PE NUMBER: 0603601F
PE TITLE: Conventional Weapons Technology

Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2004

BUDGET ACTIVITY: 03 Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603601F Conventional Weapons Technology

Cost ($ in Millions)		FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	45.070	37.198	22.398	22.594	23.024	23.409	23.785	Continuing	0.000
670A	Ordnance Technology	21.079	21.463	13.826	13.937	14.193	14.430	14.663	Continuing	0.000
670B	Guidance Technology	23.991	15.735	8.572	8.657	8.831	8.979	9.122	Continuing	0.000

Note: In FY 2004, the funding was reduced as the Low-Cost Autonomous Attack System (LOCAAS) Advanced Technology Demonstration (ATD) is transitioning from the initial powered flight test phase of the ATD to the second phase of the ATD.

(U) A. Mission Description and Budget Item Justification

This program develops, demonstrates, and integrates ordnance and advanced guidance technologies for air-launched conventional weapons. The program includes two projects: (1) development of conventional ordnance technologies including warheads, fuzes, and explosives; and (2) development of advanced guidance technologies including seekers, navigation and control, and guidance. Note: In FY 2004, Congress added $1.0 million for the LOCAAS and $6.0 million for Maverick Missile Upgrade Lock-On after Launch (LOAL) - Live Testing.

(U) B. Program Change Summary ($ in Millions)

		FY 2003	FY 2004	FY 2005
(U)	Previous President's Budget	43.605	30.516	22.456
(U)	Current PBR/President's Budget	45.070	37.198	22.398
(U)	Total Adjustments	1.465	6.682	
(U)	Congressional Program Reductions			
	Congressional Rescissions		-0.318	
	Congressional Increases		7.000	
	Reprogrammings	2.544		
	SBIR/STTR Transfer	-1.079		
(U)	Significant Program Changes:			
	Not Applicable.			

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE: 0603601F Conventional Weapons Technology	PROJECT NUMBER AND TITLE: 670A Ordnance Technology	

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
670A Ordnance Technology	21.079	21.463	13.826	13.937	14.193	14.430	14.663	Continuing	0.000
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This project develops, demonstrates, and integrates ordnance technologies for enhancing the effectiveness of air-launched conventional weapons. The project develops conventional ordnance including warheads, fuzes, explosives, carriage and release, and munition integration technologies. This project improves the capability for conventional ordnance supporting an Air Expeditionary Force.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2003	FY 2004	FY 2005
(U) MAJOR THRUST: Develop and demonstrate advanced air-delivered munitions fuze and mass-focusing warhead technologies to improve munition effectiveness, allowing for smaller warheads and munition airframes, thereby improving sortie effectiveness and increasing strike aircraft load-outs. Develop a fuzing capability that will transmit function data from penetrating weapons through various hard target mediums.	6.715	7.320	5.350
(U) In FY 2003: Supported the cooperative program with the United Kingdom to design an integrated fuze, an improved target detection device, and a directional warhead package. Improved the design of a fuze using Microwave Monolithic Integrated Circuit technologies that will give burst accuracy of 0.5 meters for weapons that have closure rates up to 2,500 meters per second. Completed design trades for precision-guided munitions with precise, time-of-arrival attributes that can be used to defeat hard and deeply buried targets that will be used to overpower protective tunnel doors and destroy tunnel contents with intruding blast pressures.			
(U) In FY 2004: Complete cooperative program with the United Kingdom to ground test an integrated fuze, an improved target detection device, and a directional warhead package. Continue design of a fuze using Microwave Monolithic Integrated Circuit technologies that will give a burst accuracy of 0.5 meters for weapons that have closure rates up to 2,500 meters per second. Begin designing a hard target influence fuze capable of denying hard and deeply buried facilities access.			
(U) In FY 2005: Continue design of a fuze using Microwave Monolithic Integrated Circuit technologies that will give burst accuracy of 0.5 meter for weapons that have closure rates up to 2,500 meters per second. Continue designing a hard target influence fuze capable of denying hard and deeply buried facilities access.			
(U)			
(U) MAJOR THRUST: Develop and demonstrate conventional munition subsystem and platform integration technologies to include innovative air-delivered munition carriage and release equipment, miniature weapon release concepts, and reduced airframe size providing the capability to safely carry, launch, and communicate with the aerospace vehicle and other multiple miniature weapons. These integration technologies will increase weapon	5.289	3.325	3.301

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY **03 Advanced Technology Development (ATD)**	PE NUMBER AND TITLE **0603601F Conventional Weapons Technology**	PROJECT NUMBER AND TITLE **670A Ordnance Technology**

	load-outs and improve sortie effectiveness for current and future strike aircraft while reducing munition airlift requirements.			
(U)	In FY 2003: Completed design of a low-cost, precision-guided weapon with a Circular Error Probable of 1.4 meters and lethal effectiveness against 85% of the MK-83 and BLU-109 targets.			
(U)	In FY 2004: Begin an effort to integrate components and technologies for a weapon that can neutralize chemical and biological warfare facilities. Begin an effort to develop a multi-mode ordnance package effective against a broad range of unhardened ground targets.			
(U)	In FY 2005: Demonstrate a weapon that can neutralize chemical and biological warfare facilities. Continue an effort to develop a multi-mode ordnance package effective against a broad range of unhardened ground targets.			
(U)				
(U)	MAJOR THRUST/CONGRESSIONAL ADD: Develop and demonstrate advanced conventional armament warhead technologies, including heavy metal liners, dense metal cases, and insensitive explosives with increased energy release performance attributes. The goal of these efforts is to destroy hardened targets by more effectively penetrating protective surfaces and by enhancing kill mechanisms against softer surface targets. Note: This effort includes $3.0 million in FY 2003 Congressional Add funding for the BLU-109 Heavy Warhead (tungsten heavy alloy core).	9.075	10.818	5.175
(U)	In FY 2003: Improved the design and began fabrication of a weapon capable of high-speed penetration of extremely hard targets by integrating a new warhead case technology, insensitive explosive, and multiple-event fuze. Completed preliminary design of a unitary warhead penetrator capable of damaging weapons of mass destruction production and storage facilities with minimum collateral damage. Investigated maturing designs of advanced reactive materials such as nano-scale aluminum. Designed new warhead for the BLU-109 with a tungsten heavy alloy core.			
(U)	In FY 2004: Continue designing and fabricating a warhead capable of surviving high-speed penetration of extremely deep targets by integrating a new warhead case technology, insensitive explosives, and a multiple-event fuze. Demonstrate a Tantalum warhead to provide attack capability against armored targets employing 'Active Protection Systems.			
(U)	In FY 2005: Continue designing and fabricating a weapon capable of high-speed penetration of extremely hard targets by integrating new warhead case technology, insensitive explosive, and a multiple-event fuze. Improve insensitive explosive warhead fills with a goal to significantly reduce the fill volume required yet successfully completing the intended ordnance mission.			
(U)	Total Cost	21.079	21.463	13.826

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE 0603601F Conventional Weapons Technology	PROJECT NUMBER AND TITLE 670A Ordnance Technology

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

	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
(U) Related Activities:									
(U) PE 0602602F, Conventional Munitions. This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.									

(U) D. Acquisition Strategy

Not Applicable.

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE: 0603601F Conventional Weapons Technology	PROJECT NUMBER AND TITLE: 670B Guidance Technology	

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
670B Guidance Technology	23.991	15.735	8.572	8.657	8.831	8.979	9.122	Continuing	0.000
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This project develops, demonstrates, and integrates affordable, autonomous, and adverse weather advanced guidance technologies for conventional armaments delivered from manned and unmanned aerospace vehicles. This project includes development of conventional weapon guidance systems including terminal seekers, midcourse navigation sensors for standoff delivery weapons, and target detection and identification processing algorithms for reducing target location error to improve target kill probability.

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2003	FY 2004	FY 2005
(U) MAJOR THRUST: Develop and demonstrate advanced conventional armament seeker technologies for miniature munitions applications. These seeker technologies will autonomously detect, acquire, and guide to targets of interest in adverse weather and battlefield conditions. Also, the seeker technologies will increase the probability of kill and minimize collateral damage while providing increased weapons load-out and improved sortie effectiveness.	2.782	2.417	2.968
(U) In FY 2003: Investigated low-cost, laser radar seeker technologies, like Defense Advanced Research Projects Agency-developed fixed, detector array technology for potential Air Force applications.			
(U) In FY 2004: Begin design of a low-cost, laser detection and ranging seeker that will increase data rate and reduce moving parts of earlier generation laser seeker technologies.			
(U) In FY 2005: Finalize design and begin fabrication of a low-cost, laser detection and ranging seeker that will increase data rate and reduce moving parts of earlier generation laser seeker technologies.			
(U)			
(U) MAJOR THRUST: Develop and demonstrate advanced conventional armament navigation and control technologies to increase armament navigation accuracy, improve stand off range, and enhance weapons control and operation in electronic jamming environments.	1.932	2.175	2.152
(U) In FY 2003: Completed developing interface between a target detection device, fuze, directional warhead, and weapon terminal guidance seeker. Designed a munition navigation system using micro-electromechanical system technology to provide an accurate (less than one meter), miniature (less than 25 cubic inches), and affordable (less than $6,000 per unit) Global Positioning System/Inertial Measurement Unit navigation system sized for munition applications.			
(U) In FY 2004: Continue developing a munition navigation system using micro-electromechanical system technology to provide an accurate (less than one meter), miniature (less than 25 cubic inches), and affordable (less than $6,000 per unit) Global Positioning System/Inertial Measurement Unit navigation system.			

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY **03 Advanced Technology Development (ATD)**	PE NUMBER AND TITLE **0603601F Conventional Weapons Technology**	PROJECT NUMBER AND TITLE **670B Guidance Technology**

(U)	In FY 2005: Continue developing a munition navigation system using micro-electromechanical system technology to provide an accurate (less than one meter), miniature (less than 25 cubic inches), and affordable (less than $6,000 per unit) Global Positioning System/Inertial Measurement Unit navigation system.			
(U)				
(U)	MAJOR THRUST: Integrate advanced conventional guidance technologies including seekers, processors, controls, datalinks, and algorithms to provide improved adverse weather performance, faster processing of target information, higher probability of target detection, an operationally acceptable target false alarm rate, and enhance the effectiveness of miniature munitions against both mobile and fixed ground targets.	4.898	4.202	3.452
(U)	In FY 2003: Investigated low-cost seeker, guidance hardware, and autonomous target recognition software technologies for a small bomb to attack mobile and re-locatable targets.			
(U)	In FY 2004: Design a data link for Low Cost Autonomous Attack System (LOCAAS) to provide a capability to perform re-targeting, in-flight capability after munition has separated from launch aircraft.			
(U)	In FY 2005: Develop, fabricate, and flight test a datalink on the LOCAAS providing the capability to re-target, in-flight after munition has separated from launch aircraft.			
(U)				
(U)	MAJOR THRUST/CONGRESSIONAL ADD: Develop technologies in support of the Low Cost Autonomous Attack System (LOCAAS) program. Note: This effort includes Congressional Adds in FY 2003 ($3.5 million) and in FY 2004 ($1.0 million).	14.379	0.992	0.000
(U)	In FY 2003: Enhanced the current LOCAAS Advanced Technology Demonstration (ATD) program by adding and completing more flight and ground testing. Additional LOCAAS ATD tasks included flight-testing of a LOCAAS with a live warhead to demonstrate that the integrated technologies perform as expected.			
(U)	In FY 2004: Complement the current LOCAAS development program by accelerating the fabrication, integration, and flight testing of a datalink on the weapon.			
(U)	In FY 2005: Not Applicable.			
(U)				
(U)	CONGRESSIONAL ADD: Maverick Missile Upgrade Lock-On After Launch (LOAL) - Live Testing.	0.000	5.949	0.000
(U)	In FY 2003: Not Applicable.			
(U)	In FY 2004: Conduct an operational utility evaluation of a Maverick Missile enhanced with a communication subsystem. Test a Maverick missile with a data communication system to prove that it can be targeted/retargeted after launch.			
(U)	In FY 2005: Not Applicable.			
(U)	Total Cost	23.991	15.735	8.572

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE 0603601F Conventional Weapons Technology	PROJECT NUMBER AND TITLE 670B Guidance Technology

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

(U) D. Acquisition Strategy

Not Applicable.