

UNCLASSIFIED

PE NUMBER: 0603438F
 PE TITLE: Space Control Technology

Exhibit R-2, RDT&E Budget Item Justification	DATE February 2008
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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603438F Space Control Technology
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Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	23.605	66.182	76.845	78.337	54.706	55.770	56.891	Continuing	TBD
2611 Technology Insertion Planning and Analysis	17.924	54.195	55.235	56.240	32.247	32.875	33.536	Continuing	TBD
A007 Space Range	5.681	11.987	21.610	22.097	22.459	22.895	23.355	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

This program supports a range of activities including technology planning, development, demonstrations and prototyping, as well as modeling, simulations and exercises to support development of tactics and procedures in the Space Control mission area. The types of Space Control activities accomplished are Space Situational Awareness (SSA), Defensive Counterspace (DCS), Offensive Counterspace (OCS) and Command and Control and Battle Management. For use in the Space Control mission area, SSA includes monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing, objects and events in space and terrestrial based space capabilities. DCS includes defensive activities to protect U.S. and friendly space-systems assets, resources, and operations from enemy attempts to negate or interfere and prevention activities that limit or eliminate an adversary's ability to use U.S. space systems and services for purposes hostile to U.S. national security interests. OCS activities disrupt, deny, degrade or destroy space systems, or the information they provide, which may be used for purposes hostile to U.S. national security interests. Consistent with DOD policy, the negation efforts of this program currently focus on negation technologies which have temporary, localized, and reversible effects. Command & Control efforts include identifying technology solutions to enable fusion of data for use in multi-level security environments, near-real-time data delivery and decision support to warfighter needs. Rapid Reaction Capabilities in response to immediate warfighter needs are developed within this program.

Also supported is the development of the technology and infrastructure for space control elements of the space range. This includes development and demonstration of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Additionally, this program supports the development of test range assets required to support developmental and operational test, exercises, training, and tactics development for space control systems. A collaborative command & control capability will be integrated into several range systems to provide real time communications during test event scenarios.

As a result of an FY08 \$25M Congressional add, the Air Force began the Self Awareness Space Situation Awareness (SASSA) technology demonstration that will build a payload to provide tactical space situational awareness (SSA) around a host satellite. SASSA is designed to demonstrate the ability to detect attacks, locate attacking sources, and communicate relevant information to the ground. SASSA will contain a suite of threat warning sensors designed to address a range of anti-satellite and environmental threats. SASSA will also have a communication package and common interface unit that eases integration and performs on-board sensor data processing. The interface unit and sensors can be configured into tailored sensing payloads for future space missions.

These projects are in Budget Activity 4, Advanced Component Development and Prototypes, because they support the research, demonstration, component development and prototyping of Space Control technologies.

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04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE

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

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Previous President's Budget	30.107	37.604	52.821
(U) Current PBR/President's Budget	23.605	66.182	76.845
(U) Total Adjustments	-6.502		
(U) Congressional Program Reductions			
Congressional Rescissions		-0.422	
Congressional Increases		29.000	
Reprogrammings	-5.800		
SBIR/STTR Transfer	-0.702		
(U) <u>Significant Program Changes:</u>			
FY 2008: +\$25M Congressional add for Self Awareness Space Situation Awareness (SASSA)			
+\$4M Congressional add for Multi-mission Deployable Optical System (MDOS)			
FY 2009: +\$25M Air Force add to continue SASSA program			

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)				PE NUMBER AND TITLE 0603438F Space Control Technology			PROJECT NUMBER AND TITLE 2611 Technology Insertion Planning and Analysis		
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
2611 Technology Insertion Planning and Analysis	17.924	54.195	55.235	56.240	32.247	32.875	33.536	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

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

This program supports a range of activities including technology planning, development, demonstrations and prototyping, as well as modeling, simulations and exercises to support development of tactics and procedures in the Space Control mission area. The types of Space Control activities accomplished are Space Situational Awareness (SSA), Defensive Counterspace (DCS), Offensive Counterspace (OCS) and Command and Control and Battle Management. For use in the Space Control mission area, SSA includes monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing, objects and events in space and terrestrial based space capabilities. DCS includes defensive activities to protect U.S. and friendly space-systems assets, resources, and operations from enemy attempts to negate or interfere and prevention activities that limit or eliminate an adversary's ability to use U.S. space systems and services for purposes hostile to U.S. national security interests. OCS activities disrupt, deny, degrade or destroy space systems, or the information they provide, which may be used for purposes hostile to U.S. national security interests. Consistent with DOD policy, the negation efforts of this program currently focus on negation technologies which have temporary, localized, and reversible effects. Command & Control efforts include identifying technology solutions to enable fusion of data for use in multi-level security environments, near-real-time data delivery and decision support to warfighter needs. Rapid Reaction Capabilities in response to immediate warfighter needs are developed within this program.

Also supported is the development of the technology and infrastructure for space control elements of the space range. This includes development and demonstration of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Additionally, this program supports the development of test range assets required to support developmental and operational test, exercises, training, and tactics development for space control systems. A collaborative command & control capability will be integrated into several range systems to provide real time communications during test event scenarios.

As a result of an FY08 \$25M Congressional add, the Air Force began the Self Awareness Space Situation Awareness (SASSA) technology demonstration that will build a payload to provide tactical space situational awareness (SSA) around a host satellite. SASSA is designed to demonstrate the ability to detect attacks, locate attacking sources, and communicate relevant information to the ground. SASSA will contain a suite of threat warning sensors designed to address a range of anti-satellite and environmental threats. SASSA will also have a communication package and common interface unit that eases integration and performs on-board sensor data processing. The interface unit and sensors can be configured into tailored sensing payloads for future space missions.

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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603438F Space Control Technology	PROJECT NUMBER AND TITLE 2611 Technology Insertion Planning and Analysis
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(U) <u>B. Accomplishments/Planned Program (\$ in Millions)</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Space Situational Awareness efforts. Continue development of key space situational awareness enabling technologies	1.289	4.899	5.460
(U) Defensive Counterspace efforts. Continue vulnerability assessments, development and demonstration of advanced techniques and technologies for space control prevention systems	7.308	13.127	11.842
(U) Offensive Counterspace efforts. Continue development and demonstration of advanced counter- communications technologies and techniques, critical signal processing technology and advanced counter surveillance, reconnaissance techniques.	0.000	0.000	0.000
(U) Continue Counterspace C2 efforts	0.000	0.000	1.515
(U) Continue to conduct prototyping, demonstration, testing, and rapid transition of technology and techniques to space control systems.	6.251	5.772	5.897
(U) Self Awareness Space Situation Awareness (SASSA)	0.000	25.000	25.000
(U) Program Office and Other Technical Support	3.076	5.397	5.521
(U) Total Cost	17.924	54.195	55.235

(U) <u>C. Other Program Funding Summary (\$ in Millions)</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</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>Complete</u>	
(U) None									

(U) D. Acquisition Strategy
All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. Program consists of numerous small projects.

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Exhibit R-3, RDT&E Project Cost Analysis

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(U) <u>Cost Categories</u> (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior to FY 2007 Cost</u>	<u>FY 2007 Cost</u>	<u>FY 2007 Award Date</u>	<u>FY 2008 Cost</u>	<u>FY 2008 Award Date</u>	<u>FY 2009 Cost</u>	<u>FY 2009 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
(U) <u>Product Development</u>												
SSA Development	Various	Various	13.013	1.289	Nov-06	4.899	Jan-08	5.460	Jan-09	Continuing	TBD	TBD
DCS Activities	Various	Various	25.126	7.308	Nov-06	13.127	Jan-08	11.842	Jan-09	Continuing	TBD	TBD
OCS Development	Various	Various	42.520	0.000	Nov-06	0.000					42.520	TBD
Counterspace C2			0.000	0.000				1.515	Jan-09	Continuing	TBD	TBD
Counterspace Technology Prototyping	Various	Various	0.000	6.251	Nov-06	5.772	Jan-08	5.897	Jan-09	Continuing	TBD	TBD
SASSA	TBD	TBD	0.000	0.000		25.000	Jun-08	25.000	Jan-09	Continuing	TBD	TBD
Subtotal Product Development			80.659	14.848		48.798		49.714		Continuing	TBD	TBD
Remarks:												
(U) <u>Support</u>												
Program Office and Other Technical Support	Various	SMC- EI Segundo, CA	7.952	3.076	Nov-06	5.397	Jan-08	5.521	Jan-09	Continuing	TBD	TBD
Subtotal Support			7.952	3.076		5.397		5.521		Continuing	TBD	TBD
Remarks:												
(U) <u>Test & Evaluation</u>												
None											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000			0.000	0.000
Remarks:												
(U) <u>Management</u>												
Subtotal Management			0.000	0.000		0.000		0.000			0.000	0.000
Remarks:												
(U)												
Subtotal			0.000	0.000		0.000		0.000			0.000	0.000
Remarks:												
(U) Total Cost			88.611	17.924		54.195		55.235		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY
04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE
0603438F Space Control Technology

PROJECT NUMBER AND TITLE
2611 Technology Insertion Planning and Analysis

SCT

Schedule: Technology Insertion

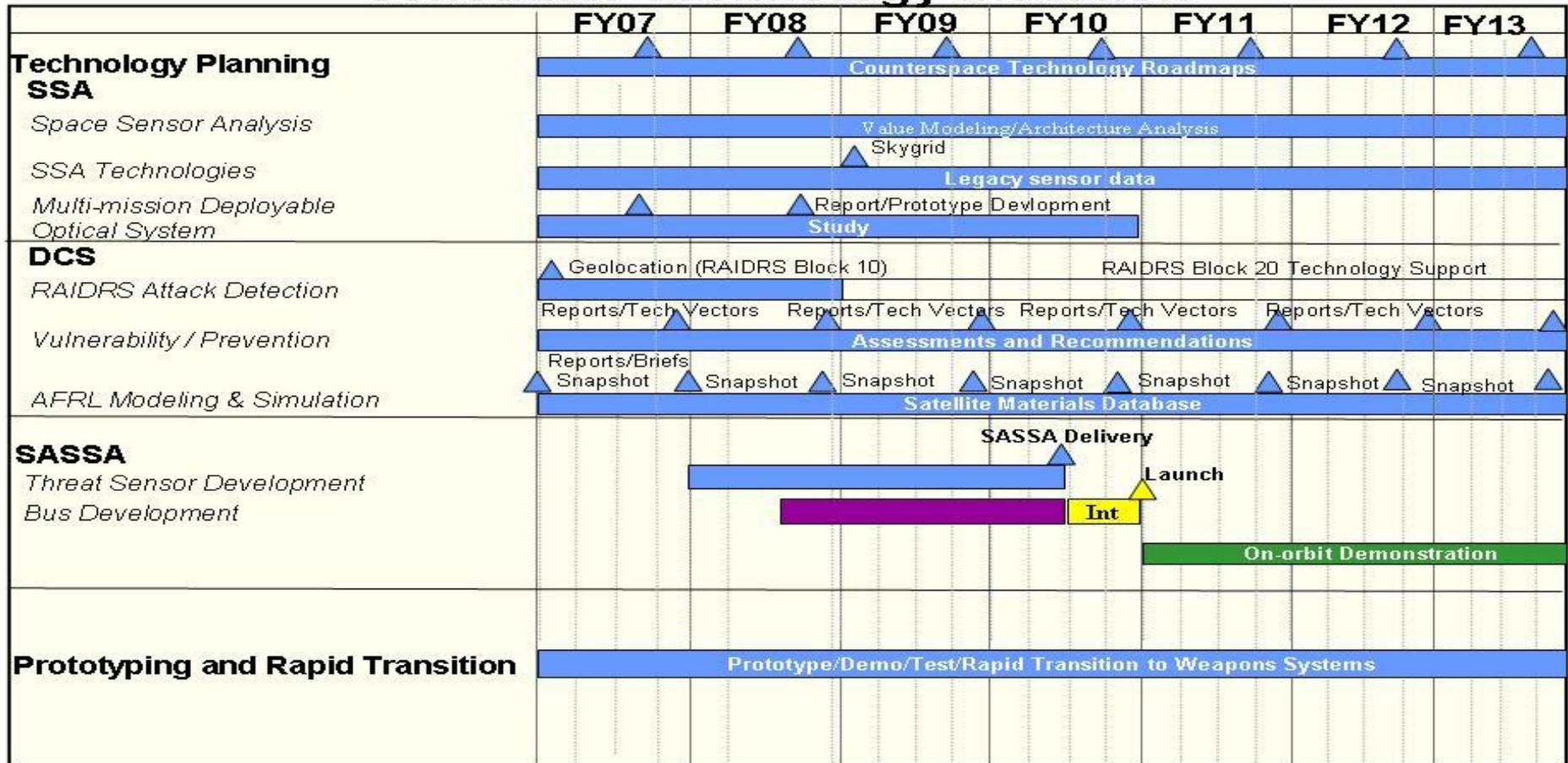


Exhibit R-4a, RDT&E Schedule Detail	DATE February 2008
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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603438F Space Control Technology	PROJECT NUMBER AND TITLE 2611 Technology Insertion Planning and Analysis
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	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) <u>Schedule Profile</u>			
(U) Continue Technology Roadmaps & Planning	1-4Q	1-4Q	1-4Q
(U) SSA- Continue sensor development	1-4Q	1-4Q	1-4Q
(U) SSA - Continue Skygrid Report		4Q	
(U) SSA - Multi-mission Deployable Optical System Prototype		3Q	
(U) DCS - Continue RAIDRS/DCS technology development and evaluation	1-4Q	1-4Q	1-4Q
(U) DCS - Continue Vulnerability and threat assessment report	4Q	4Q	4Q
(U) DCS - Continue AFRL Modelling and Simulation	4Q	4Q	4Q
(U) DCS - Develop DCS Toolbox	2-4Q	1-4Q	
(U) Prototyping and Rapid Transition to Weapons Systems	1-4Q	1-4Q	1-4Q
(U) SASSA Pre-acquisition		1-3Q	
(U) SASSA Contract Award		3Q	
(U) SASSA Threat Sensors CDRs/PDRs			2-4Q

Exhibit R-2a, RDT&E Project Justification

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BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)				PE NUMBER AND TITLE 0603438F Space Control Technology			PROJECT NUMBER AND TITLE A007 Space Range		
Cost (\$ in Millions)	FY 2007 Actual	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total
A007 Space Range	5.681	11.987	21.610	22.097	22.459	22.895	23.355	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program supports the development of space test and training range capabilities required to support developmental and operational test, training, exercises and tactics development for Space Control systems and related architecture.

This project is in Budget Activity 4, Advanced Component Development and Prototypes because it supports the research, demonstration, component development and prototyping of Space Test & Training Range technologies & infrastructure.

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

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) Range Control - Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities	1.248	5.414	11.620
(U) Targets - Development and acquisition of terrestrial-based and space-based target environments	2.550	2.800	6.500
(U) Threats - Development and acquisition of actual and representative threat systems and range protection and integration	0.000	1.000	0.488
(U) Program Office and Other Technical Support	1.883	2.773	3.002
(U) Total Cost	5.681	11.987	21.610

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

	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</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>Complete</u>	
(U) None									

(U) D. Acquisition Strategy

All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible.

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Exhibit R-3, RDT&E Project Cost Analysis

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BUDGET ACTIVITY				PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
04 Advanced Component Development and Prototypes (ACD&P)				0603438F Space Control Technology					A007 Space Range				
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2007 Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
(U) <u>Product Development</u>													
Leased Bandwidth	CPAF	G2 Satellite Systems, Long Beach, CA	5.360	2.550	Jan-07					0.000	7.910		
Leased Bandwidth	FFP	INTELSAT, Bethesda, MD				2.000	Dec-07	5.300	Jan-09	Continuing	TBD	TBD	
MCATS	CPAF	TMC, Las Cruces, NM	2.911	1.153	Jan-07	1.050	Jan-08				5.114		
MCATS (New Contract)	TBD	TBD				1.550	Jan-08	3.050	Jan-09	Continuing	TBD	TBD	
Signal Generation, Monitoring and Collection	TBD	TBD	4.519			2.000	Feb-08	5.500	Jan-09	Continuing	TBD	TBD	
Transportable Monitoring System (TMS II)	TBD	TBD				0.164	Mar-08	0.870	Jan-09	Continuing	TBD	TBD	
STTR Studies and Analysis	CPFF	Northrup Grumman, El Segundo, CA	0.742	0.095		2.450	Jan-08	3.888	Jan-09	Continuing	TBD	TBD	
Subtotal Product Development			13.532	3.798		9.214		18.608		Continuing	TBD	TBD	
Remarks:													
(U) <u>Support</u>													
Program Office and Other Technical Support	Various	SMC, El Segundo, CA	2.261	1.883	Dec-06	2.773	Dec-07	3.002	Dec-08	Continuing	TBD	TBD	
Subtotal Support			2.261	1.883		2.773		3.002		Continuing	TBD	TBD	
Remarks:													
(U) <u>Test & Evaluation</u>													
None											0.000		
None											0.000		
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:													
(U) <u>Management</u>													
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000	
Remarks:													
(U) Total Cost			15.793	5.681		11.987		21.610		Continuing	TBD	TBD	

Exhibit R-4, RDT&E Schedule Profile

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BUDGET ACTIVITY

04 Advanced Component Development and Prototypes (ACD&P)

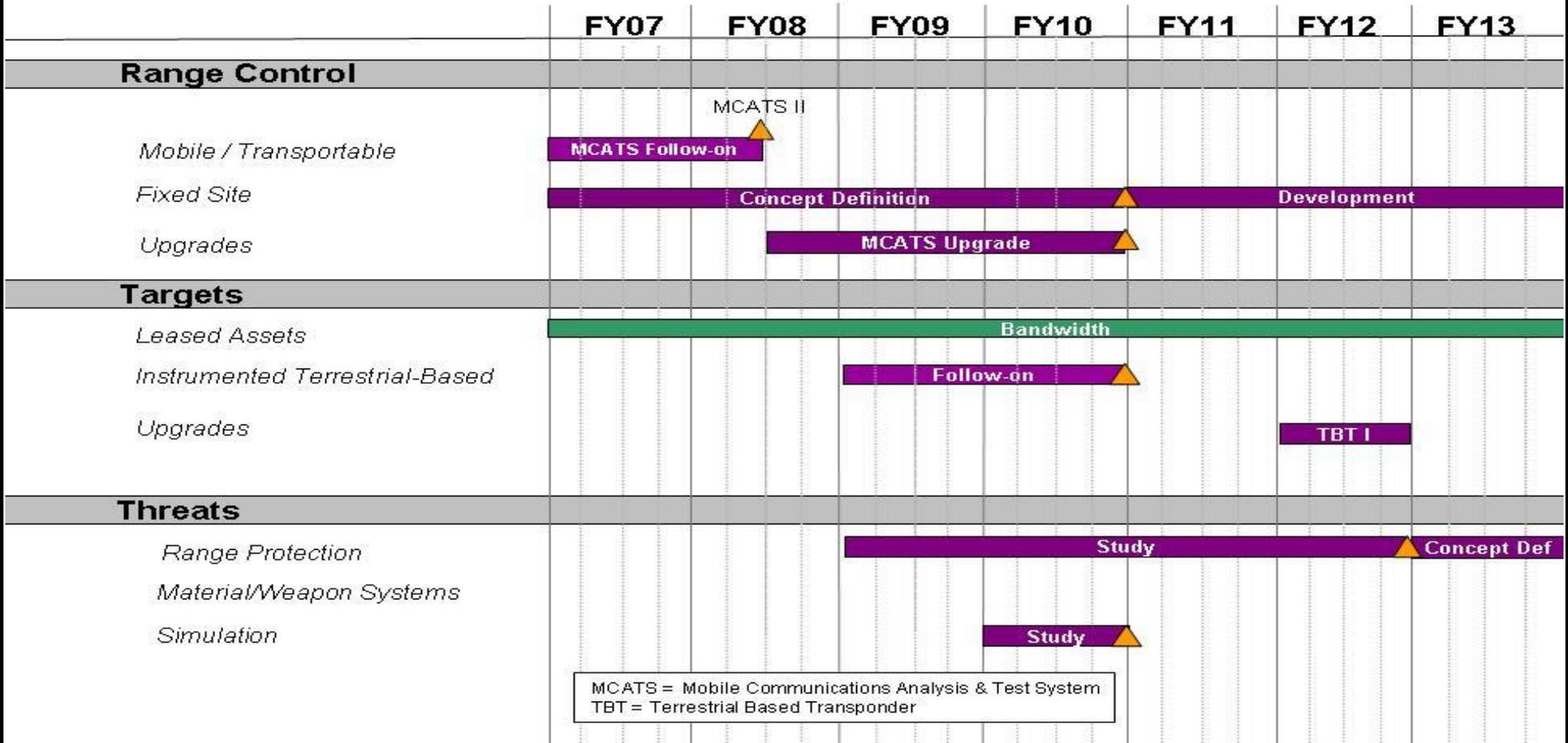
PE NUMBER AND TITLE

0603438F Space Control Technology

PROJECT NUMBER AND TITLE

A007 Space Range

STTR



MCATS = Mobile Communications Analysis & Test System
 TBT = Terrestrial Based Transponder

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Exhibit R-4a, RDT&E Schedule Detail

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04 Advanced Component Development and Prototypes (ACD&P)

PE NUMBER AND TITLE

0603438F Space Control Technology

PROJECT NUMBER AND TITLE

A007 Space Range

(U) <u>Schedule Profile</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
(U) RANGE CONTROL			
(U) Develop Mobile /Transportable Systems	1-4Q	1-4Q	
(U) Deliver MCATS		2Q	
(U) Upgrade MCATS		3-4Q	1-4Q
(U) Develop fixed-site capability	1-4Q	1-4Q	1-4Q
(U) Deliver Leased Assets	1-4Q	1-4Q	1-4Q