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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)					PE 0604602F: Armament/Ordnance Development							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	7.755	9.951	16.284	-	16.284	23.596	16.797	5.957	6.064	Continuing	Continuing
653133: Bombs & Fuzes	-	3.936	3.993	0.720	-	0.720	1.238	1.198	1.074	1.093	Continuing	Continuing
653134: BLU-109 and BLU-113 Upgrade	-	0.000	0.000	11.500	-	11.500	16.500	10.000	0.000	0.000	Continuing	Continuing
655361: Stores-Aircraft Interface	-	3.819	5.958	4.064	-	4.064	5.858	5.599	4.883	4.971	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

Note

In FY 2014, Project 653134, BLU-109 and BLU-113 Upgrade, includes new start efforts.

A. Mission Description and Budget Item Justification

The Armament/Ordnance Development program provides for initial and continuing development of weapons/munitions (kinetic and non-kinetic) and munitions equipment for support and operational use. This PE develops and improves the following weapons and weapons subsystems: bombs, bomb fuzes, insensitive explosive fills (Insensitive Munitions - IM), aircraft ammunition, stores-aircraft interface upgrades to include the Universal Armament Interface (UAI), directed energy technology transition to weapons, munitions materiel handling equipment (MMHE), munitions containers, and other weapon subsystems.

- Bombs and Fuzes (Armament Subsystems): This project develops and improves conventional weapons/munitions (kinetic and non-kinetic) and fuzes. The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes. The project provides for research, development, and testing of medium caliber ammunition and enterprise management of guns, ammunition, and Munitions Materiel Handling Equipment (MMHE) systems integration and testing to ensure tested and certified medium caliber ammunition is provided to users. The project helps the AF meet Insensitive Munitions (IM) compliance through strategic planning, development of insensitive explosive fills, and bomb case modifications to make weapons insensitive to unplanned stimuli. Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. This project also funds the operation of the tri-service Container Design Retrieval System (CDRS), maintaining a container database to preclude proliferation and duplication of munitions containers and supporting organic container design.

- BLU-109 and BLU-113 Upgrade (Penetrator Bomb Enhancement): This project develops, tests and implements upgrades to legacy penetrator bombs, enabling them to hold more targets at risk than currently achievable.

- Stores-Aircraft Interface: This project conducts stores-aircraft interface upgrades and standards development to include the Universal Armament Interface (UAI). UAI is an Air Force initiative to develop standardized software interfaces in aircraft, weapons and mission planning to support integration of weapons independent of aircraft Operation Flight Program (OFP) cycles.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
3600: Research, Development, Test & Evaluation, Air Force		PE 0604602F: Armament/Ordnance Development			
BA 5: System Development & Demonstration (SDD)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	7.755	9.951	7.078	-	7.078
Current President's Budget	7.755	9.951	16.284	-	16.284
Total Adjustments	0.000	0.000	9.206	-	9.206
• Congressional General Reductions	-	0.000			
• Congressional Directed Reductions	-	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	-	0.000			
• Congressional Directed Transfers	-	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.206	-	9.206
Change Summary Explanation					
Base FY 2014,Base BY1 Other Adjustments: +\$11.5M, BLU-109/113 upgrade; -\$2.294M, higher Air Force priorities					

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604602F: Armament/Ordnance Development				PROJECT 653133: Bombs & Fuzes			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
653133: Bombs & Fuzes	-	3.936	3.993	0.720	-	0.720	1.238	1.198	1.074	1.093	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
The Bombs & Fuzes (Armament Subsystems) Project contains a variety of work: - Bombs/munitions and fuzes. (a) Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting PGU-28A/B (F-22) and 25mm (F-35) qualification testing. (b) Fixed Wing Advanced Precision Kill Weapon System II (FW APKWS II) Joint Capability Technology Demonstration (JCTD) will integrate the existing APKWS II, a rotary wing (helicopter) system, onto the fixed-wing A-10 platform and provide a precision laser guided, low collateral damage capability against static and moving targets. (c) This project funds follow-on development activities for legacy fuzes, including reliability enhancements and producibility improvements. - Insensitive Munitions (IM). IM develops less sensitive explosive fills and bomb case modifications to improve the response of conventional weapons to unplanned stimuli. The project also supports AF IM strategic planning to achieve IM compliance IAW U.S. Code, Title 10, Subtitle A, Part N, Chapter 141, Section 2389, Ensuring safety regarding insensitive munitions. - Munitions Materiel Handling Equipment (MMHE) and Container Design Retrieval System (CDRS). Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are limited to the study, design, and development of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project. The tri-service Container Design Retrieval System (CDRS) is a database intended to preclude proliferation and duplication of munitions containers. It also supports organic container design, acquisition transportation, prototyping, testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading.												
BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Munitions Materiel Handling Equipment/Container Design Retrieval System									0.899	0.802	0.466	
Description: Munitions Materiel Handling Equipment (MMHE) and Container Design Retrieval System (CDRS). Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are												

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>	PROJECT 653133: <i>Bombs & Fuzes</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
limited to the study, design, and development of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project. The tri-service Container Design Retrieval System (CDRS) is a database intended to preclude proliferation and duplication of munitions containers. It also supports organic container design, acquisition transportation, prototyping, Packaging, Handling, Storage & Transportation (PHS&T) support, testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading. FY 2012 Accomplishments: CDRS provided DoD wide customer support with container design and technical support for munitions/weapons containers developers. Completed 46 customer requests to provide container or technical information and design. Qualified redesigned Miniature Air Launched Decoy (MALD) container for safe decoy shipment. Analyzed P5 Combat Training System Pod shipping container defects and provided corrective action to System Program Office (SPO) Program Manager. Utilized CDRS database to locate containers for three SEEK EAGLE programs, saved \$37K. Researched CDRS database for JASSM Super Frame container, saved \$2.4K in research time for the JASSM SPO. Researched CDRS database for Army Accelerated Improved Initiative Intercept (AI3) Missile containers, saved US Army program office \$2.4K. Provided ten updated container Certificate of Equivalency (COEs) for AMRAAM, JASSM, and Griffin missile program offices. MMHE completed 24 MMHE support equipment projects to include engineering, drafting, proof load, technical data development, and safety authorizations. Fabricated 18 prototypes for project test and evaluation. Completed 20 first article equipment fabrications for drawing verification and delivery to Air Force units for additional OT&E. Engineered and developed Air-to-Air Pylon load adapter and Pylon Storage Stand to support F-35 Program Office. Engineered and developed Multipurpose Load Adapter and Hellfire Preload Adapter to support SOCOM C-130W Small Diameter Bomb (SDB)/Hellfire missile weapons system upgrade. Engineered and developed 30MM ammunition linker/delinker to support AFSOC AC-130 Gunship weapons system upgrade. Engineered and developed new 20MM Ammunition Transfer System base for Medium Caliber SPO. Engineered and developed Lightweight Bomb Lift Beam for the SDB SPO. Provided support to all SPO offices with new weapons and container development. Continued support and sustainment of all previously existing items developed by the MMHE program office. Provided direct customer support through customer support visits to Whiteman AFB, MO, Mountain Home AFB, ID, Anderson AFB, Guam, Moody AFB, GA, Nellis AFB, NV, Edwards AFB, CA , Boise and Tusla ANG. FY 2013 Plans: Provide container design expertise and technical support to AF munitions/weapons containers developers. Complete ten Munitions Materiel Handling Equipment (MMHE) support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate seven prototypes for test and evaluation purposes. Complete seven first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all System Program Office (SPO) with new weapons and container development. Continue support to the F-35 programs with			

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
equipment to test and evaluate various pylons and adapters. Continue support and sustainment of all previously existing items developed by the MMHE program office. FY 2014 Plans: Provide container design expertise and technical support to AF munitions/weapons containers developers. Maintain the tri-service Container Design Retrieval System (CDRS) database search ability to preclude proliferation and duplication of munitions containers. Complete six Munitions Materiel Handling Equipment (MMHE) support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate six prototypes for test and evaluation purposes. Complete four first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all System Program Office (SPO) with new weapons and container development. Continue support to the multi service F-35/JSF programs with equipment to test and evaluate various Alternate Mission Equipment to include pylons, racks and adapters. Continue support and sustainment of all previously existing items developed by the MMHE program office. Continue to provide direct customer support through limited customer support visits.					
Title: Medium Caliber Ammunition Description: Assess, refine, and develop medium caliber ammunition. The project provides enterprise management of guns, ammunition, and Munitions Materiel Handling Equipment (MMHE) systems integration. FY 2012 Accomplishments: Conducted PGU-28A/B F-22 qualification testing; conducted 25mm (F-35) Foreign Comparative Test FY 2013 Plans: Conduct PGU-28A/B F-22 qualification testing; perform 20mm clean sheet (alternate round) assessment.			1.795	2.790	0.000
Title: Insensitive Munitions (IM) Description: Strategic IM planning for the AF; support Joint Service IM efforts; provide technical guidance and test expertise to AF IM programs FY 2012 Accomplishments: Delivered FY13/14 AF IM Strategic Plan which provided plans of action and milestones for priority AF programs including AMRAAM, SDB-II, BLU-109, HTVSF, general purpose bombs, and BLU-129; supported DoD and Joint Service IM planning. FY 2013 Plans: Initiate the FY15/16 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs. FY 2014 Plans:			0.268	0.401	0.254

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Deliver the FY 15/16 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs.				
Title: Fixed Wing Advanced Precision Kill Weapon System II (FW APKWS II) Joint Capability Technology Demonstration (JCTD) Description: FW APKWS II JCTD: will integrate the existing APKWS II, a rotary wing (helicopter) system, onto the AV-8B and A-10 platforms and demonstrate its military utility to provide a precision laser guided, low collateral damage capability against static and moving targets, both close support and urban targets; system will leverage existing rocket motor stockpiles. FY 2012 Accomplishments: Completed two LAU-131A/A Extended Length Launcher jettison tests off the A-10. Completed Preliminary Design Review (PDR) and Critical Design Review (CDR). Completed HERO (Hazards of Electromagnetic Radiation to Ordnance) Susceptible evaluation of APKWS by Navy and provided letter for flight clearance of A-10/F-16 aircraft. SEEK EAGLE prepared request for flight clearance for A-10/F-16 aircraft. Completed two contractor ground shots at China Lake and two contractor flight test/safe separation off A-10 at Eglin. Conducted three performance shots and Military Utility Assessment (MUA) test planning.		0.939	0.000	0.000
Title: Joint Programmable Fuze (JPF -- FMU-152)/Modernized Commodity Fuze (MCF) Description: Joint fuze modernization to improve design characteristics for enhanced affordability, producibility, and sustainability. FY 2012 Accomplishments: Explored cooperation with Navy and reviewed fuze design and manufacturing capabilities.		0.035	0.000	0.000
Accomplishments/Planned Programs Subtotals		3.936	3.993	0.720
C. Other Program Funding Summary (\$ in Millions) N/A Remarks N/A				
D. Acquisition Strategy Fuzes (including the FMU-152) is a continuing effort with most activities performed in-house or through contracted services (small contracts). Fixed Wing APKWS II JCTD is being conducted under the current contract for the rotary wing APKWS II system. MMHE/CDRS project activities are performed in-house with limited technical and analysis contract support. Medium Caliber project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).				

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E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)						R-1 ITEM NOMENCLATURE PE 0604602F: Armament/Ordnance Development				PROJECT 653133: Bombs & Fuzes					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IM	TBD	Air Force Research Lab RWM:Eglin AFB, FL	-	0.150	Jan 2012	0.150	Jan 2013	0.150	Jan 2014	-		0.150	Continuing	Continuing	TBD
MMHE/CDRS -- Prototypes	PO	Prototype Fabrication Shop:Eglin AFB, FL	-	0.281	Jan 2012	0.153	Oct 2012	0.100	Oct 2013	-		0.100	Continuing	Continuing	TBD
Subtotal			0.000	0.431		0.303		0.250		0.000		0.250			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
IM/APKWS	Various	AFLCMC EBSN & XZWG and AFRL RW:Eglin AFB, FL	-	0.175	Jan 2012	0.075	Jan 2013	0.029		-		0.029	Continuing	Continuing	TBD
APKWS contract support	C/CPAF	TEAS TAMS:Eglin AFB, FL	-	0.075	Jun 2012	0.176	Jun 2013	0.075	Jun 2014	-		0.075	Continuing	Continuing	TBD
Fuzes -- Progam Office support	C/CPAF	AFLCMC EBDZ:Eglin AFB, FL	-	0.035		0.000		0.000		-		0.000	Continuing	Continuing	
MMHE/CDRS contract support	C/FFP	TEAS:Eglin AFB, FL	-	0.333	Jan 2012	0.336	Jan 2013	0.224	Oct 2013	-		0.224	Continuing	Continuing	
MMHE/CDRS -- Program Office support	PO	AFLCMC/EBD:Eglin AFB, FL	-	0.285	Jan 2012	0.313	Oct 2012	0.142	Oct 2013	-		0.142	Continuing	Continuing	TBD
Medium Caliber Ammunition - Program Office support	TBD	AFLCMC EBSN:Eglin AFB, FL	-	0.000		0.900	Oct 2012	0.000		-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	0.903		1.800		0.470		0.000		0.470			
Remarks TEAS/TAMS contractors provide support to the System Program Office (SPO) for technical (TEAS) and management/financial (TAMS) services															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>								R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>				PROJECT 653133: <i>Bombs & Fuzes</i>			

Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Medium Caliber	TBD	Various:Various,	-	1.795	Dec 2011	1.890	Jun 2013	0.000		-		0.000	Continuing	Continuing	TBD
FW APKWS II	Various	Various:Various,	-	0.807	Jan 2012	0.000		0.000		-		0.000	Continuing	Continuing	
Subtotal			0.000	2.602		1.890		0.000		0.000		0.000			

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000

			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	3.936		3.993		0.720		0.000		0.720			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: *Research, Development, Test & Evaluation, Air Force*
BA 5: *System Development & Demonstration (SDD)*

R-1 ITEM NOMENCLATURE

PE 0604602F: *Armament/Ordnance Development*

PROJECT

653133: *Bombs & Fuzes*



Armament/Ordnance RDT&E Schedule



	FY12				FY13				FY14				FY15				FY16				FY17				FY18			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MMHE design, prototype, test projects																												
CDRS support tri-service data base																												
PGU-28A/B F-22 qualification testing																												
Procure 25mm FAP rounds for DT/OT																												
Submit Bi-Annual IM Strategic Plan																												
Mod Commodity Fuze Development																												

Int Planning Conf Industry Day

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 5: System Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0604602F: Armament/Ordnance
Development

PROJECT

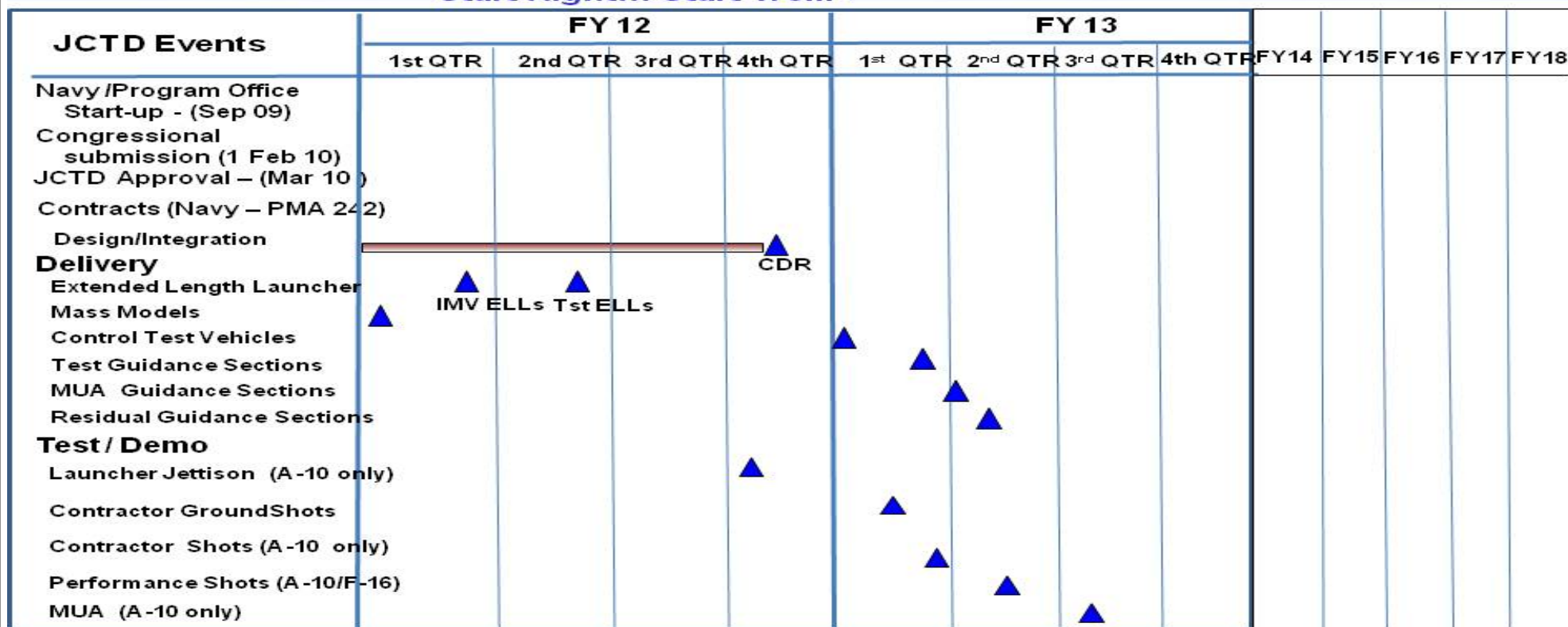
653133: Bombs & Fuzes



USAF FW APKWS II JCTD Schedule



Start Right... Start Well!



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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>	PROJECT 653133: <i>Bombs & Fuzes</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	1	2012	4	2018
Container Design Retrieval System (CDRS): support tri-service data base	1	2012	4	2018
Medium Caliber Ammunition: Conduct PGU-28A/B F-22 qualification testing	1	2012	4	2013
Medium Caliber Ammunition: Procure 25mm Frangible Armor Piercing (FAP) rounds for DT/OT of F-35 gun system	1	2013	4	2014
Submit AF FY13/14 Insensitive Munitions (IM) Strategic Plan	2	2012	2	2012
Submit AF FY15/16 Insensitive Munitions (IM) Strategic Plan	2	2014	2	2014
Submit AF FY17/18 Insensitive Munitions (IM) Strategic Plan	2	2016	2	2016
FW APKWS II JCTD: Design/Integration	1	2012	4	2012
FW APKWS II JCTD: A-10 Fight Tests	4	2012	2	2013
Joint Programmable Fuze/Modernized Commodity Fuze: Joint planning conference	3	2012	3	2012
Joint Programmable Fuze/Modernized Commodity Fuze: Fuze industry Day	1	2013	1	2013

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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604602F: Armament/Ordnance Development				PROJECT 653134: BLU-109 and BLU-113 Upgrade			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
653134: BLU-109 and BLU-113 Upgrade	-	0.000	0.000	11.500	-	11.500	16.500	10.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note												
In FY 2014, Project 653134, BLU-109 and BLU-113 Upgrade, includes new start efforts.												
A. Mission Description and Budget Item Justification												
BLU-109 and BLU-113 Upgrade (Penetrator Bomb Enhancement): This project develops, tests and implements upgrades to penetrator bomb designs (BLU-109, BLU-122, BLU-113) to improve their reliability and survivability during penetration into hardened targets. These enhancements will enable penetrator weapons to hold more targets at risk than currently achievable with legacy weapons. The initial effort will focus on demonstrating an advanced 2000 lb (A2K) warhead, which improves the survivability and reliability of the BLU-109. This program is an outgrowth of the penetrator Legacy Warhead Improvement Program (LWIP), and work under the program will be accomplished in concert with the Direct Strike Penetrator System analysis-of-alternatives (AoA) conducted in PE 64327, Hardened Target Munitions.												
BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Advanced 2000 lb Penetrator (A2K) Demonstration									0.000	0.000	11.500	
Description: Conduct A2K design analysis, warhead modifications, and testing to improve BLU-109 performance against increasingly hardened targets. Designs will maintain the current BLU-109 mold line and will attempt to maintain current BLU-109C/B mass properties and Insensitive Munitions (IM) characteristics.												
FY 2014 Plans: Complete risk reduction and begin demonstration/qualification testing of A2K design to include modified FMU-152 FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platform (B-2A). The demonstration/qualification effort will complete in FY15.												
Accomplishments/Planned Programs Subtotals									0.000	0.000	11.500	

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>					R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>			PROJECT 653134: <i>BLU-109 and BLU-113 Upgrade</i>			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• RDTE:BA04:PE 0604618F: <i>Joint Direct Attack Munition</i>	0.000	0.000	2.500		2.500	2.500	0.000	0.000	0.000	Continuing	Continuing
• RDTE:BA04:PE 0604327F: <i>Hardened Target Munitions</i>	33.248	16.711	0.103		0.103	0.000	0.000	0.000	0.000	Continuing	Continuing
• PAAF:BA01:Line Item # 353020: <i>Legacy Weapon Improvement Program</i>	1.997	3.000	3.000		3.000	3.000	3.000	3.000	3.000	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
The Advanced 2000 lb Warhead (A2K) Demonstration and Partial Qualification program will provide a BLU-109 modification package that would proceed to a full qualification and low rate initial production (LRIP) for production phase in FY18.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>						PROJECT 653134: <i>BLU-109 and BLU-113 Upgrade</i>			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Eglin Steel - 1 (ES-1)	Various	Various:Various,	-	0.000		0.000		2.581	Jan 2014	-		2.581	Continuing	Continuing	
JDAM Hardware	SS/CPFF	Boeing:St. Charles, MO	-	0.000		0.000		2.302	Jan 2014	-		2.302	Continuing	Continuing	
FZU Modification	SS/CPFF	KPPI:Various,	-	0.000		0.000		1.185	Jan 2014	-		1.185	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		6.068		0.000		6.068			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Qualification Tests	Various	Various:Various,	-	0.000		0.000		3.314	Jan 2014	-		3.314	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		3.314		0.000		3.314			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration/Program Support	Various	Various:Various,	-	0.000		0.000		2.118	Oct 2014	-		2.118	Continuing	Continuing	
Subtotal			0.000	0.000		0.000		2.118		0.000		2.118			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force										DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>					R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>					PROJECT 653134: <i>BLU-109 and BLU-113 Upgrade</i>			
	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		11.500		0.000		11.500			
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 5: System Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0604602F: Armament/Ordnance
Development

PROJECT

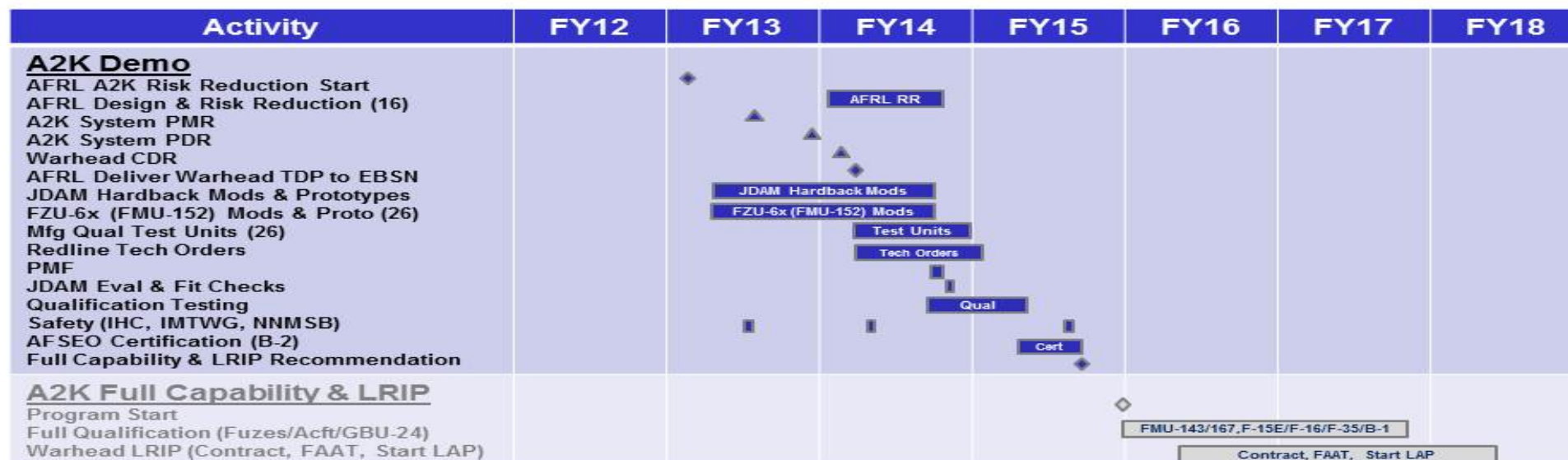
653134: BLU-109 and BLU-113 Upgrade



Advanced 2000 Lb Penetrator (A2K) Schedule [BLU-109 Upgrade]



War-Winning Capability...On Time, On Cost



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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>	PROJECT 653134: <i>BLU-109 and BLU-113 Upgrade</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Manufacture Demo/Qual Warheads, Aft Closures, FZUs, JDAM Hardware	1	2014	4	2014
Conduct Demonstration/Qualification Tests	3	2014	2	2015
Certify assets for transition to inventory stocks	2	2015	3	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604602F: Armament/Ordnance Development				PROJECT 655361: Stores-Aircraft Interface			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
655361: Stores-Aircraft Interface	-	3.819	5.958	4.064	-	4.064	5.858	5.599	4.883	4.971	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Universal Armament Interface (UAI) is an Air Force program to develop, enhance, and implement standardized interfaces in current and future aircraft (manned or unmanned), weapons and mission planning to support integration of weapons independent of aircraft Operational Flight Program (OFP) cycles. UAI is currently being implemented on the F-15E, F-16 Block 40/50, and EPAF(European Participating Air Forces) F-16 aircraft, Small Diameter Bomb (SDB) I and II, Joint Direct Attack Munition (JDAM), Laser JDAM, Joint Air-to-Surface Stand-off Missile (JASSM) and Precision Guided Munitions Planning Software (PGMPS). Additional aircraft and weapons, including but not limited to, Joint Strike Fighter (JSF/F-35), MQ-9, as well as Army and Navy systems, have program plans to implement UAI. The UAI program office is responsible for development and enhancement of the standard (U.S. and allied), support to coalition/allied/joint interoperability efforts for weapons-platform interface efforts, provision of certification tools and implementation support to aircraft and weapons.												
BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: UAI Development									3.819	5.958	4.064	
Description: Conduct stores-aircraft interface upgrades and standards development to the Universal Armament Interface (UAI), development of and maintenance to the UAI, and facilitation of aircraft and stores program users in the UAI process.												
FY 2012 Accomplishments: Continued development and configuration management of UAI standards in response to user needs, working group management, technical meetings and workshops, risk reduction studies, common mission planning, integration support and updates to test. Completed Moving Target LAR Study, began/completed 14 Platform-Store and 2 Mission Planning (MP) interface changes in response to aircraft program needs. With support from UAI PO, B-2 MP SPO signed the UAI ICP, Precision Guided Munitions Planning System designated UAI as its single future MP interface (even to non-UAI a/c), and the Army/Navy/AF Unmanned Systems Interoperability Profile (USIP) weapons IP 5.0 mandated UAI as its primary interface on UAVs.												
FY 2013 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force							DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>				R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>			PROJECT 655361: <i>Stores-Aircraft Interface</i>		

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2012	FY 2013	FY 2014
Continue development and configuration management of UAI standards in response to user needs, working group management, technical meetings and workshops, risk reduction studies, common mission planning, and integration support. Also, continue integration and updates to test tools, including maintenance and procurement of certification tools. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts.			
<i>FY 2014 Plans:</i> Continue development and configuration management of UAI standards in response to user needs, working group management, technical meetings and workshops, risk reduction studies, common mission planning, integration support and updates to test. Procure certification tools with miniature and micro munitions interface capability to meet F-35, SDB II and other future user system integration lab test certification needs.			
Accomplishments/Planned Programs Subtotals	3.819	5.958	4.064

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• None: N/A	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
In December 2004, under the authority of a class Justification and Approval (J&A), the UAI program office awarded individual Cost Plus Fixed Fee (CPFF) contracts to Boeing, Lockheed Martin, Northrop Grumman and Raytheon. Each OEM is responsible for a different piece of the total UAI requirement based on its product-specific (platform/weapon) expertise. During FY10 these contracts expired. Under the authority of a new class J&A, Cost Plus Incentive Fee (CPIF) contracts were awarded to the four UAI vendors in August 2010. Follow-on period of performance was awarded in August 2011 for 18 months to better align future contract awards with funding through the FYDP.											
E. Performance Metrics											
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
3600: Research, Development, Test & Evaluation, Air Force BA 5: System Development & Demonstration (SDD)						PE 0604602F: Armament/Ordnance Development				655361: Stores-Aircraft Interface					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Interface Control Document (ICD) Development/Updates/ Maintenance	SS/CPIF	Boeing Northrop Grumman Lockheed Martin Raytheon:Various,	-	2.653	Feb 2013	4.978	Jun 2013	3.114	Feb 2014	-		3.114	Continuing	Continuing	TBD
UAI Common Component	SS/CPIF	Northrop Grumman:Bethpage, NY	-	1.034	Feb 2012	0.650	May 2013	0.600	Jan 2014	-		0.600	Continuing	Continuing	TBD
Certification Tool	SS/CPFF	Boeing Northrop Grumman Lockheed Martin Raytheon:Various,	-	0.000		0.200	May 2013	0.200	Jan 2014	-		0.200	Continuing	Continuing	TBD
Subtotal			0.000	3.687		5.828		3.914		0.000		3.914			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration/Program Support	Various	Various:Various,	-	0.132		0.130		0.150		-		0.150	Continuing	Continuing	TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>				PROJECT 655361: <i>Stores-Aircraft Interface</i>				

Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.132		0.130		0.150		0.000		0.150				

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	3.819	5.958	4.064	0.000	4.064			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 5: System Development & Demonstration (SDD)

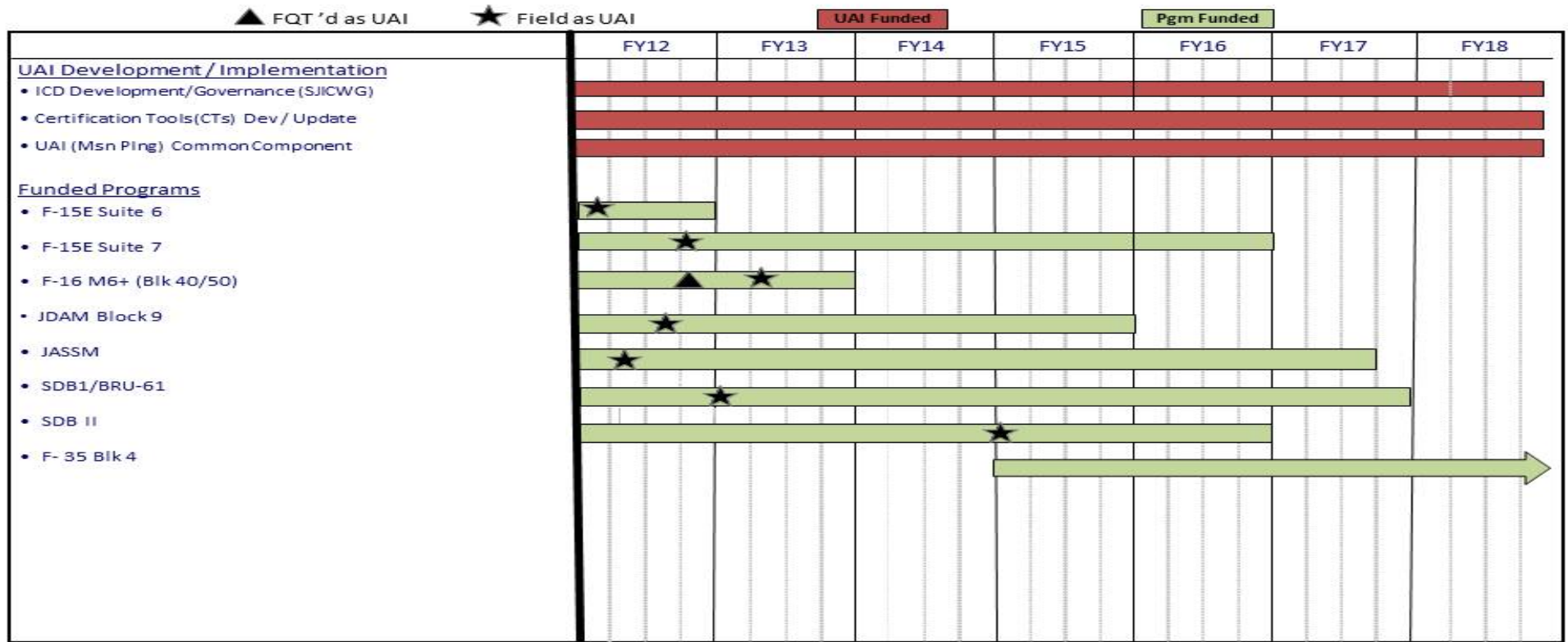
R-1 ITEM NOMENCLATURE

PE 0604602F: Armament/Ordnance
Development

PROJECT

655361: Stores-Aircraft Interface

Exh R-4, UAI Technical Roadmap



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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604602F: <i>Armament/Ordnance Development</i>	PROJECT 655361: <i>Stores-Aircraft Interface</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
F-15E Suite 6	1	2012	4	2012
F-15E Suite 7	1	2012	4	2016
F-16 M6+ (Blk 40/50)	1	2012	4	2013
JDAM Block 9	1	2012	4	2015
JASSM	1	2012	3	2017
SDB 1/BRU-61	1	2012	4	2017
SDB II	1	2012	4	2016
F-35 Blk 4	4	2014	4	2018