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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: <i>Research, Development, Test & Evaluation, Air Force</i> BA 5: <i>System Development & Demonstration (SDD)</i>					PE 0604735F: <i>Combat Training Ranges</i>							
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	-	7.869	9.222	33.200	-	33.200	25.872	20.040	19.301	19.648	Continuing	Continuing
652286: <i>Combat Training Range Equipment</i>	-	7.869	9.222	33.200	-	33.200	25.872	20.040	19.301	19.648	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 Combat Training Range (CTR) Program Element (PE) provides equipment and support to Air Force units and combat training ranges for mission testing, training, and evaluation of aircrews, as well as the operational testing of weapon systems and tactics under simulated combat conditions. This PE provides funding for the development of electronic warfare training capabilities to include, threat emitters, communication jammers, instrumentation equipment/systems, and evolutionary upgrades to facilitate standardization across all platforms to include coalition, F-22A and F-35 aircraft. The P5 Combat Training System (P5CTS), a collaborative development between USAF and USN, provides air combat training systems for both services at operational locations worldwide. Increments include hardware and software upgrades, an encrypted software communications architecture compliant data link to facilitate interoperability in a multiple independent level security environment and training with F-22A and F-35, internal pod replacement subsystems, and integration of new aircraft Operational Flight Programs. This PE also includes the development of advanced threat emitters. The Joint Threat Emitter (JTE) continues the development of a comprehensive suite of threat signals for aircrew tactics and electronic combat training for simulated penetrations of hostile airspace. This program complements existing range threat simulators by emulating signals that simulate current and future air defense and threat radars. JTE Increment 1 is currently in process of initiating a follow-on production contract to improve the current baseline by removing obsolescence and proprietary software to enable full organic sustainment. The follow-on production contract will include the purchase of additional JTE systems, Mobile Command and Control Units (MC2U) and Fixed Command and Control Units (FC2U) and additional sparing. Consistent with the evolutionary acquisition strategy and documented ACC training requirements, development will continue with next generation threat systems. Future increments will continue to add additional capability to the warfighter's training ranges. JTE Increment 2 - Advanced Radar Threat System (J12-ARTS) will develop, design, build and test a threat system simulator based on a foreign fielded, long range, double digit, surface-to-air missile(SAM) threat system. The ARTS-V1 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may be trained against the ARTS-V1, but the most stringent requirements placed on the ARTS-V1 system design come from fifth generation aircraft capabilities. This PE includes Legacy Range Threat Systems including Miniature Multiple Threat Emitter Systems-M3P (Mini-MUTES), Multiple Threat Emitter System (MUTES), Modular Threat Emitter (MTE) and Tactical Radar Threat Generator (TRTG), Band Simulator and Unmanned Modular Threat Emitter (UMTE) Systems, which are being considered for modernization that will extend the system's service life and allow for upgrades to antiquated components for increased reliability and capabilities. Additionally, this PE funds studies and technology development to enhance range systems, such as radio and GPS jammers, weapon drop scoring systems and infrastructure networks. These enhancements add a critical dimension to exercises and optimize warfighter training.

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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 0604735F: Combat Training Ranges				
This program is in Budget Activity 5 - Systems Development and Demonstration 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. Program Change Summary (\$ in Millions)		FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget		8.106	9.222	28.828	-	28.828
Current President's Budget		7.869	9.222	33.200	-	33.200
Total Adjustments		-0.237	0.000	4.372	-	4.372
• 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		-0.237	0.000			
• Other Adjustments		0.000	0.000	4.372	-	4.372
Change Summary Explanation						
FY14 funding increased to fund ARTS pre-milestone B activities to mature radar technology needed for high fidelity double digit SAM simulator.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2012	FY 2013	FY 2014
Title: P5 Combat Training System (CTS)				3.547	0.000	6.925
Description: P5 CTS funding supports Range Instrumentation Systems to include the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funds cover efforts to facilitate interoperability in a multi-level security encryption environment, training with F-22A and F-35, internal pod replacement subsystems, integration of new aircraft operational Flight Programs and the development of solutions to enable live, virtual and constructive capabilities.						
FY 2012 Accomplishments: Continued development, integration and testing of P5 Combat Training Systems (P5CTS) evolutionary upgrades to provide software/hardware upgrades, aircraft/pod integration, upgrades for range applications, interoperability improvements, encrypted communication.						
FY 2013 Plans: N/A						
FY 2014 Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
P5 CTS funding supports Range Instrumentation Systems to include the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funds cover efforts to facilitate interoperability in a multi-level security encryption environment, training with F-22A and F-35, internal pod replacement subsystems, integration of new aircraft operational Flight Programs and the development of solutions to enable live, virtual and constructive capabilities.				
Title: P5 CTS Program Management Administration (PMA) Description: Funding for Range Instrumentation Systems development, integration and testing of P5 Combat Training Systems (P5CTS) support. Funding supports program operations to include TDYs for site activations and installations, IT support and other basic management costs. It also provides for hiring of contractor subject matter experts to work system related efforts. FY 2012 Accomplishments: Funding for Range Instrumentation Systems development, integration and testing of P5 Combat Training Systems (P5CTS) support. Funding supported program operations to include TDYs for site activations and installations, IT support and other basic management costs. It also provided for hiring of contractor subject matter experts to work system related efforts. FY 2013 Plans: Funding for Range Instrumentation Systems development, integration and testing of P5 Combat Training Systems (P5CTS) support. Funding supports program operations to include TDYs for site activations and installations, IT support and other basic management costs. It also provides for hiring of contractor subject matter experts to work system related efforts. FY 2014 Plans: Funding for Range Instrumentation Systems development, integration and testing of P5 Combat Training Systems (P5CTS) support. Funding supports program operations to include TDYs for site activations and installations, IT support and other basic management costs. It also provides for hiring of contractor subject matter experts to work system related efforts.		3.128	0.300	1.735
Title: Joint Threat Emitter Inc 1 (JTE1) Description: The Joint Threat Emitter (JTE) Increment 1 is designed to train aircrews how to survive in a combat environment against Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) threats. The JTE simulates SA-2, SA-3, SA6, SA13 and AAA threat signals which interact with the aircraft Radar Warning Receiver and Electronic Countermeasure system to provide realistic Electronic Warfare training environments for pilots and crewmembers. The JTE is intended to reduce range manpower and resource requirements by replacing legacy systems as they face increasing supportability issues. The JTE attempts to use Commercial-Off-The-Shelf (COTS) where possible. The JTE system utilizes a either a mobile command and control unit (MC2U) or a Fixed Command and Control Unit (FC2U) to control up to 12 JTE systems. FY 2012 Accomplishments:		0.000	5.787	8.218

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
N/A				
FY 2013 Plans: Begin development of a new software baseline to eliminate proprietary issues and create an organic software sustainment capability.				
FY 2014 Plans: Continue development of a new software baseline to eliminate proprietary issues and to create a software sustainment capability.				
Title: Advanced Threat Technical Development Description: Reduce program risk to develop, design, build and test a capability that provides full fidelity simulation of modern advanced threat radars to train aircrews against Next Generation threats. This capability is geared toward the training of 5th Generation aircrews and will be employed in the joint training environment at established DoD Training, Test, and Electronic Combat Ranges. The systems will look as much like, and have the same physical and operational characteristics as possible, as the intended threats. FY 2012 Accomplishments: Continued Risk Reduction efforts in preparation for a Milestone A decision for the JI2-Variant 1 (JI2-V1) system FY 2013 Plans: N/A FY 2014 Plans: N/A		0.812	0.000	0.000
Title: Advanced Radar Threat System (ARTS) Development Description: Reduce risk and prepare solicitation for competitive development. Develop, design, build and test a threat system simulator based on a foreign fielded, long range, double digit, surface-to-air missile(SAM) threat system. ARTS-V1, formerly JI2-V1, uses technology developed in the Pre-EMD activities of the later system. The ARTS-V1 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may be trained against the ARTS-V1, but the most stringent requirements placed on the ARTS-V1 system design come from fifth generation aircraft capabilities FY 2012 Accomplishments:		0.000	2.835	15.812

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2012	FY 2013	FY 2014
N/A												
FY 2013 Plans: Complete Pre-Milestone B technology development activities for the JI2-V1 system												
FY 2014 Plans: Source Selection with contract an EMD award end of FY14. The EMD effort will develop, design, build and test a threat system simulator based on a foreign fielded, long range, double digit, surface-to-air missile(SAM) threat system.												
Title: Threats PMA										0.382	0.300	0.510
Description: Threats - Support and Management Service costs associated with Range Threat Systems for all program support costs including PMA costs and A&AS costs (TDY, TEAS, TAMS, Contractor Support)												
FY 2012 Accomplishments: Threat mission support costs including contractor support, TDY and Supplies												
FY 2013 Plans: Threat mission support costs including contractor support, TDY and Supplies												
FY 2014 Plans: Threat mission support costs including contractor support, TDY and Supplies												
Accomplishments/Planned Programs Subtotals										7.869	9.222	33.200
D. 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	
• OPAF: BA03: 834190: Combat Training Ranges	36.455	17.422	7.939		7.939	23.791	17.498	15.048	19.049	Continuing	Continuing	
• OPAF: BA05: 861900: Spares and Repair Parts	0.903	0.934	3.698		3.698	1.339	1.119	0.665	0.677	Continuing	Continuing	
• APAF: BA07: 000075: Other Production Charges	14.867	0.000	28.888		28.888	6.018	0.000	0.000	22.350	Continuing	Continuing	
• APAF: BA 06: 000999: Initial Spares/Repair Parts	1.466	1.642	1.374		1.374	2.069	1.957	1.816	1.849	Continuing	Continuing	
Remarks												

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<u>E. Acquisition Strategy</u> The acquisition strategy is competitive, with cost plus and fixed price contracts. <u>F. Performance Metrics</u> 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						PE 0604735F: Combat Training Ranges				652286: Combat Training Range Equipment					
BA 5: System Development & Demonstration (SDD)															
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
Cubic Defense Applications (P5CTS)	C/FFP	Cubic Defense:San Diego, CA	-	0.000		0.000		0.000		-		0.000	Continuing	Continuing	
JTE Increment II - Advanced Radar Threat System (JI2-ARTS) - Pre-Milestone A Activities	MIPR	MSIC:Redstone Arsenal, AL	-	0.075	Apr 2013	0.000		0.000		-		0.000	Continuing	Continuing	
Advanced Radar Threat System (ARTS) Development	C/TBD	TBD:,	-	0.447	Apr 2013	2.835	Aug 2013	15.812	Aug 2014	-		15.812	Continuing	Continuing	
JTE Increment I Development	C/CPFF	TBD:TBD,	-	0.000		5.787	Aug 2013	8.218	Mar 2014	-		8.218	Continuing	Continuing	
Legacy System Improvements	MIPR	NAWCWD:China Lake, CA	-	0.000		0.000		0.000		-		0.000	Continuing	Continuing	
Rockwell-Collins, Inc (P5CTS)	SS/CPFF	Rockwell-Collins, Inc:Cedar Rapids, IA	-	0.000		0.000		0.000		-		0.000	Continuing	Continuing	
Army Joint Tactical Radio System (JTRS-HMS) (P5CTS)	SS/CPAF	General Dynamics:Scottsdale AZ	-	0.000		0.000		0.000		-		0.000	Continuing	Continuing	
National Security Agency (NSA)	SS/FFP	NSA:Ft George Meade, MD,	-	0.000		0.000		0.000		-		0.000	Continuing	Continuing	
Boeing - F15 (P5CTS)	Various	Boeing:0, MO	-	0.400	Jun 2012	0.000		0.000		-		0.000	Continuing	Continuing	
Lower L-Band Development	TBD	Various:Various,	-	0.000		0.000		6.240	Jun 2014	-		6.240	Continuing	Continuing	
Encryption Development	TBD	Various:Various,	-	2.736	Dec 2011	0.000		0.000		-		0.000	Continuing	Continuing	
Sustainment Ugrades	C/TBD	Not specified.:	-	0.231	Jun 2012	0.000		0.685	Dec 2013	-		0.685	Continuing	Continuing	
Subtotal			0.000	3.889		8.622		30.955		0.000		30.955			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force													DATE: April 2013		
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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
AFLCMC/HBZC, Hill AFB (Direct Msn Support)	MIPR	Various:Various,	-	0.290	May 2013	0.000		0.000		-		0.000	Continuing	Continuing	
AAC/EBYI, Eglin AFB - Direct Msn Spt	Various	TBD:TBD,	-	0.446	Jan 2012	0.300	Jan 2013	0.557	Jan 2014	-		0.557	Continuing	Continuing	
Subtotal			0.000	0.736		0.300		0.557		0.000		0.557			
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
Block I/II Flight Test, 46 Test Wing	Various	Eglin AFB:FL,	-	0.180	Mar 2012	0.000		0.000		-		0.000	Continuing	Continuing	
Subtotal			0.000	0.180		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
AFLCMC/HBZC, Hill AFB (PMA)	Various	AFLCMC/HBZC:Hill AFB, UT	-	0.382	Sep 2013	0.300	May 2013	0.510	May 2014	-		0.510	Continuing	Continuing	
AFLCMC/EBYC (TEAS/TAMS)	C/FFP	Jacobs/Oasis:Eglin AFB, FL	-	2.682	Mar 2012	0.000		1.178	Mar 2014	-		1.178	Continuing	Continuing	
Subtotal			0.000	3.064		0.300		1.688		0.000		1.688			
			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	7.869		9.222		33.200		0.000		33.200			
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 0604735F: Combat Training Ranges	PROJECT 652286: Combat Training Range Equipment



P5CTS 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
Sustainment Upgrades																												
PACAF Lower L-Band Dev/Mod Kit																												
Encryption																												

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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

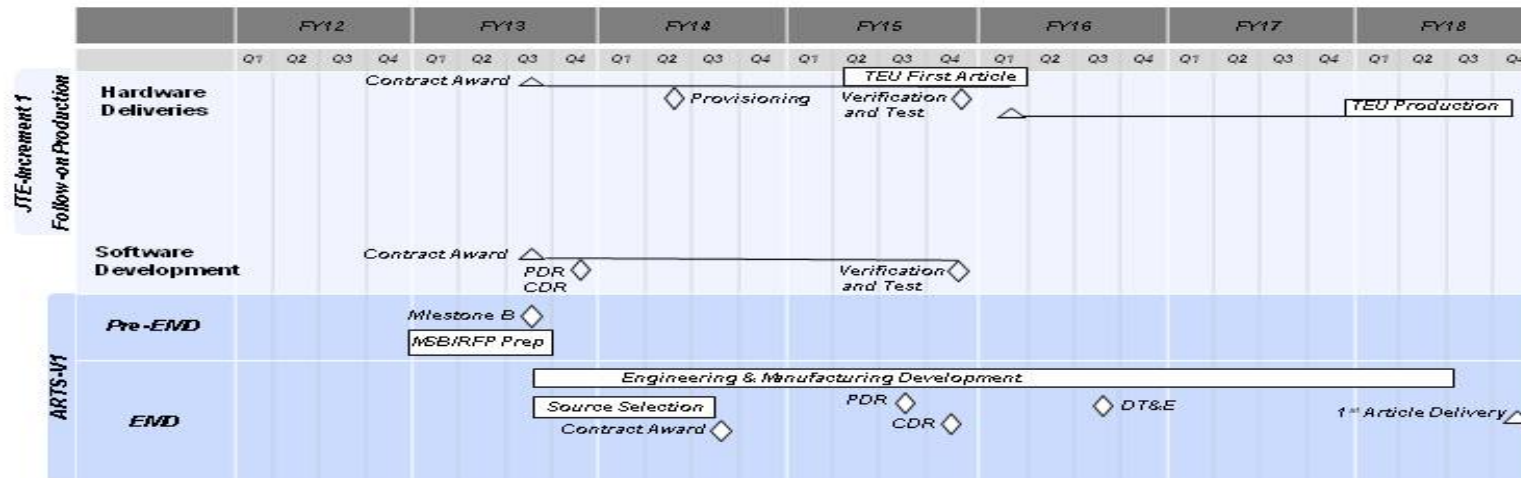
PE 0604735F: Combat Training Ranges

PROJECT

652286: Combat Training Range Equipment



Combat Training Ranges



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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 0604735F: <i>Combat Training Ranges</i>	PROJECT 652286: <i>Combat Training Range Equipment</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P5CTS Development	1	2014	4	2015
--Sustainment Upgrades	1	2014	2	2015
--PACAF Lower L-Band Development	3	2014	1	2016
--Encryption	2	2015	4	2018
JTE Development	1	2014	4	2015
-- Advanced Threat Simulator Pre-Milestone A Activities	1	2013	1	2014
-- Advanced Threat Simulator Technical Development	2	2013	4	2014
-- Advanced Radar Threat System (ARTS) EMD	4	2014	2	2018
-- JI1 Follow-on Software Development	1	2013	4	2015
-- JI1 Follow-on PDR/CDR	4	2013	4	2013
-- JI1 Follow-on Test	3	2015	4	2015