PE NUMBER: 0603438F
PE TITLE: Space Control Technology

Exhibit R-2, RDT&E Budget Item Justification	DATE: May 2009
BUDGET ACTIVITY: 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE: 0603438F Space Control Technology

	Cost ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
	Total Program Element (PE) Cost	61.659	86.110	97.701	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
2611	Technology Insertion Planning and Analysis	55.041	64.643	75.937	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
A007	Space Range	6.618	21.467	21.764	0.000	0.000	0.000	0.000	0.000	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 war fighter needs. Rapid Reaction Capabilities in response to immediate war fighter needs are developed within this program.

Emphasis on the Space Protection Program effort has added a project line within this Program Element to support the Air Force response to the Public Law 110-181 task to develop a DoD space protection strategy and in response to the "Sense of Congress" that "the United States should place greater priority on the protection of national security space systems."

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 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.

Spacetrack Integration Node Global Enhanced Reporting (STINGER) project converts an enhanced processing capability developed for missile warning radar to use for the space situation awareness program radars.

SASSA Risk Reduction: This effort will leverage the on-going technology demonstration to further reduce the risk associated with critical technologies, requirements, CONOPS, MUA/AoA, interfaces, sensors, and communication architectures to enable rapid prototyping of future SASSA concepts potentially leading to attribution, awareness and protection capabilities.

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.

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

		FY 2008	FY 2009	FY 2010
(U)	Previous President's Budget	66.182	76.845	78.337
(U)	Current PBR/President's Budget	61.659	86.110	97.701
(U)	Total Adjustments	-4.523	9.265	
(U)	Congressional Program Reductions		-0.301	
	Congressional Rescissions		-0.234	
	Congressional Increases		9.800	
	Reprogrammings	-3.797		
	SBIR/STTR Transfer	-0.726		

(U) Significant Program Changes:

FY 2008: - $3.797 reprogrammed for higher Air Force priorities

FY 2009: +$9.800M Congressional add for Space Situation Awareness technologies

FY 2010: +$19.364M increase ($6.585M for Space Protection Program, $9.8M for SASSA risk reduction, and $4.500M for STINGER project, -$1.4M decrease for inflation)

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
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 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
2611	Technology Insertion Planning and Analysis	55.041	64.643	75.937	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
	Quantity of RDT&E Articles	0	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.

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.

SASSA Risk Reduction: This effort will leverage the on-going technology demonstration to further reduce the risk associated with critical technologies, requirements, CONOPS, MUA/AoA, interfaces, sensors and communication architectures to enable rapid prototyping of future SASSA concepts potentially leading to attribution, awareness and protection capabilities.

Spacetrack Integration Node Global Enhanced Reporting (STINGER) project converts an enhanced processing capability developed for missile warning radar to use for the space situation awareness program radars.

Emphasis on the Space Protection Program effort has added a project line within this Program Element to support the Air Force response to the Public Law 110-181 task to develop a DoD space protection strategy and in response to the "Sense of Congress" that "the United States should place greater priority on the protection of national security space systems."

Exhibit R-2a, RDT&E Project Justification		DATE May 2009
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

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U) Space Situational Awareness efforts. Continue development of key space situational awareness enabling technologies	4.899	13.120	4.526
(U) Defensive Counterspace efforts. Continue vulnerability assessments, development and demonstration of advanced techniques and technologies for space control prevention systems	9.927	13.806	13.091
(U) Space Protection Program	3.200	0.000	6.493
(U) Continue Counterspace C2 efforts	0.000	1.515	1.124
(U) Continue to conduct prototyping, demonstration, testing, and rapid transition of technology and techniques to space control systems.	5.368	5.681	5.942
(U) Self Awareness Space Situation Awareness (SASSA)	25.000	25.000	25.000
(U) SASSA Risk Reduction	0.000	0.000	9.615
(U) STINGER	0.000	0.000	4.432
(U) Program Office and Other Technical Support (includes System Engineering and Architectural Support)	6.647	5.521	5.714
(U) Total Cost	55.041	64.643	75.937

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

	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total Cost
(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.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

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

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
SSA Development	Various	Various	14.302	4.899	Jan-08	13.120	Jan-09	4.526	Jan-10	Continuing	TBD	TBD
DCS Activities	Various	Various	32.434	9.927	Jan-08	13.806	Jan-09	13.091	Jan-10	Continuing	TBD	TBD
Space Protection Program	Various	Various	0.000	3.200	Jan-08	0.000		6.493	Jan-10	Continuing	TBD	TBD
Counterspace C2	Various	Various	0.000	0.000		1.515	Jan-09	1.124	Jan-10	Continuing	TBD	TBD
Counterspace Technology Prototyping	Various	Various	6.251	5.368	Jan-08	5.681	Jan-09	5.942	Jan-10	Continuing	TBD	TBD
SASSA Tech Demo	Various	Various	0.000	25.000	Oct-08	25.000	Dec-08	25.000	Jan-10	0.000	75.000	75.000
SASSA Risk Reduction	TBD	TBD	0.000	0.000		0.000		9.615	Jan-10	Continuing	TBD	TBD
STINGER	TBD	TBD	0.000	0.000		0.000		4.432	Jan-10	Continuing	TBD	TBD
Subtotal Product Development			52.987	48.394		59.122		70.223		Continuing	TBD	TBD
Remarks:												
(U) Support												
Program Office and Other Technical Support	Various	SMC- El Segundo, CA	11.028	3.592	Jan-08	3.374	Jan-09	3.597	Jan-10	Continuing	TBD	TBD
System Engineering and Architectural Support	CPAF	Northrup Grumman, Redondo Beach, CA	0.000	3.055	Nov-07	2.147	Dec-09	2.117	Jan-10	Continuing	TBD	TBD
Subtotal Support			11.028	6.647		5.521		5.714		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation												
None											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Management												
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U)												
											0.000	
Subtotal			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			64.015	55.041		64.643		75.937		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
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

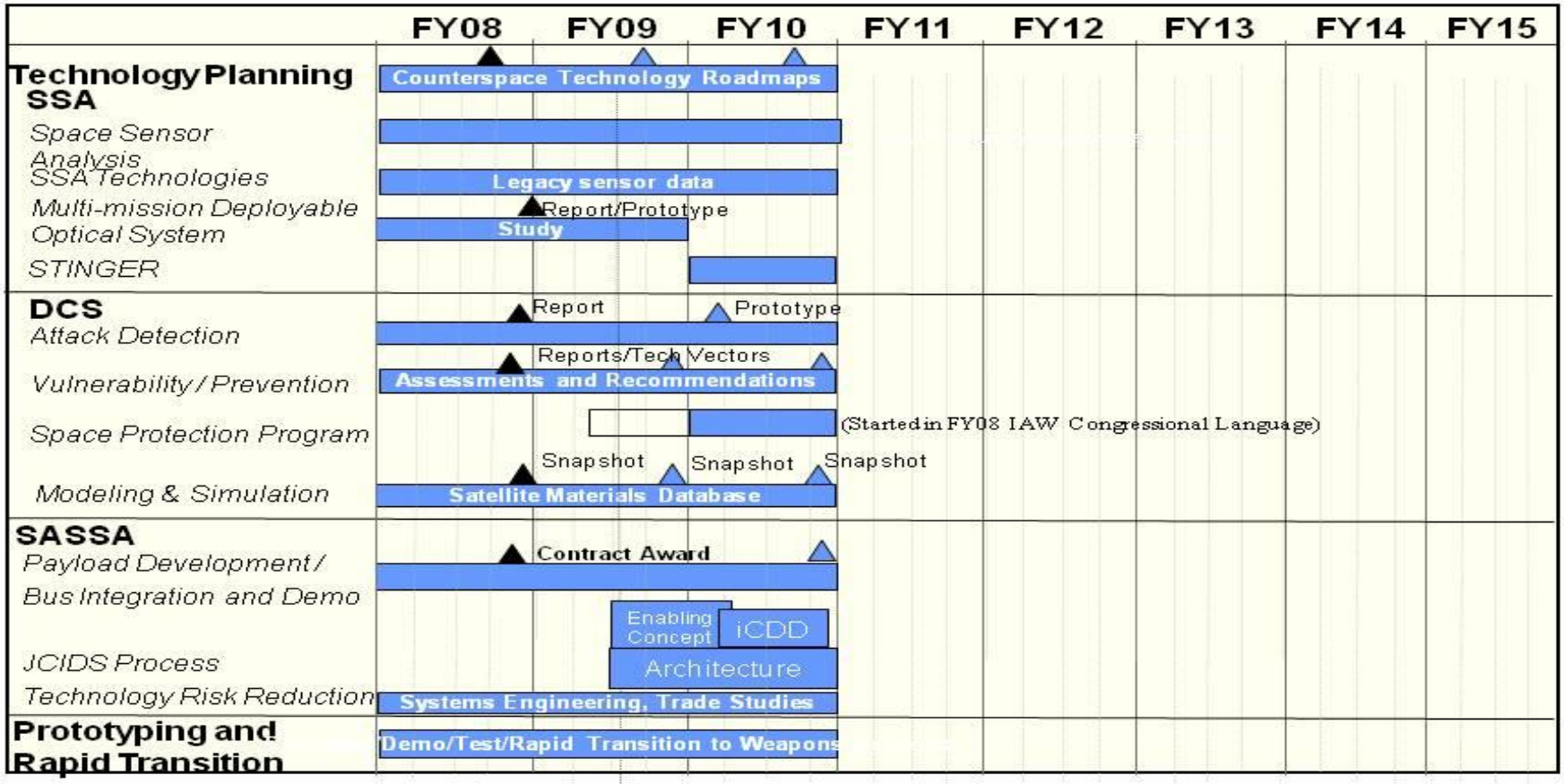

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **04 Advanced Component Development and Prototypes (ACD&P)**	PE NUMBER AND TITLE **0603438F Space Control Technology**	PROJECT NUMBER AND TITLE **2611 Technology Insertion Planning and Analysis**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) Continue Technology Roadmaps & Planning	1-4Q	1-4Q	1-4Q
(U) SSA- Continue sensor development	1-4Q	1-4Q	1-4Q
(U) SSA - Multi-mission Deployable Optical System Prototype	1-4Q	1-4Q	
(U) DCS - Continue DCS technology development and evaluation	1-4Q	1-4Q	1-4Q
(U) DCS - Continue Vulnerability and threat assessment report	1-4Q	1-4Q	1-4Q
(U) DCS - Continue AFRL Modelling and Simulation	1-4Q	1-4Q	1-4Q
(U) Space Protection Program			1-4Q
(U) Prototyping and Rapid Transition to Weapons Systems	1-4Q	1-4Q	1-4Q
(U) STINGER processing integration for SSA radar systems			1-4Q
(U) SASSA Contract Definition and Award	1-4Q		
(U) SASSA Sensor Deliveries/Demo			4Q
(U) SASSA Risk Reduction Architecture development		3-4Q	1-4Q

Exhibit R-2a, RDT&E Project Justification

DATE: May 2009

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 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total
A007	Space Range	6.618	21.467	21.764	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
	Quantity of RDT&E Articles	0	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 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.

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.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	Range Control - Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities	1.036	8.548	13.450
(U)	STTR Leased Bandwith	2.000	3.000	3.000
(U)	STTR Studies and Analysis	0.500	0.425	0.425
(U)	Program Office and Other Technical Support	3.082	9.494	4.889
(U)	Total Cost	6.618	21.467	21.764

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

	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost to Complete	Total Cost
(U) None										

(U) D. Acquisition Strategy

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

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

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

(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
Leased Bandwidth	FFP	INTELSAT, Bethesda, MD	0.000	2.000	Jan-08	0.000		0.000		0.000	2.000	2.000
Leased Bandwidth	TBD	DISA	0.000	0.000		3.000	Feb-09	3.000	Feb-10	Continuing	TBD	TBD
STTR Upgrade (Execution Test Center)	CPAF	Harris Corp, Melbourne, FL	0.000	0.824	Nov-07	4.400	Jan-09	4.600	Nov-09	0.000	9.824	9.824
Execution Test Center Transition into SROC	CPAF	Harris Corp, Melboune, FL	0.000	0.000						Continuing	TBD	TBD
STTR Transportable	CPAF	Harris Corp, Melbourne, FL	0.000			0.400	Jan-09	2.586	Nov-09	0.000	2.986	2.986
STTR Training Suite	CPAF	Harris Corp, Melbourne, FL	0.000	0.000		0.600	Jan-09	0.450	Nov-09	Continuing	TBD	TBD
Signal Generation, Monitoring and Collection	CPFF	Harris Corp, Melbourne, FL	0.000	0.212	Sep-08	1.988	Nov-08	4.240	Nov-09	Continuing	TBD	TBD
Automated Scheduling Software Tool	TBD	Various	0.000	0.000		1.160	Feb-09	1.150	Nov-09	Continuing	TBD	TBD
STTR Tech Refresh	TBD	Various	0.000	0.000		0.000		0.400	Jan-10	Continuing	TBD	TBD
Advanced Capabilities Environment (ACE)	CPAF	Harris Corp, Melbourne, FL	0.000	0.000		0.000		0.000		Continuing	TBD	TBD
STTR Studies and Analysis	CPFF	Harris Corp, Melbourne, FL	0.837	0.500	Sep-08	0.425	Dec-08	0.425	Jan-10	Continuing	TBD	TBD
STTR Systems Engineering and Architecture	Various	Various	0.000	0.000		0.000		0.357	Nov-09	Continuing	TBD	TBD
Subtotal Product Development			0.837	3.536		11.973		17.208		Continuing	TBD	TBD
Remarks:												
(U) Support												
Program Office and Other Technical Support	Various	SMC, El Segundo, CA	4.144	3.082	Dec-07	9.494	Nov-08	4.556	Nov-09	Continuing	TBD	TBD
Subtotal Support			4.144	3.082		9.494		4.556		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation												
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) Management												
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Total Cost			4.981	6.618		21.467		21.764		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
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 Program Schedule

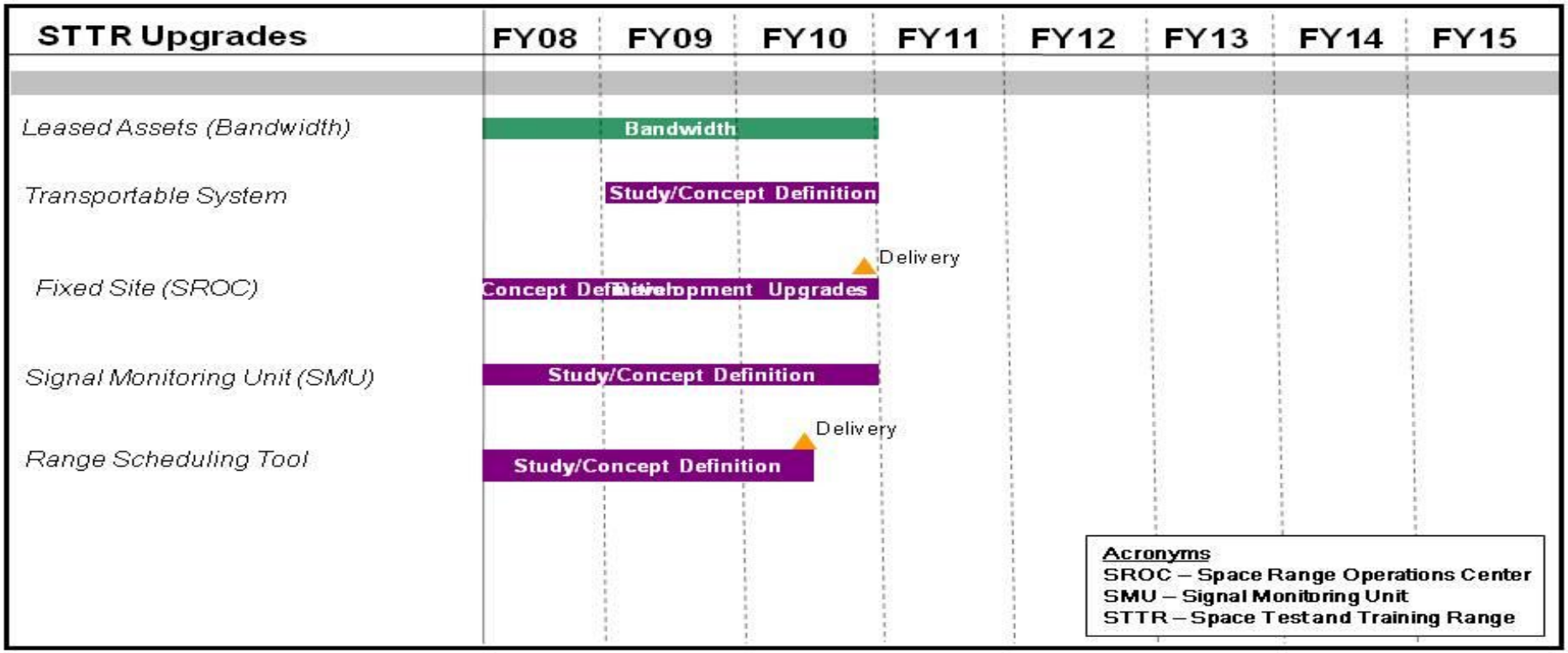

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)	PE NUMBER AND TITLE 0603438F Space Control Technology	PROJECT NUMBER AND TITLE A007 Space Range

(U) Schedule Profile	FY 2008	FY 2009	FY 2010
(U) RANGE CONTROL/TARGETS/THREATS			
(U) Deliver Leased Assets	1-4Q	1-4Q	1-4Q
(U) Upgrade Transportable System		1-4Q	1-4Q
(U) Develop fixed-site capability (SROC)	1-4Q	1-4Q	1-4Q
(U) Signal monitoring and collection (SMU)	1-4Q	1-4Q	1-4Q
(U) Range Scheduling Tool	1-4Q	1-4Q	1-4Q