and analyzed by JIMTP management and technical staff.
3) Chairman's Annual Assessments for each MATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each MATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.
6) External Peer Review of Projects conducted as part of Joint Army/Navy/NASA/Air Force meetings.
7) Technology Transition Agreements in place with Munition programs.

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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
P301: *Enabling Fuze Advanced Technology*	-	3.522	5.051	-	5.051	6.098	6.835	8.350	8.606	Continuing	Continuing

A. Mission Description and Budget Item Justification

This effort will demonstrate fuze enabling technologies needed to develop weapons that address priority capability areas identified in the Guidance for Development of the Force, the Secretary of Defense Memorandum, DoD Policy on Cluster Munitions and Unintended Harm to Civilians, and shortfalls in current weapon systems. This effort will take promising technologies integrated and tested to technology readiness level (TRL) five and demonstrate the technologies to a TRL-6 utilizing weapon hardware based on priority capabilities and technology needs identified and validated by the Program Executive Officers (PEOs) and the Heads of the Service S&T communities. Mature demonstrated fuze technology will be transitioned, thereby decreasing their program costs and schedule risk and facilitating spin-offs to other munitions within their portfolios.

Under the Joint Fuze Technology Program (JFTP), investments are focused on specific capability areas that have been identified by Department strategic guidance and current shortfalls in weapon systems and validated by the PEOs and Heads of the Service S&T communities. These four capability areas are: 1) Hard Target Survivable Fuzing, 2) Tailorable Effects (TE) Weapon Fuzing, 3) High Reliability Fuzing, 4) and Enabling Fuze Technologies and Common Architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Hard Target Fuzing	-	0.690	1.325
Description: The Hard Target Fuzing challenges are grouped into three Technology Areas. Improved modeling and simulation capabilities provide the validated computational tools necessary for hard target applications. Basic Phenomenology & Understanding of the Fuze Environment is the science-based endeavor of providing the test equipment, instrumentation, and analysis techniques for experimentation and data gathering necessary for Hardware Development - Next Generation Fuzing. This technology area aims to increase the effectiveness of facility denial munitions by improving the prediction tools and testing methodologies to evaluate the survivability and functionality of legacy and future fuzes. Development of these technologies will enable next generation boosted and hypersonic penetrators to execute missions against hardened and deeply buried targets.			
FY 2011 Plans: - Start to develop a survivable post-impact intelligent module and fire-set that would become part of a miniaturized fuze for next generation penetrating weapons. This Hardened Miniature Fuze Technology (HMFT) module possesses the capability of media discrimination (concrete, soil, air, etc.) as the penetrator host progresses through the target.			
FY 2012 Plans: - Build HMFT technology hardware for survivability and functionality evaluation in sled testing against complex penetration targets.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Start to develop test, redesign and demonstrate recorders in high speed (2500-4000 fps). Start to develop survivable modular fuze technology for multi-role common miniature munitions with distributed/embedded fuzes.			
Title: Tailorable Effects Fuzing ***Description:*** Develop fuzing for tailorable effects weapons that encompasses the ability to selectively vary the output of the weapon (Dial-a-Yield) and/or the ability to generate selectable effects (directed blast, fragmentation). Develop initiation and multi-point technologies; electronic safe and arm based multi-point initiators for tunable output – scalable yield warheads; Micro Electro-Mechanical Systems (MEMS) based multi-point initiators for tunable output/scalable yield warheads; and smart fuzing for tailorable effects weapons. These technologies will enable weapons that can effectively defeat a variety of targets while minimizing unintentional collateral effects. ***FY 2011 Plans:*** - Develop selectable yield warhead multi-point initiation architecture and control concepts including: a) architectures utilizing lower energy detonators/initiators and b) non-conventional multi-point initiation architectures such as energetic multi-points. ***FY 2012 Plans:*** - Apply selectable yield warhead initiation architecture and control concepts into candidate warheads. In particular, Army Technology Objectives (ATOs) related to tairlorable effects will benefit from the 6.3 JFTP efforts. They are Scalable Technology for Adaptable Response ATO and the Sensor Warhead Fuze Technology for Integrated Combined Effects ATO.	-	1.332	1.422
Title: High Reliability Fuzing ***Description:*** Develop high reliability fuzing architectures, fuzing components, and unexploded ordnance (UXO) reduction features. These technologies will enable the next generation of cluster munitions to achieve the required greater than 99% reliability goal. Evolving DoD emphasis on increased weapon system reliability is driving the need to consider new and novel approaches for achieving increased fuze reliability while maintaining or enhancing fuze design safety. DoD policy, higher weapon reliability expectations and harsher weapon system operational requirements are dictating the need for higher fuze reliability than available using current technologies. ***FY 2011 Plans:*** - Begin research, development and demonstration of MEMS device components and fabrication processes for future cluster munitions fuze applications. - Develop and build test phase 1 high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. ***FY 2012 Plans:***	-	0.660	1.111

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
- Develop and build phase 2 high reliability fuze architecture technology prototypes that satisfy reliability while maintaining safety by eliminating single-point and common-mode failures. - Demonstrate high reliability miniature fuzes in air-gun testing, that simulate cluster munitions environments, to achieve Technical Readiness Level (TRL)-5.			
Title: Enabling Fuze Technologies ***Description:*** Develop common / modular fuze architecture; innovative fuze component technologies; sensors; next generation fuze setting capability, tools and modeling; and fuzing power sources. These fuzing technologies will provide smaller, more cost effective solutions while meeting or exceeding the performance of existing technologies. Development of these technologies will enable future weapon applications to be more mission adaptive and smaller along with improve target detection capabilities. ***FY 2011 Plans:*** - Fabricate and test 1st phase MEMS retard and impact sensors and conduct functional testing in simulated environments. - Apply common fuze architecture technology concepts in bomb, missile, and artillery fuze applications to provide enhance fuze modularity, common components and packaging for lower cost and manufacturing ease. ***FY 2012 Plans:*** - Build and test 2nd phase miniature retard and impact sensors for bomb and air dropped munitions. Demonstration will be in relevant environments simulating bomb deployment. - Conduct functional and safety assessment and testing of common fuze architecture technologies: safety components, modular electronics, sensors, interfaces, and packaging.	-	0.840	1.193
Accomplishments/Planned Programs Subtotals	-	3.522	5.051

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• 0602000D8Z P204: *BA2 Enabling Fuze Technology*	3.818	7.713	7.167		7.167	5.656	6.604	7.312	7.524	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

1) Transitions of technologies developed by the Program are tracked and documented using DoD/NASA TRL scale.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603000D8Z: *Joint Munitions Advanced Technology*	PROJECT P301: *Enabling Fuze Advanced Technology*

2) FATG Technology Roadmaps are prepared, evaluated, and analyzed by JFTP management and technical staff.
3) Chairman's Annual Assessments for each FATG are critically reviewed by the TAC to determine progress, transition plans, and relevance of each project.
4) Project progress toward goals and milestones is assessed at each FATG meeting.
5) Annual technical reports and papers are tracked and documented for the Program.
6) Technology Transition Agreements in place with Munition programs.