

UNCLASSIFIED

PE NUMBER: 0604735F

PE TITLE: Combat Training Ranges

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	24.077	21.326	6.122	15.092	18.459	18.575	18.854	18.922	Continuing	TBD
2286 Combat Training Range Equipment	24.077	21.326	6.122	15.092	18.459	18.575	18.854	18.922	Continuing	TBD

(U) **A. Mission Description and Budget Item Justification**

The Combat Training Range (CTR) Program Element provides equipment and support for Air Force units and combat training ranges to support mission test, training, and evaluation of aircrews, as well as the operational testing of weapons systems and tactics under simulated combat conditions. This program element provides funding for the development of electronic, telecommunications, instrumentation equipment/systems and standards for the training ranges. Air Force P5 Combat Training System (P5CTS) is interoperable with Navy Tactical Air Combat Training System (TACTS) ranges. The P5CTS will take a phased approach to the development of improved Air Combat Training System (ACTS) capabilities for fielding to operational locations. It will provide capabilities to train aircrews in air-to-air and air-to-surface combat as well as electronic warfare. Additionally, P5CTS provides real-time monitoring and control of aircraft during large and joint force exercises, small unit training, while recording events for post-mission debrief and analysis. Other capabilities P5CTS include: real-time kill verification, system security initiatives to protect classified aircraft systems information, integration of electronics, weapon and threat simulations, ground system integration location specific architecture, internal pod replacement subsystems, integration of new Operational Flight Programs, and the development of solutions to meet changing data link standards. Other efforts included in this program element are: the development of Next Generation Range Instrumentation (NexRI) standards to facilitate live/virtual connectivity and standardization across all platforms to include the F/A-22 and F-35, Joint Strike Fighter (JSF). The NexRI initiative, started in FY04, uses a Air Force business approach to produce and test standards for new range systems to facilitate interoperability for joint training exercises. Another effort is to development/upgrade the Nellis Air Combat Training System (NACTS) Range to support Red Flag, Coalition Flag, USAF Fighter Weapons School training and tactics development. Another effort is aircraft-to-pod interfaces and software interoperability among service ranges and aircraft platforms.

This program element includes the development of advanced threat emitters. In FY02, the Advanced Threat Emitter System (ATES) incorporated other service requirements and evolved into the Joint Threat Emitter (JTE) system. The 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. In FY04 the Threat Reaction Analysis Indicator System (TRAINS) underwent improvements to increase reliability, maintainability and availability, and to increase its functional capabilities including Reactive Threats, Deceptive Analysis and Site electronic countermeasure information database capabilities. The TRAINS is an electronic combat analysis system that is paired with the Multiple Threat Emitter System (MUTES) to provide analysis of aircraft Electronic Countermeasure (ECM) responses to threat signals.

Aerial Targets was included in this program element through FY04 and moved to PE 0305116F in FY05.

This program is in budget activity 5 - Systems Development and Demonstration because the Combat Training Ranges (CTR) Program directly contributes to the effectiveness and survivability of US combat forces by developing range instrumentation and training systems.

Exhibit R-2, RDT&E Budget Item Justification

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	24.077	18.714	17.490	17.935
(U) Current PBR/President's Budget	24.077	21.326	6.122	15.092
(U) Total Adjustments	0.000	2.612		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.188		
Congressional Increases		2.800		
Reprogrammings				
SBIR/STTR Transfer				
(U) <u>Significant Program Changes:</u>				
FY06: Reduced for program realignment and higher AF priorities				
FY07: Reduced for higher AF priorities				

UNCLASSIFIED

Exhibit R-2a, RDT&E Project Justification

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range Equipment

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
2286 Combat Training Range Equipment	24.077	21.326	6.122	15.092	18.459	18.575	18.854	18.922	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

The Combat Training Range (CTR) Program Element provides equipment and support for Air Force units and combat training ranges to support mission test, training, and evaluation of aircrews, as well as the operational testing of weapons systems and tactics under simulated combat conditions. This program element provides funding for the development of electronic, telecommunications, instrumentation equipment/systems and standards for the training ranges. Air Force P5 Combat Training System (P5CTS) is interoperable with Navy Tactical Air Combat Training System (TACTS) ranges. The P5CTS will take a phased approach to the development of improved Air Combat Training System (ACTS) capabilities for fielding to operational locations. It will provide capabilities to train aircrews in air-to-air and air-to-surface combat as well as electronic warfare. Additionally, P5CTS provides real-time monitoring and control of aircraft during large and joint force exercises, small unit training, while recording events for post-mission debrief and analysis. Other capabilities P5CTS include: real-time kill verification, system security initiatives to protect classified aircraft systems information, integration of electronics, weapon and threat simulations, ground system integration location specific architecture, internal pod replacement subsystems, integration of new Operational Flight Programs, and the development of solutions to meet changing data link standards. Other efforts included in this program element are: the development of Next Generation Range Instrumentation (NexRI) standards to facilitate live/virtual connectivity and standardization across all platforms to include the F/A-22 and F-35, Joint Strike Fighter (JSF). The NexRI initiative, started in FY04, uses a Air Force business approach to produce and test standards for new range systems to facilitate interoperability for joint training exercises. Another effort is to development/upgrade the Nellis Air Combat Training System (NACTS) Range to support Red Flag, Coalition Flag, USAF Fighter Weapons School training and tactics development. Another effort is aircraft-to-pod interfaces and software interoperability among service ranges and aircraft platforms.

This program element includes the development of advanced threat emitters. In FY02, the Advanced Threat Emitter System (ATES) incorporated other service requirements and evolved into the Joint Threat Emitter (JTE) system. The 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. In FY04 the Threat Reaction Analysis Indicator System (TRAINS) under went improvements to increase reliability, maintainability and availability, and to increase its functional capabilities including Reactive Threats, Deceptive Analysis and Site electronic countermeasure information database capabilities. The TRAINS is an electronic combat analysis system that is paired with the Multiple Threat Emitter System (MUTES) to provide analysis of aircraft Electronic Countermeasure (ECM) responses to threat signals.

Aerial Targets was included in this program element through FY04 and moved to PE 0305116F in FY05.

This program is in budget activity 5 - Systems Development and Demonstration because the Combat Training Ranges (CTR) Program directly contributes to the effectiveness and survivability of US combat forces by developing range instrumentation and training systems.

(U) **B. Accomplishments/Planned Program (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue Air Combat Training Systems (ACTS) funding support for Range Instrumentation Systems to	18.670	13.140	4.988	12.137

Project 2286

R-1 Shopping List - Item No. 85-3 of 85-9

Exhibit R-2a (PE 0604735F)

UNCLASSIFIED

Exhibit R-2a, RDT&E Project Justification

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

include the development and testing of: P5 Combat Training Systems (P5CTS) including software/hardware upgrades, and continue Joint Tactical Radio System (JTRS) compliance; aircraft/pod integration and upgrades for range applications; interoperability improvements with existing Air Force and Navy ranges including software, upgrades, and weapons simulations; Combat Training Range (CTR) programs basic operating support, system acquisition and engineering support; upgrades to the Nellis Air Combat Training System (NACTS) including integration of tactical information and ground tracking (FY03 and FY04); and Next Generation Range Instrumentation (NexRI) standards (first year FY04).

(U)	Continue ACTS funding support for Range Threat Systems which includes the development and testing of the Joint Threat Emitter (JTE) System, the Threat Reaction Analysis Indicator System (TRAINS), and program operating, acquisition and engineering support.	5.407	5.386	1.134	2.955
(U)	Virtual TeleOperation for Unmanned Aerial Vehicle		2.800		
(U)	Total Cost	24.077	21.326	6.122	15.092

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Other Procurement, AF, Combat Training Ranges, 3080 BP83	80.691	31.789	15.021	14.774	19.452	19.599	19.856	20.282	Continuing	TBD
(U) Initial Spares, 3080 BP86	0.768	0.780	0.803	0.832	0.862	0.884	0.906	0.921	Continuing	TBD
(U) Total OPAF, PEC 0207429F	81.459	32.569	15.824	15.606	20.314	20.483	20.762	21.203	Continuing	TBD
(U) Aircraft Procurement, AF, Combat Training Ranges, 3010 BP19	11.840	14.158	14.105	14.542	15.499	15.896	16.228	16.356	Continuing	TBD
(U) Initial Spares, 3010 BP16	1.082	1.164	1.428	1.463	1.548	1.598	1.638	1.657	Continuing	TBD
(U) Total APAF, PEC 0207429F	12.922	15.322	15.533	16.005	17.047	17.494	17.866	18.013	Continuing	TBD

(U) **D. Acquisition Strategy**

The acquisition strategy is competitive, with cost plus and fixed price contracts.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract</u> <u>Method &</u> <u>Type</u>	<u>Performing</u> <u>Activity &</u> <u>Location</u>	<u>Total</u> <u>Prior to FY</u> <u>2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Cost</u>	<u>FY 2004</u> <u>Award</u> <u>Date</u>	<u>FY 2005</u> <u>Cost</u>	<u>FY 2005</u> <u>Award</u> <u>Date</u>	<u>FY 2006</u> <u>Cost</u>	<u>FY 2006</u> <u>Award</u> <u>Date</u>	<u>FY 2007</u> <u>Cost</u>	<u>FY 2007</u> <u>Award</u> <u>Date</u>	<u>Cost to</u> <u>Complete</u>	<u>Total Cost</u>	<u>Target</u> <u>Value of</u> <u>Contract</u>
(U) <u>Product Development</u>														
Cubic Defense (NACTS)	C/CPAF/F FP		33.480	3.765	Jun-04	0.000		0.000		0.000			37.245	
Sverdrup (RITS)	CPAF		2.530	0.149	Jan-04	0.155	Jan-05	0.000		0.155	Jan-07	Continuing	TBD	
Cubic Defense (P5CTS)	CPIF/FFP		0.395	1.866	Mar-04	3.430	Feb-05	2.041	Feb-06	2.160	Feb-07	Continuing	TBD	
Modern Technologies Corp (JTE)	CPAF		2.700	4.770	Mar-04	4.631	Mar-05	0.600	Mar-06	2.181	Mar-07	Continuing	TBD	
E W Systems (TRAINS)	FFP		0.000	0.356	Mar-04	0.369	Mar-05	0.369	Mar-06	0.369	Mar-07	Continuing	TBD	
Joint Interoperability	Navy Contract		5.947	3.165	Feb-04	3.555	Feb-05	0.873	Feb-06	3.700	Feb-07	Continuing	TBD	
Stanford Research International (NexRI)	FFP		0.000	3.628	Apr-04	1.000	Apr-05	0.000		0.950	Apr-07	Continuing	TBD	
Aircraft Interface	Through MOAs with ALCs & Aircraft SPO Contractor s		5.549	1.199	Apr-04	2.164	Apr-05	1.074	Apr-06	2.220	Apr-07	Continuing	TBD	
Composite Engineering Inc. (AFSAT PI)	FFP		0.000	1.575	Apr-04	0.000		0.000		0.000			1.575	
University of Iowa (Virtual Teleoperation for Unmanned Aerial Vehicle)	TBD		0.000	0.000		2.800		0.000		0.000			2.800	
Subtotal Product Development			50.601	20.473		18.104		4.957		11.735		Continuing	TBD	0.000
Remarks:														
(U) <u>Support</u>														
OO/ALC/LH, Hill AFB, UT	Various		0.879	0.281		0.386		0.165		0.405		Continuing	TBD	
AAC/YBR, Eglin AFB, FL	Various		10.715	2.306		2.836		1.000		2.952		Continuing	TBD	
AAC/YAA, Eglin AFB, FL	Various		0.371	0.219		0.000		0.000		0.000			0.590	
SAF/AQX			0.363	0.664		0.000		0.000		0.000			1.027	
Subtotal Support			12.328	3.470		3.222		1.165		3.357		Continuing	TBD	0.000
Remarks:														
(U) <u>Test & Evaluation</u>														
AAC/YBR, Eglin AFB, FL	Various		1.405	0.000		0.000		0.000		0.000		Continuing	TBD	
46 Test Wing, Eglin AFB FL	Various		0.640	0.134		0.000		0.000		0.000		Continuing	TBD	
Subtotal Test & Evaluation			2.045	0.134		0.000		0.000		0.000		Continuing	TBD	0.000
Remarks:														
(U) Total Cost			64.974	24.077		21.326		6.122		15.092		Continuing	TBD	0.000

Project 2286

R-1 Shopping List - Item No. 85-5 of 85-9

Exhibit R-3 (PE 0604735F)

Exhibit R-4, RDT&E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

U.S. AIR FORCE

CTR Schedule

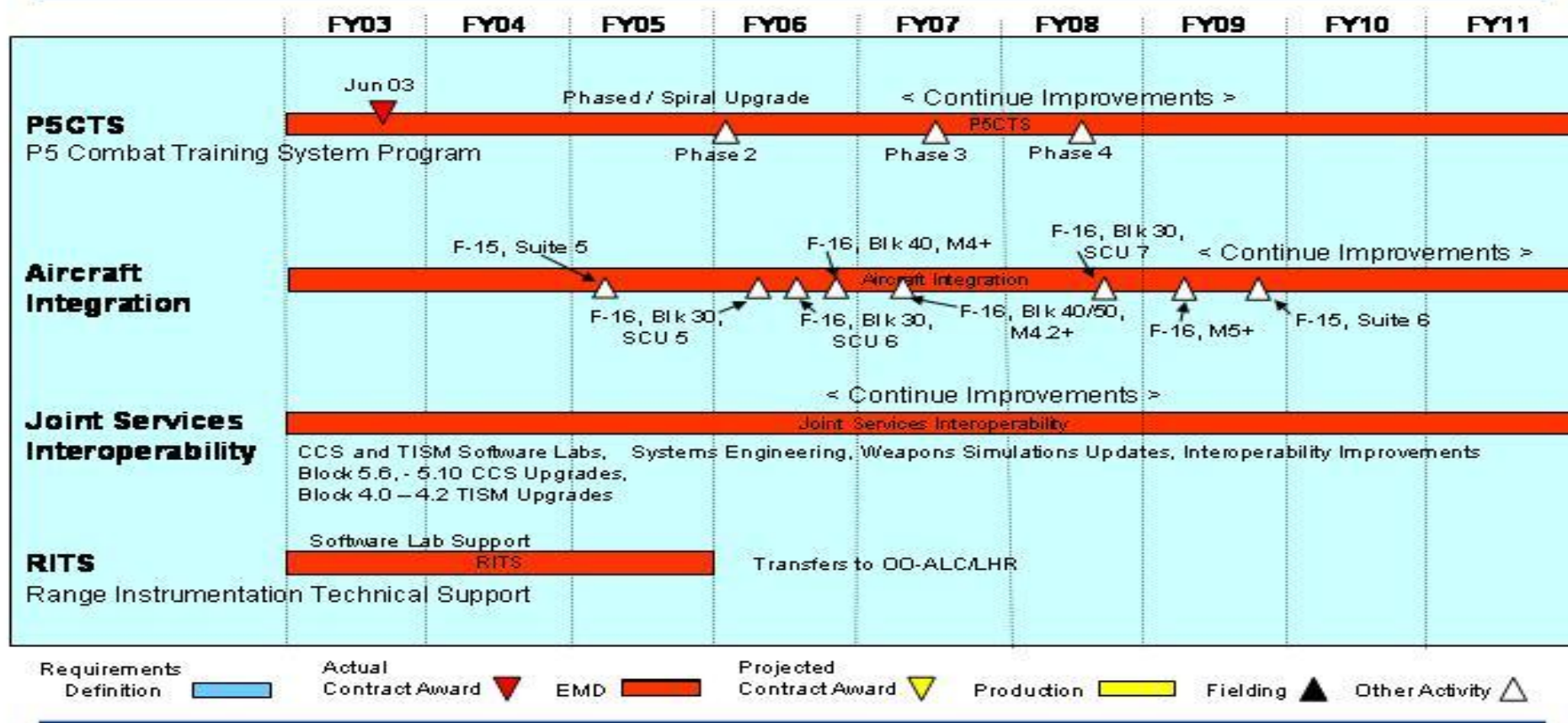


Exhibit R-4, RDT&E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

U.S. AIR FORCE

CTR Schedule

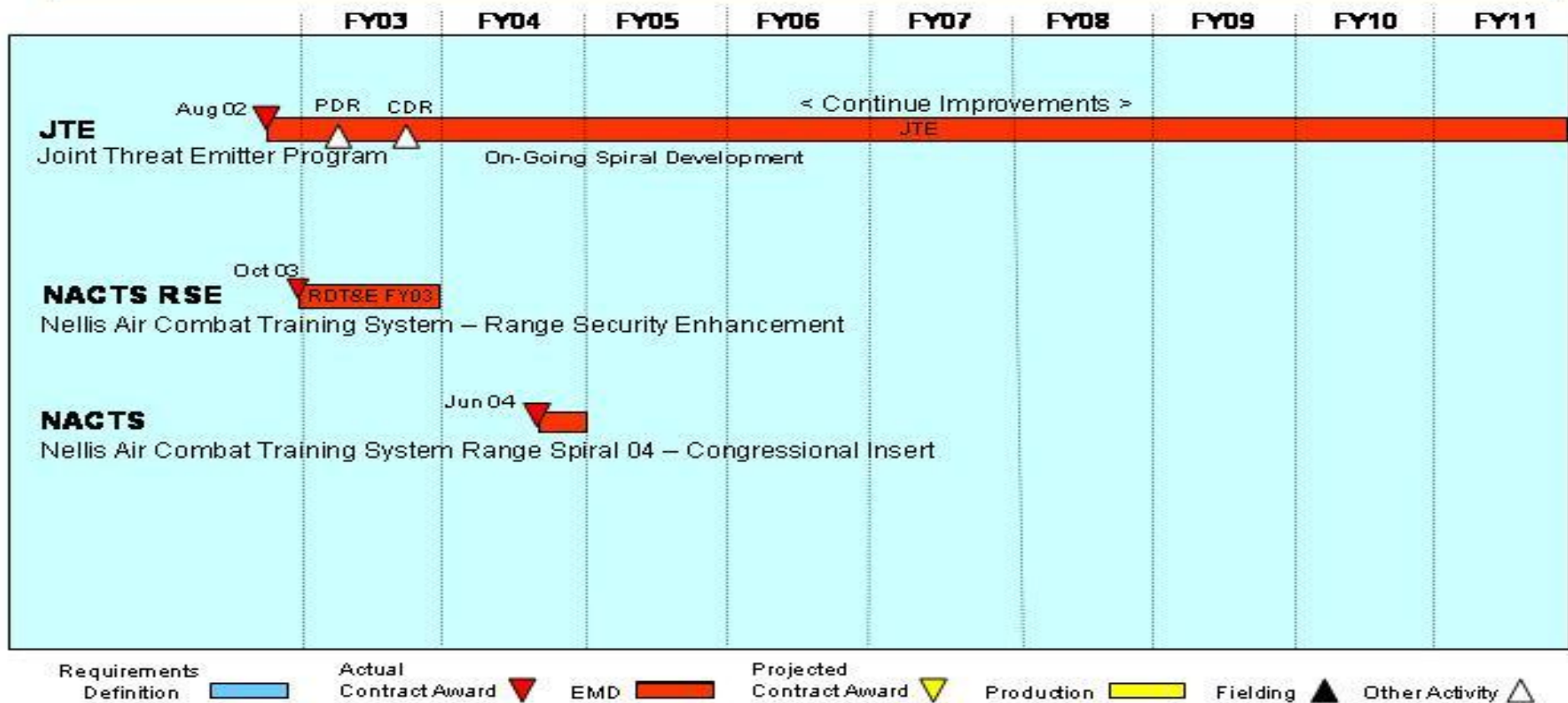


Exhibit R-4, RDT&E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

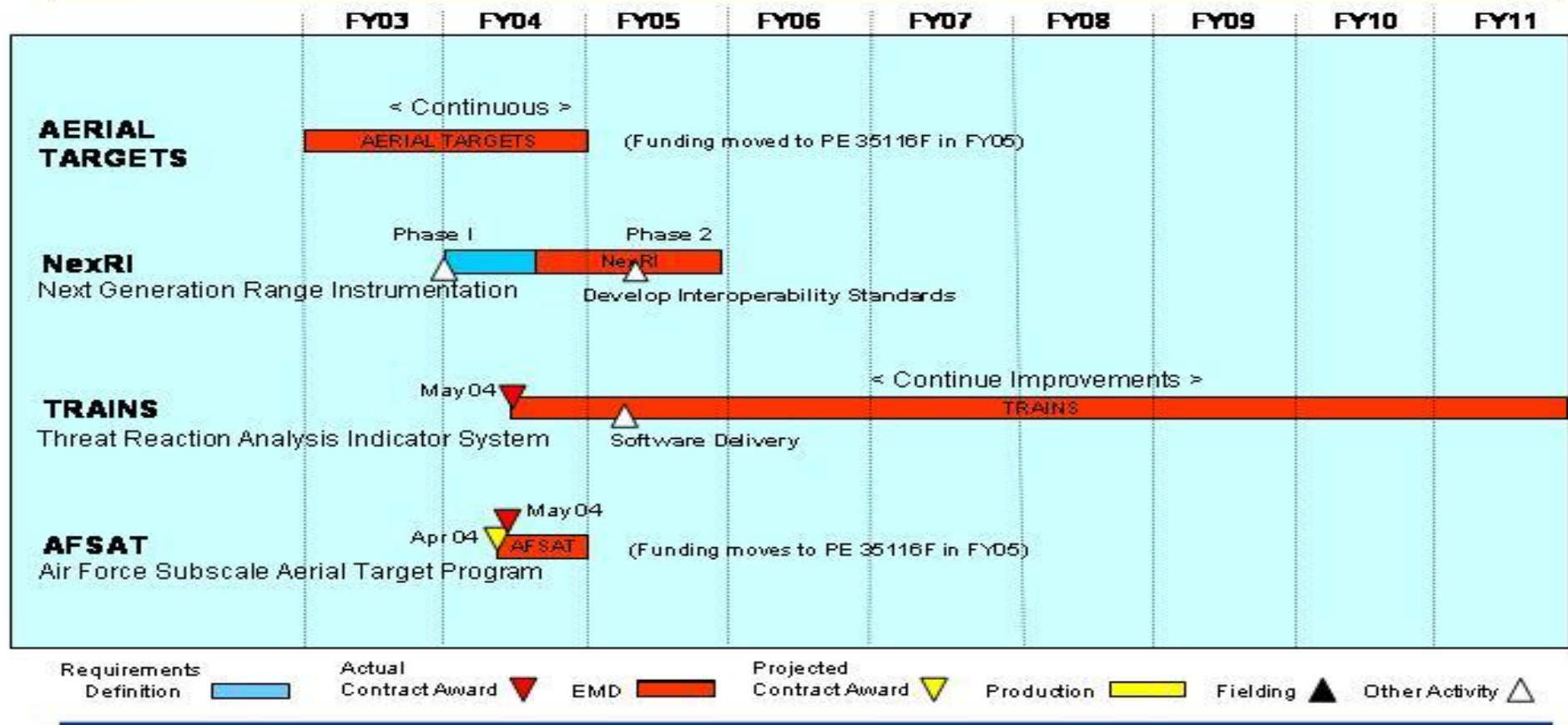
0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

U.S. AIR FORCE

CTR Schedule for Congressional Adds



UNCLASSIFIED

Exhibit R-4a, RDT&E Schedule Detail

DATE

February 2005

BUDGET ACTIVITY

05 System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT NUMBER AND TITLE

2286 Combat Training Range
Equipment

(U) <u>Schedule Profile</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) P5CTS Development				
(U) -- P5 CTS Spiral Development	2Q	1-4Q	1-4Q	1-4Q
(U) -- Continue Joint Tactical Radio System (JTRS) Waveform Development	1-4Q	1-4Q	1-4Q	1-4Q
(U) Aircraft Integration Effort				
(U) -- F-15 5E Software Upgrade		2Q		
(U) -- F-15 5M Software Upgrade		2Q		
(U) -- F-16 M3.3+ Software Upgrade		2Q		
(U) -- F-16 OFP 4.1a+ Software Upgrade			2Q	
(U) -- F-16 OFP 4.2a+ Software Upgrade				3Q
(U) Joint Service Interoperability				
(U) -- Continue System Engineering Activities	1-4Q	1-4Q	1-4Q	1-4Q
(U) -- CCS Upgrades	1-3Q	1-3Q	1-3Q	1-3Q
(U) -- TISM Software Upgrades	1Q	1Q		1Q
(U) JTE Development				
(U) -- Initial Developmental Contract Award	2Q			
(U) -- Spiral Development and Continue Improvements		2Q	2Q	2Q
(U) Nellis Air Combat Training Systems (NACTS)				
(U) -- Contract Award for Spiral Development	3Q			
(U) -- NACTS Range Security activities (on-going)	1-4Q			
(U) Next Generation Range Instrumentation (NexRI)				
(U) -- Phase I Studies Complete		2Q		
(U) -- Phase II Studies Complete		4Q		
(U) Threat Reaction Analysis Indicator System (TRAINS)				
(U) -- Contract Award	3Q			
(U) -- Software Delivery		1Q		
(U) -- Continue Improvements			2Q	2Q
(U) AF Subscale Aerial Targets (AFSAT) Program (to PE 35116F in FY05)				
(U) -- Contract Award	3Q			