

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force										Date: March 2014		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604735F I Combat Training Ranges							
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	-	9.209	25.300	10.129	-	10.129	19.811	19.110	19.483	19.854	Continuing	Continuing
652286: Combat Training Range Equipment	-	9.209	25.300	10.129	-	10.129	19.811	19.110	19.483	19.854	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Combat Training Range (CTR) program 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 program provides funding for the development and integration of electronic warfare training capabilities to include P5 Combat Training Systems (P5CTS), threat emitters, communication jammers, instrumentation equipment/systems, and evolutionary upgrades to facilitate standardization and integration across all platforms to include coalition and 5th Generation aircraft. The P5 Combat Training System, a collaborative development between USAF and USN, provides air combat training systems for the services at operational locations worldwide. Increments include: hardware and software upgrades; an encrypted software communications architecture compliant data link to facilitate interoperability in a security environment and training with 5th Generation aircraft; internal pod replacement subsystems; integration of new aircraft Operational Flight Programs. This program 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 awarded 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 includes the development of a non-proprietary software baseline and the procurement of that source code in addition to JTE systems, Mobile Command and Control Units (MC2U), Fixed Command and Control Units (FC2U), and additional spares. Consistent with an evolutionary acquisition strategy and documented ACC training requirements, development will continue with next generation threat systems. Future developments will continue to add additional capability to the warfighter's training ranges. The Advanced Radar Threat System (ARTS) program, formerly named JTE Increment 2, will develop, design, build and test threat system simulators based on advanced foreign fielded surface-to-air missile (SAM) radar threat systems. ARTS 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 train against ARTS, but the most stringent requirements placed on ARTS design come from 5th generation aircraft capabilities. The ARTS-Variant 1 (ARTS-V1) is focused on strategic, long-range, re-locatable radar threat systems while ARTS-Variant 2 (ARTS-V2) is focused on tactical, mobile, short/medium-range radar threat systems. Since a similar ARTS-V1 capability is being developed through the Central Test and Evaluation Investment Program, ARTS-V2 development is being accelerated. It was originally to start development after ARTS-V1 was in procurement. This program also funds development of replacement components for Legacy Range Threat Systems (due to obsolescence) to extend the system's service life. Legacy Systems include the Multiple Threat Emitter System (MUTES), the Miniature Multiple Threat Emitter System (Mini-MUTES), the Modular Threat Emitter (MTE) system, the Tactical Radar Threat Generator (TRTG) system, the Band Simulator, the Common Electronic Attack Receiver (CEAR) and the Unmanned Modular Threat Emitter (UMTE) system. Additionally, this program funds ongoing analyses, studies, risk reduction efforts, and technology development to enhance range systems, such as combat training range equipment integration into a

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force				Date: March 2014		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604735F I Combat Training Ranges				
Live Virtual Constructive architecture, communication and GPS jammers, weapon drop scoring systems and infrastructure networks. These enhancements add a critical dimension to exercises and optimize warfighter training.						
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.						
B. Program Change Summary (\$ in Millions)		FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget		9.222	33.200	25.872	-	25.872
Current President's Budget		9.209	25.300	10.129	-	10.129
Total Adjustments		-0.013	-7.900	-15.743	-	-15.743
• Congressional General Reductions		-0.013	-			
• Congressional Directed Reductions		-	-7.900			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-	-			
• Other Adjustments		-	-	-15.743	-	-15.743
Change Summary Explanation						
FY13 reduction of \$13K for Sequestration						
FY14 Congressional reduction of \$7.9M for ARTS late contract award.						
FY15 reduction for higher air force priorities.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2013	FY 2014	FY 2015
Title: P5 Combat Training System (CTS)				0.300	8.660	8.183
Description: P5 CTS funding supports Air Combat Training Systems capabilities and includes the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funding covers efforts to facilitate interoperability in a secure (encrypted) environment, training with 5th Generation aircraft, internal pod replacement subsystems, integration of new aircraft Operational Flight Programs, and the development of solutions to enable live, virtual, and constructive capabilities.						
FY 2013 Accomplishments: Initiated development/qualification of Alternate Source Line Replaceable Units.						
FY 2014 Plans:						

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force		Date: March 2014		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
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. FY 2015 Plans: P5 CTS funding supports Air Combat Training Systems capabilities and includes the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funding covers efforts to facilitate interoperability in a secure (encrypted) environment, training with 5th Generation aircraft, internal pod replacement subsystems, integration of new aircraft Operational Flight Programs.				
Title: Joint Threat Emitter (JTE) Description: The Joint Threat Emitter (JTE) is designed to train aircrews 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, SA-6, SA-13 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 leverages Commercial-Off-The-Shelf (COTS) where possible. The JTE system consists of a Threat Emitter Unit (TEU) and either a mobile command and control unit (MC2U) or a Fixed Command and Control Unit (FC2U). FY 2013 Accomplishments: Began 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 an organic software sustainment capability. FY 2015 Plans: Development and testing will continue on a new software baseline to eliminate proprietary issues and to create an organic software sustainment capability. Additionally, studies will continue to identify system capability modifications to simulate new threat signals.		4.750	2.550	0.350
Title: Legacy Range Threat Systems Description: The Legacy Systems program program develops, integrates, tests, and builds a common component replacement for obsolete electronic attack receivers on radar threat simulators such as the Joint Threat Emitter and Unmanned Modular Threat Emitter (UMTE) instead of developing and sustaining unique replacements for those systems. Common Electronic Attack Receiver (CEAR) enables radar threat simulators to realistically react to electronic counter measures, expendable counter		1.813	4.370	0.350

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force		Date: March 2014		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
measures, maneuvers, and terrain masking initiated by aircrew during electronic combat training for simulated penetrations of hostile airspace. CEAR also enables the recording of aircrew reactions for playback and debriefing.				
FY 2013 Accomplishments: CEAR funding supported engineering activities for development, integration and testing.				
FY 2014 Plans: CEAR funding supports continued engineering and manufacturing activities for development, integration, testing, and test articles. Development and testing will continue on the JTE and UMTE production test articles. Additionally, development, integration, and testing will expand the CEAR capability to MUTES and Mini-MUTES.				
FY 2015 Plans: CEAR funding supports continued engineering and manufacturing activities for development, integration, testing, and production test articles. Development and testing will continue on the MUTES and Mini-MUTES first articles and production test articles.				
Title: Advanced Radar Threat System (ARTS) Development		2.346	9.720	1.246
Description: The Advanced Radar Threat System (ARTS) program will develop, design, build and test threat system simulators based on advanced foreign fielded surface-to-air missile (SAM) radar threat systems. ARTS 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 train against ARTS, but the most stringent requirements placed on ARTS design come from fifth generation aircraft capabilities. The ARTS-Variant 1 (ARTS-V1) is focused on strategic, long-range, re-locatable radar threat systems while ARTS-Variant 2 (ARTS-V2) is focused on tactical, mobile, short/medium-range radar threat systems. Additionally, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS and other systems into a Live Virtual Constructive architecture.				
FY 2013 Accomplishments: ARTS funding supported risk reduction and pre-solicitation activities for the development, integration, and testing of ARTS-V2. The Capabilities Development Document (CDD) was refined and Pre-Milestone B activities initiated for the ARTS-V2 system. Additionally, funding supported ongoing analyses and studies focused on integrating ARTS and other systems into a Live Virtual Constructive architecture.				
FY 2014 Plans: ARTS funding supports risk reduction and pre-solicitation activities for the development, integration, and testing of ARTS-V2. Risk reduction efforts include an extensive intelligence study and report that ensures the accurate development of a high fidelity threat and technical studies on electronically-scanned-array design approaches. A draft request for proposal (RFP) and associated				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force								Date: March 2014			
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I</i> BA 5: <i>System Development & Demonstration (SDD)</i>						R-1 Program Element (Number/Name) PE 0604735F <i>I Combat Training Ranges</i>					
C. Accomplishments/Planned Programs (\$ in Millions)											
documentation will be developed for release. Additionally, funding supports ongoing analyses and studies focused on integrating ARTS and other systems into a Live Virtual Constructive architecture.								FY 2013	FY 2014	FY 2015	
FY 2015 Plans: ARTS funding supports risk reduction, pre-solicitation, and source selection activities for the development, integration, and testing of ARTS-V2. Risk reduction efforts include the completion of an extensive intelligence study and report that ensures the accurate development of a high fidelity threat and technical studies on electronically-scanned-array design approaches. An RFP and associated documentation will be developed for release followed by a source selection. Additionally, funding supports ongoing analyses and studies focused on integrating ARTS and other systems into a Live Virtual Constructive architecture.											
Accomplishments/Planned Programs Subtotals								9.209	25.300	10.129	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• OPAF: BA03: Line Item #	27.557	15.939	23.580	-	23.580	17.402	14.970	16.955	17.259	Continuing	Continuing
834190: <i>Combat Training Ranges</i>											
• OPAF: BA05: Line Item #	0.779	3.102	0.900	-	0.900	1.370	0.834	0.673	0.685	Continuing	Continuing
861900: <i>Spares and Repair Parts</i>											
• APAF: BA07: Line Item #	-	20.772	-	-	-	-	-	2.334	22.611	Continuing	Continuing
000075: <i>Other Production Charges</i>											
• APAF: BA06: Line Item #	1.526	1.181	1.489	-	1.489	2.277	2.026	1.836	1.870	Continuing	Continuing
000999: <i>Initial Spares/Repair Parts</i>											
Remarks											
E. Acquisition Strategy											
The acquisition strategy is competitive, with cost plus and fixed price contracts.											
F. 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.											

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

Date: March 2014

Appropriation/Budget Activity
3600 / 5

R-1 Program Element (Number/Name)
PE 0604735F / *Combat Training Ranges*

Project (Number/Name)
652286 / *Combat Training Range Equipment*



P5CTS Development Schedule



Development	FY13				FY14				FY15				FY16				FY17				FY18				FY19			
	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
ADIU Obsolescence																												
Software Block upgrades																												
JSF Encryption Pass-through																												

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

Date: March 2014

Appropriation/Budget Activity
3600 / 5

R-1 Program Element (Number/Name)
PE 0604735F / Combat Training Ranges

Project (Number/Name)
652286 / Combat Training Range
Equipment

