PE NUMBER: 0305206F
PE TITLE: Airborne Reconnaissance Systems

Exhibit R-2, RDT&E Budget Item Justification

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems

	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	111.842	103.870	143.892	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
4818	Imaging and Targeting Support	74.175	20.742	51.035	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
4819	Common Data Link (CDL)	35.922	37.475	37.773	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5092	JTC/SIL MUSE	1.745	1.653	3.470	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5291	Wide Area Airborne Surveillance (WAAS)	0.000	34.000	46.000	0.000	0.000	0.000	0.000	0.000	Continuing	TBD
5292	Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)	0.000	10.000	5.614	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FY2008 funding total includes $1.401M in supplemental funding.

(U) A. Mission Description and Budget Item Justification

The Airborne Reconnaissance Systems program coordinates the development of advanced airborne reconnaissance system technologies (sensors, data links, targeting networks and products, and quick reaction capabilities) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objective is to develop, demonstrate, and rapidly transition advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline. This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time intelligence, surveillance, and reconnaissance (ISR).

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

Funds in any project can also cover activities to include studies and analysis to support both current program planning and execution and future program planning.

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

		FY 2008	FY 2009	FY 2010
(U)	Previous President's Budget	65.842	149.752	229.970
(U)	Current PBR/President's Budget	111.842	103.870	143.892
(U)	Total Adjustments	46.000	-45.882	
(U)	Congressional Program Reductions		-50.000	
	Congressional Rescissions		-0.282	
	Congressional Increases		4.400	
	Reprogrammings	46.000		
	SBIR/STTR Transfer			
(U)	Significant Program Changes:			

Exhibit R-2, RDT&E Budget Item Justification	DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems

FY2008 funding total includes $1.401M in supplemental funding. Funding added for GORGON STARE (Formerly WAAS) (FY09-15). FY08 Funding for GORGON STARE was under the I&TS project. Funding reduced to terminate Blackswift (FY09-12).

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4818 Imaging and Targeting Support	

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
4818 Imaging and Targeting Support	74.175	20.742	51.035	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		

FY2008 funding total includes $1.401M in supplemental funding.

(U) A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (I&TS) program is to develop and demonstrate next-generation, persistent, wide area surveillance and common imagery reconnaissance sensor capabilities (radar and electro-optical systems) for multiple airborne platforms, and sensor products to aid in rapid targeting (geolocation models, sensor-based exploitation tools, sensor networking capabilities). Developmental efforts pursued are improved sensor capabilities (such as hyperspectral imagery [HSI], measurement and signature intelligence [MASINT], polarimetric imaging, ground moving target indication, foliage penetration, and other radar and electro-optical modes), increased geolocation accuracy, advanced sensor data correlation, automated target detection, network centric warfare, and other Intelligence, Surveillance, and Reconnaissance (ISR) and associated Tasking Processing Exploitation and Dissemination (TPED) capabilities to reduce both target search and kill chain timelines; as well as, supporting traditional intelligence activities. I&TS will increase interoperability among developed systems by developing common standards and tools. I&TS focuses on the following areas:

Development and integration of common radar and electro-optical sensors (Synthetic Aperture Radar [SAR], Low Frequency SAR, and antennas, Electro-Optical [EO], Infrared [IR], HSI, Low Light, Laser Radar [LADAR]) and their operational modes (High Resolution Imagery, Moving Target Indication, Persistent Surveillance, Wide Area Surveillance, Spectral Identification) for multiple airborne platforms.

Development and demonstration of advanced airborne tactical sensor and associated TPED processing algorithms and tools (automatic registration, automatic and assisted target detection, network centric warfare). Development of integrated multi-sensor capabilities to detect and identify obscured targets (OT). Development and implementation of imagery standards (Common Ground Moving Target Indicator (GMTI), National Imagery Transmission Format (NITF)). These efforts focus on reducing the find, fix and track elements of the time critical targeting kill-chain timeline while improving operator and decision-maker efficiency and effectiveness.

Enhancement of Imagery Intelligence (IMINT) product quality. Monitoring and enhancement of IMINT product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user).

ACES HY moved to new BPAC 675292 starting in FY09.

GORGON STARE (formerly WAAS) moved to new BPAC 675291 starting in FY09.

New Wide Area Surveillance Program of Record adds $38.705 RDT&E in FY10.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

Exhibit R-2a, RDT&E Project Justification		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE 4818 Imaging and Targeting Support

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	Continue efforts to transition HSI technology, such as the Spectral Infrared Imaging Technology Transition Testbed (SPIRITT) sensor and the Hyperspectral Collection and Analysis System (HyCAS) into airborne reconnaissance platforms.	8.392	8.183	6.000
(U)	Develop Obscured Target (OT) sensor capabilities (e.g. foliage penetration synthetic aperture radar (FOPEN SAR) and target identification (ID) laser radar (LADAR)).	6.140	5.280	2.800
(U)	Continue Obscured Target Roadmap Development	0.130	0.271	0.300
(U)	Develop automatic and assisted target detection algorithms and tools.	0.045	0.520	1.000
(U)	Develop passive low light level sensors for OT detection (e.g., Nocturnal Camera (NCAM)).	0.000	0.280	0.300
(U)	Procure three ACES HY Sensors, integrate onto the MQ-1 Predator UAS, and provide training and support for these systems.	10.922		
(U)	Initiate development of wide area airborne surveillance (sensors, platforms, and associated TPED) capability, using manned and unmanned testbeds.	46.000		
(U)	Project Anubis small UAS	0.479		
(U)	Multiple UAS Cooperative Observation and Engagement		4.400	
(U)	Wide Area Surveillance Program of Record			38.705
(U)	Mission Support	2.067	1.808	1.930
(U)	Total Cost	74.175	20.742	51.035

(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) AF RDT & E (PE 63203F, AFRL)	1.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.500

- Air Force Research Lab is contributing to SPIRITT HSI sensor development, including a longwave infrared (LWIR) hyperspectral channel.

(U) D. Acquisition Strategy

Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods; including the use of Engineering Change Proposals (ECP) to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **May 2009**

BUDGET ACTIVITY: **07 Operational System Development**

PE NUMBER AND TITLE: **0305206F Airborne Reconnaissance Systems**

PROJECT NUMBER AND TITLE: **4818 Imaging and Targeting Support**

(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												
BAE Systems (SPIRITT)	C/CPFF	Greenlawn, NY	30.473	6.530	Jan-08	8.183	Jan-09	4.890	Jan-10	Continuing	TBD	TBD
Essex Corp (OT-SAR)	Phase III SBIR	Columbia, MD	3.104	4.420	Feb-08	4.130	Jan-09	1.950	Jan-10	Continuing	TBD	TBD
Georgia Tech Research Institute (GTRI)	SS/CPFF	Dayton, OH	0.671	0.250	Jan-08	0.271	Jan-09	0.260	Jan-10	Continuing	TBD	TBD
Lockheed Martin ADP (SPIRITT)	SS/CPFF	Palmdale, CA	0.925	1.500	Jul-08	0.250	Jan-09	0.000			2.675	1.750
Sierra Nevada (WAAS)			0.000	46.000	Aug-08					Continuing	TBD	TBD
Raytheon (ACES HY)			0.000	10.922	Mar-08					Continuing	TBD	TBD
Proxy Aviation (Multiple UAS Cooperation)						4.400	Mar-09				4.400	
Wide Area Surveillance Program of Record								38.705	Jan-10	Continuing	TBD	TBD
Others	Various	Various	0.000	2.486	Mar-08	1.524	Mar-09	3.300	Jan-10	Continuing	TBD	TBD
Subtotal Product Development			35.173	72.108		18.758		49.105		Continuing	TBD	TBD
Remarks:												
(U) Support												
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Test & Evaluation												
										0.000	0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Management												
ASC (ITS)	Various	Wright Patterson, AFB	0.000	2.067	Oct-07	1.984	Oct-08	1.930	Oct-09	Continuing	TBD	TBD
Subtotal Management			0.000	2.067		1.984		1.930		Continuing	TBD	TBD
Remarks:												
(U) Total Cost			35.173	74.175		20.742		51.035		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE 4818 Imaging and Targeting Support

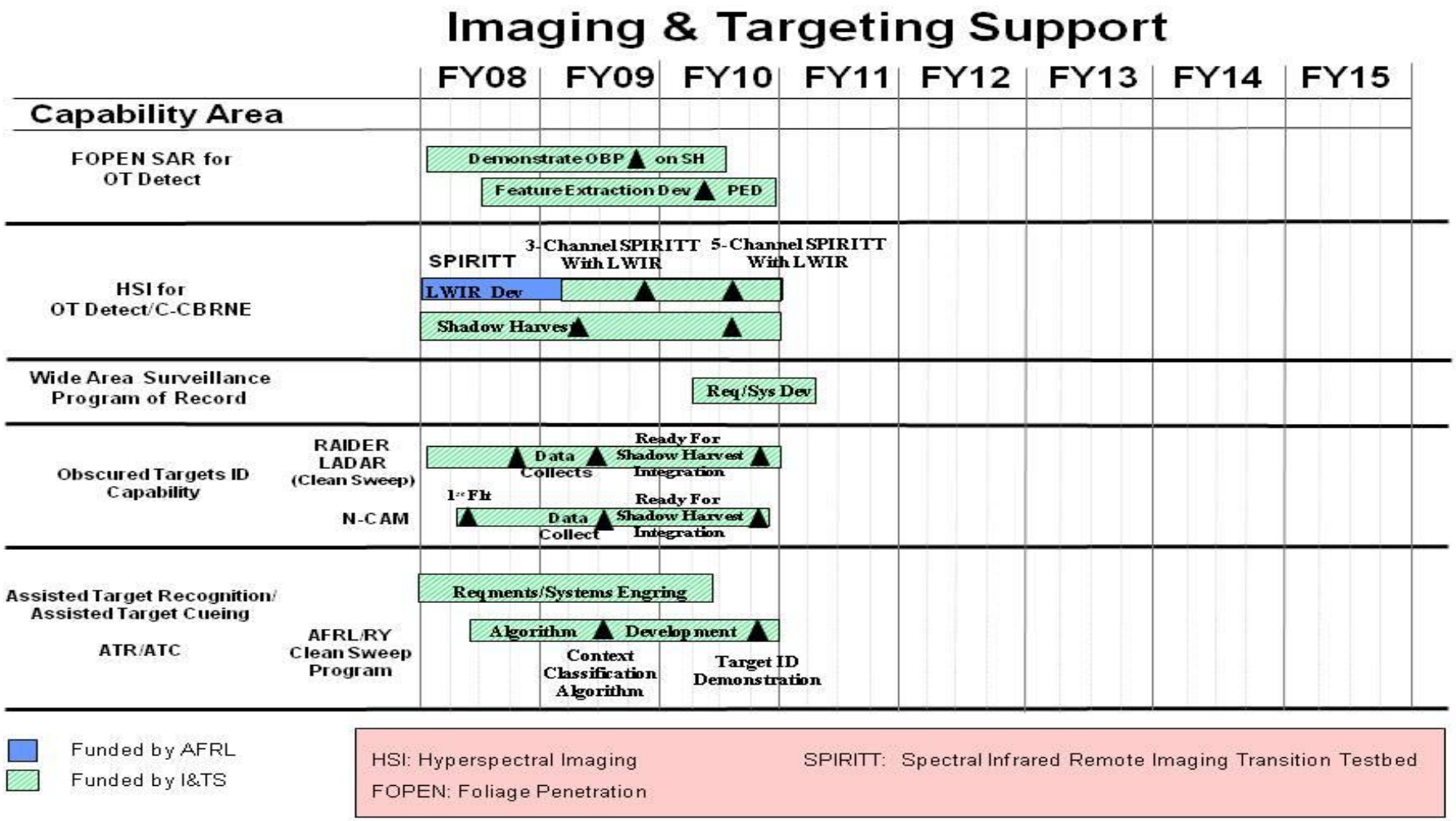


Exhibit R-4a, RDT&E Schedule Detail		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4818 Imaging and Targeting Support

(U) Schedule Profile	FY 2008	FY 2009	FY 2010
(U) FOPEN SAR Development	1-4Q	1-4Q	1-4Q
(U) HSI/SPIRITT Development	1-4Q	1-4Q	1-4Q
(U) Obscured Targets ID Capability	1-4Q	1-4Q	1-4Q
(U) Assisted Target Recognition/Cueing	1-4Q	1-4Q	1-4Q
(U) Wide Area Surveillance Program of Record			2-4Q

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4819 Common Data Link (CDL)	

	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
4819	Common Data Link (CDL)	35.922	37.475	37.773	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

Common Data Link (CDL) provides an interoperable joint command, control, and communications capability for manned/unmanned Intelligence, Surveillance, and Reconnaissance (ISR) assets. As the CDL Executive Agent (EA), the Air Force oversees acquisition of developmental data-link terminals and update/maintenance of the CDL specification. CDL Military Intelligence Program (MIP) funds are used to ensure design configuration, commonality, and interoperability, including testing, among the service's ISR platforms. Updates to the CDL specification and developmental systems impact approximately 500 DoD airborne and ground ISR systems with CDL capabilities. The CDL program is also focused on complying with OSD mandates for Software Communications Architecture (SCA) waveform development, Internet Protocol Version 6 (IPv6), and software re-programmable cryptographic (COMSEC) equipment.

The CDL design permits existing and future reconnaissance assets to operate worldwide, providing sensor data directly via point-to-point or point-to-multipoint broadcast to ground sites and airborne platforms. It also provides the capability to relay data via air-to-air or satellite links when the asset and ground site are not within line-of-sight. CDL provides bandwidth to accommodate numerous sensors collecting Signals Intelligence (SIGINT) and Imagery Intelligence (IMINT) (including video) data.

Concept, technology, and developmental efforts support continuous improvements and implementation of line-of-sight and network Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) capabilities. CDL's modular design provides for future technology insertion and reduces non-recurring engineering and life-cycle costs to the user. (Note: the term A-series refers to full data rate/network capable CDL systems and T-Series refers to less capable, lower data rate CDL systems.)

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program is categorized as Budget Activity 07 because it provides for development of technologies and capabilities in support of operational system development.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	Continued evolutionary development of T-Series CDL terminals (e.g. Team Portable, Mini CDL, and Joint Tactical Edge Network) for use on C2ISR platforms (e.g. Guardrail Legacy Replacement, Airborne Reconnaissance Low, P-3, Predator, Reaper, other tactical and small UAVs) and man portable systems.	9.566	9.902	11.920
(U)	Continued development of A-Series terminals and waveforms (e.g. R-CDL, MR-TCDL and SCA/IPv6 compliant waveforms) for integration into ISR platforms and programs such as ACS, Apache, DCGS-A and Objective Gateway.	14.781	16.544	11.436
(U)	Continued configuration control of CDL architecture, standards, specification, and modules.	2.247	2.448	2.631
(U)	Continued development of COMSEC replacement and transition to development of software reprogrammable	0.000	0.110	0.118

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4819 Common Data Link (CDL)

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
	COMSEC.			
(U)	Continued development of advanced technology insertion activities (to include studies and analysis of future data link requirements and architectures), CDL certification test equipment development, and related joint interoperability certification and spectrum management requirements to include OSD mandates.	7.935	6.441	8.294
(U)	CDL technical and engineering support.	1.393	2.030	3.375
(U)	Total Cost	35.922	37.475	37.773

(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

The CDL Executive Agent, supported by the 653rd Electronics System Group (ELSG), in concert with other program offices and laboratories, provides for development of common, interoperable wideband ISR data links as mandated by Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)) policy. Platforms are responsible for CDL procurement, NSA/JITC certifications, integration, and installation. Acquisition strategy varies by contract. When possible contracts are awarded under full and open competition.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE: 4819 Common Data Link (CDL)

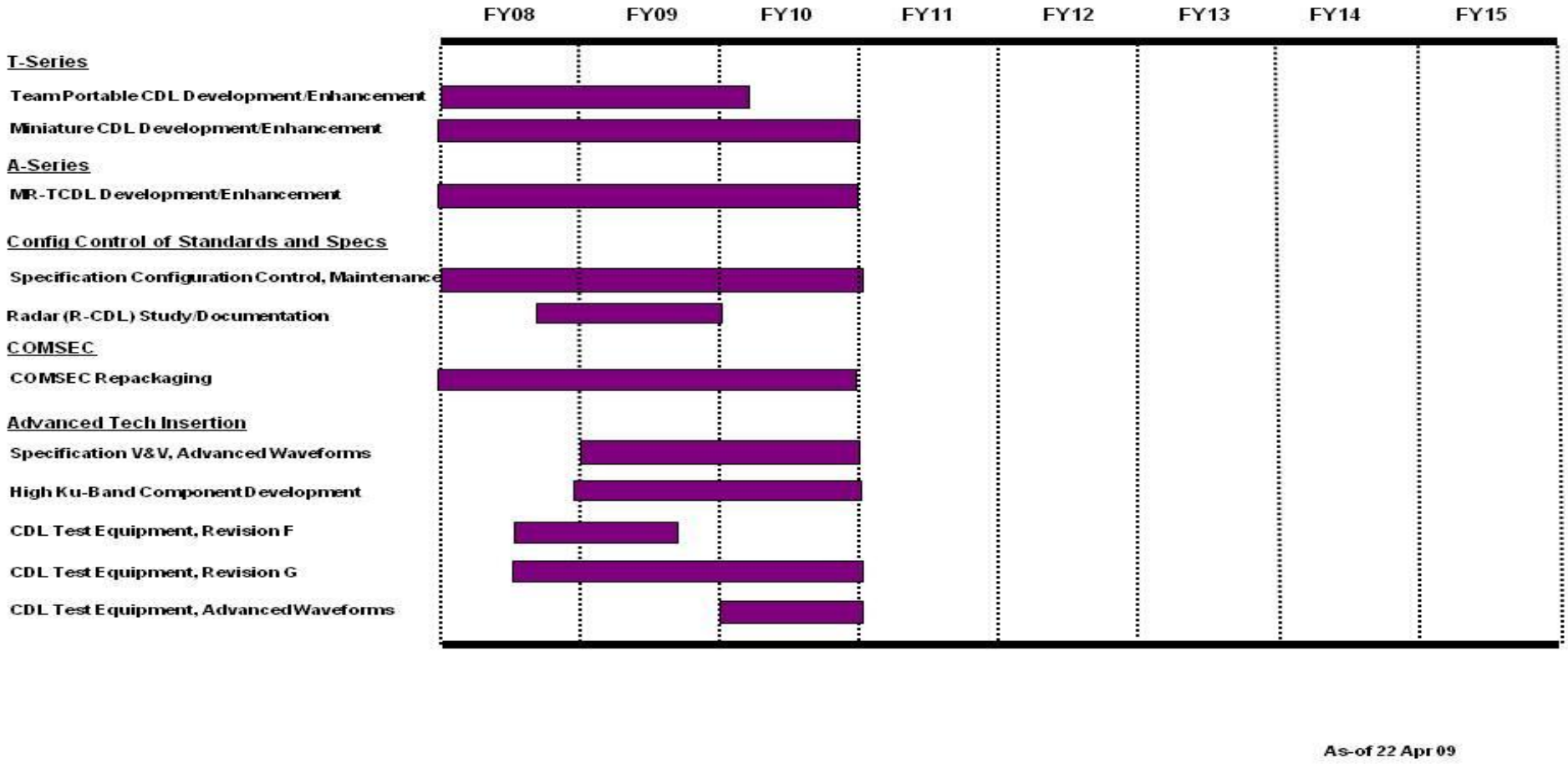
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) ($ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2008 Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development												
L-3 Communications (Mini, MR-TCDL)	C & S; CPAF, CPFF, CPIF	Salt Lake City, UT	175.220	9.004	Jan-08	9.370	Jan-09	6.511	Jan-10	Continuing	TBD	TBD
Rockwell Collins (Mini)				3.796	Jan-08	3.500	May-09	3.211	Jan-10	Continuing	TBD	TBD
Harris Corp (Mini)	C & S; CPFF	Melbourne, FL	4.775								4.775	
SATCOM Interop/Other Govt Orgs	S; MIPR, CPIF	Multiple	8.207			0.300	Jan-09	0.303	Jan-10	Continuing	TBD	
L-3 COMCEPT		Multiple	21.619								21.619	
Centech Group (Radar CDL)	CPFF	Arlington, VA		0.597	Jun-08						0.597	
Centech Group (CDL spec Support Team)	CPFF	Salt Lake City, UT		1.917	Feb-08	2.000	Feb-09	2.100	Jan-10		6.017	
ITT	C; IDIQ	Beavercreek, OH	4.474								4.474	4.500
Cubic (Team Portable)	C, CPFF	San Diego, CA	23.385	3.679	Feb-08	1.900	Apr-09	1.500	Jan-10	Continuing	TBD	TBD
Viasat			1.334			0.000	Apr-09			Continuing	TBD	TBD
Lear Seigler Services (Test Set)		Shrewsbury, NJ		2.898	May-08	3.700	Apr-09	6.000	Jan-10	Continuing	TBD	TBD
Other	S; MIPR, CPFF	Multiple	10.810	0.000		3.873	Jan-09	9.199	Jan-10	Continuing	TBD	TBD
Subtotal Product Development			249.824	21.891		24.643		28.824		Continuing	TBD	TBD
Remarks:												
(U) Support												
Various	C & S; CPFF, MIPR	Multiple	39.117	4.214		3.515	Jan-09	4.879	Jan-10	Continuing	TBD	TBD
Subtotal Support			39.117	4.214		3.515		4.879		Continuing	TBD	TBD
Remarks:												
(U) Test & Evaluation												
JITC	MIPR	Fort Huachuca, AZ	4.632	0.864	Jan-08	0.824	Jan-09	0.848	Jan-10	Continuing	TBD	TBD
Northrop Grumman (MR-T CDL Test)		Herndon, VA		6.434	Jan-08	6.000	Dec-08				12.434	
Subtotal Test & Evaluation			4.632	7.298		6.824		0.848		Continuing	TBD	TBD
Remarks:												
(U) Management												
Various	MIPR	Multiple	12.163	2.519	Jan-08	2.493	Jan-09	3.222	Nov-09	Continuing	TBD	TBD
Subtotal Management			12.163	2.519		2.493		3.222		Continuing	TBD	TBD
Remarks:												

Exhibit R-3, RDT&E Project Cost Analysis			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4819 Common Data Link (CDL)	

(U)								
							0.000	
	Subtotal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Remarks:							
(U)	Total Cost	305.736	35.922	37.475	37.773	Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 4819 Common Data Link (CDL)

Common Data Link



As-of 22 Apr 09

Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0305206F Airborne Reconnaissance Systems**	PROJECT NUMBER AND TITLE **4819 Common Data Link (CDL)**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) Team Portable CDL Development	1-4Q	1-4Q	1Q
(U) Miniature CDL Development	1-4Q	1-4Q	1-4Q
(U) MR-TCDL Development	1-4Q	1-4Q	1-4Q
(U) Configuration Control and Specification Updates	1-4Q	1-4Q	1-4Q
(U) Radar CDL Study	4Q	1-4Q	
(U) COMSEC Repackaging	1-4Q	1-4Q	1-4Q
(U) Specification V&V Advanced Waveforms		1-4Q	1-4Q
(U) High KU-Band Component Development		1-4Q	1-4Q
(U) CDL Test Equipment, Rev F	3-4Q	1-3Q	
(U) CDL Test Equipment Rev G	3-4Q	1-4Q	1-4Q
(U) CDL Test Equipment Advanced Waveforms			1-4Q

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5092 JTC/SIL MUSE	

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
5092 JTC/SIL MUSE	1.745	1.653	3.470	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

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a center of technical excellence to support all Unmanned Air Systems (UAS) programs within the services. The mission includes Service-specific and Joint UAS and Intelligence Surveillance Reconnaissance (ISR) programs throughout DoD. The JTC/SIL provides a Government test bed for rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and Command Control Communications Computers and Intelligence (C4I) optimization. The cornerstone of its diverse tool set is the Multiple Unified Simulation Environment (MUSE), which is the Department's simulation/training system of choice for ISR systems, sensors, and platforms. The MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force application.

The Services and Warfighting Commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and Concept of Operations (CONOPS) development, Tactics, Techniques, and Procedures (TTP) development and refinement, the conduct of emerging concepts experimentation and C4I optimization within warfighting exercises and experiments. The MUSE/AFSERS is the only capability within the Department that allows all Services to train with UAS and ISR assets in a Joint training environment. The MUSE also creates a realistic operational environment that supports an embedded training capability for multiple Program Managers. These tools help to minimize acquisition and life cycle cost and schedule impacts.

The MUSE is currently in use within all services and unified commands simulating PREDATOR, GLOBAL HAWK, HUNTER, Shadow 200 and PIONEER UASs, national and commercial satellite collectors, P-3 and the U-2. During warfighting exercises, the JTC/SIL integrates realistic high-fidelity imagery simulations, emulating the C4I construct. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. Distributed training environments, virtually linking participants from various locations worldwide, are routinely supported within the MUSE architecture. The MUSE/AFSERS is also used as a Mission Rehearsal Tool for current on-going combat operations.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

The JTC/SIL is supporting the OSD Task Force Staff and the Standards and Interoperability IPT as well as the joint team working the Ground Segment Interface (GSI). The JTC/SIL is the primary custodian of this interface and in that role performs various supporting task including development of tools for helping the definition and execution of an open architecture for joint service ground control systems, developing and maintaining STANAG 45 joint interoperabiltiy tasks to be defined on an annual basis.

This program is categorized as Budget Activity 7 because it provides for the development of technologies and capabilities in support of operational system development.

Exhibit R-2a, RDT&E Project Justification		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5092 JTC/SIL MUSE

(U) B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U) Laboratory sustainment	0.334	0.334	0.334
(U) Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) development	0.911	0.819	0.636
(U) Common Ground Station Interface			2.000
(U) Maintenance, Licenses and equipment purchases	0.500	0.500	0.500
(U) Total Cost	1.745	1.653	3.470

(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) Other										

The program receives approximately $2.3M per year from the Army (PE 0305204A) and $1.7M per year from the Navy (PE P0305204N) and beginning in FY10 will receive an additional $2M from each USA and USN for Common Ground Station.

(U) D. Acquisition Strategy

All contracts are awarded after full and open competition and when situations dictate, via sole source.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: **May 2009**

BUDGET ACTIVITY: **07 Operational System Development**

PE NUMBER AND TITLE: **0305206F Airborne Reconnaissance Systems**

PROJECT NUMBER AND TITLE: **5092 JTC/SIL MUSE**

(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												
JTC/SIL	MIPR	Redstone Arsenal, Huntsville, AL	17.004	1.745	Jan-08	1.653	Jan-09	3.470	Jan-10	Continuing	TBD	TBD
Subtotal Product Development			17.004	1.745		1.653		3.470		Continuing	TBD	TBD
Remarks:												
(U) Total Cost			17.004	1.745		1.653		3.470		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE 5092 JTC/SIL MUSE

JTC/SIL Schedule

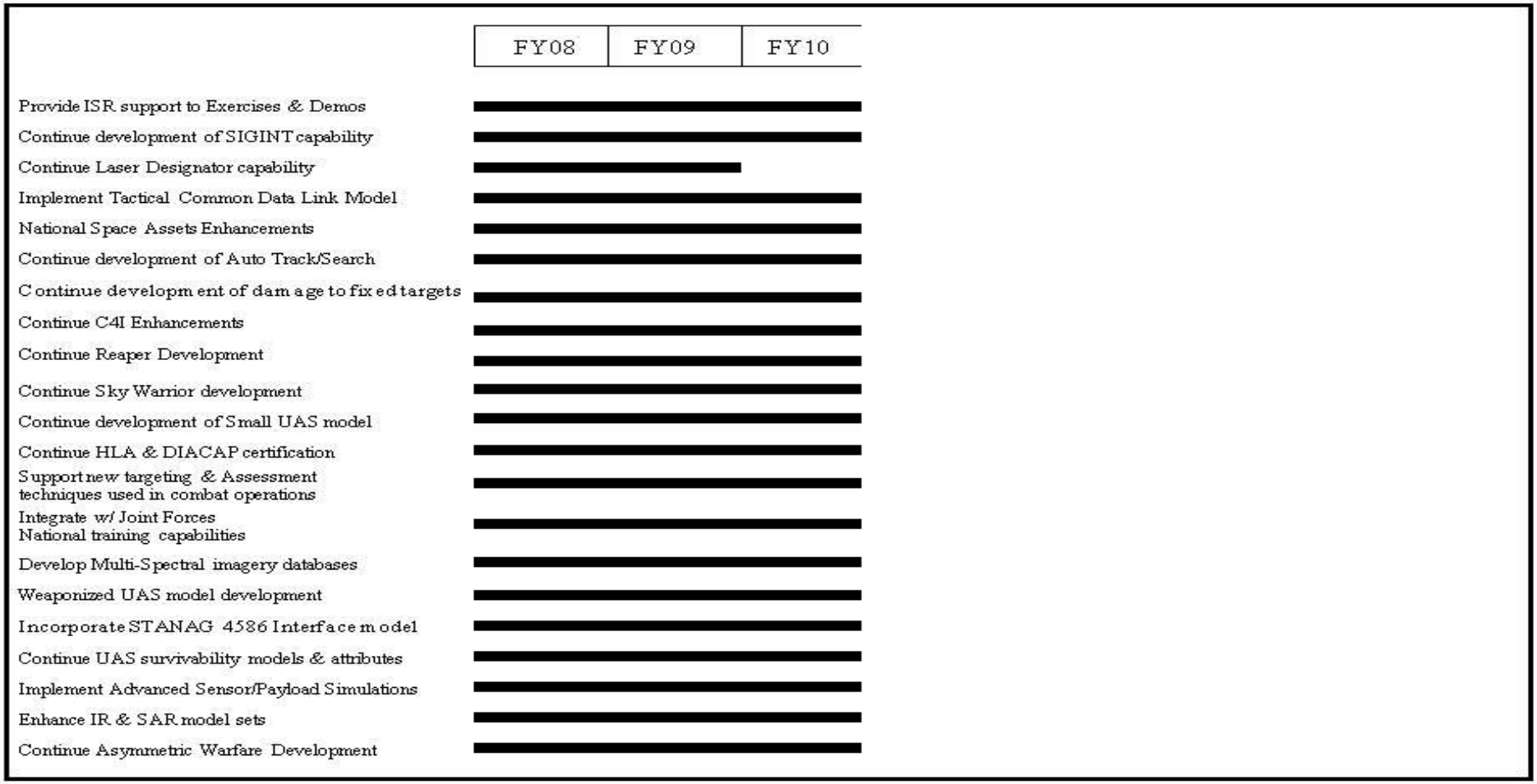


Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0305206F Airborne Reconnaissance Systems**	PROJECT NUMBER AND TITLE **5092 JTC/SIL MUSE**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) Provide ISR support to exercises and demonstrations	1-4Q	1-4Q	1-4Q
(U) Continue development of SIGINT platforms	1-4Q	1-4Q	1-4Q
(U) Continue Laser Designator capability	1-4Q	1-4Q	
(U) Implement Tactical Common Data Link model	1-4Q	1-4Q	1-4Q
(U) National space assets enhancements	1-4Q	1-4Q	1-4Q
(U) Continue development of auto track/search	1-4Q	1-4Q	1-4Q
(U) Continue development of damage to fixed targets	1-4Q	1-4Q	1-4Q
(U) Continue C4I enhancements	1-4Q	1-4Q	1-4Q
(U) Continue Predator B (Reaper) development	1-4Q	1-4Q	
(U) Continue ERMP development	1-4Q	1-4Q	1-4Q
(U) Continue development of Small UAV model	1-4Q	1-4Q	1-4Q
(U) Continue HLA & DIACAP certification	1-4Q	1-4Q	1-4Q
(U) Support new targeting and assessment techniques used in combat operations	1-4Q	1-4Q	1-4Q
(U) Integrate with Joint Forces national training capabilities	1-4Q	1-4Q	1-4Q
(U) Develop multi-spectral imagery databases	1-4Q	1-4Q	1-4Q
(U) Weaponized UAS model development	1-4Q	1-4Q	1-4Q
(U) Incorporate STANAG 4586 Datalink interface standard	1-4Q	1-4Q	1-4Q
(U) Continue UAS survivability models & attributes	1-4Q	1-4Q	1-4Q
(U) Support Common Ground Station Interface			1 4Q

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5291 Wide Area Airborne Surveillance (WAAS)	

	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
5291	Wide Area Airborne Surveillance (WAAS)	0.000	34.000	46.000	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

Funding increase beginning in FY09 will meet Combatant Commander (COCOM) Wide Area Airborne Surveillance (WAAS) urgent operational need and will be managed by the Air Force through the 645th Aeronautical Systems Group (AESG, aka BIG SAFARI), Reconnanissance Systems Wing, Aeronautical Systems Center, Air Force Material Command.

Develop a podded wide area airborne sensor suite to provide city-sized and similar broad area surveillance capability for the Combatant Commanders (COCOMs). The Joint Requirements Oversight Council Memorandum (JROCM 106-08, dated 27 May 08) approved the Air Force concept for a Wide Area Airborne Surveillance (WAAS) program plan to address Service requirements for wide area airborne sensors on existing manned and unmanned aircraft system platforms. Funding will be allocated in FY09-FY10 for this Air Force program to meet Combatant Commander (COCOM) Wide Area Airborne Surveillance (WAAS) urgent operational need and will be managed through the 645th Aeronautical Systems Group (AESG, a.k.a. BIG SAFARI Program Office), 303rd Reconnanissance Systems Wing, Aeronautical Systems Center, Air Force Material Command. Air Force provided FY08 funds in BPAC 674818, Imaging and Targeting Support, to initiate program management and system integration concept development. BIG SAFARI Program Office initiated a contract with Sierra Nevada Corporation in July 2008 for this program. Program funding for WAAS will be appropriated to this new BPAC 675291 starting in FY09.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	Program Mgt/System Engineering		8.000	8.000
(U)	Airborne System Element (Increment I)		17.100	18.138
(U)	C2 Element		3.000	4.048
(U)	Tactical Dissemination Element		3.300	4.462
(U)	Fixed Site Processing Element		2.000	2.714
(U)	Airborne System Element (Increment II)		0.600	8.638
(U)	Total Cost	0.000	34.000	46.000

Exhibit R-2a, RDT&E Project Justification		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE 5291 Wide Area Airborne Surveillance (WAAS)

(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) Procurment (PE 0305206F), Airborne Reconn Systems, MN-9136		43.538	19.903						Continuing	TBD
(U) O&M (PE 0305206F), Airborne Reconn Systems)			13.000						Continuing	TBD

(U) D. Acquisition Strategy

In response to a COCOM urgent operational need, the WAAS program will be executed by the 645 AESG (BIG SAFARI Program Office) using an incremental "baseline" acquisition strategy to mitigate risk, find affordable end-to-end architecture solutions and field needed capabilities quickly to address Service requirements for wide area airborne sensors on existing manned and unmanned aircraft system platforms.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE: 5291 Wide Area Airborne Surveillance (WAAS)

(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												
Sierra Nevada Corporation		Sparks, NV	0.000	0.000		24.000	Jan-09	35.286	Dec-09	Continuing	TBD	TBD
Subtotal Product Development			0.000	0.000		24.000		35.286		Continuing	TBD	TBD
Remarks:												
(U) Support												
						2.000	Jan-09	2.714	Dec-09	Continuing	TBD	
Subtotal Support			0.000	0.000		2.000		2.714		Continuing	TBD	0.000
Remarks:												
(U) Test & Evaluation												
											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Management												
645 AESG, AFRL, Sierra Nevada Corporation		Multiple locations				8.000	Jan-09	8.000	Dec-09	Continuing	TBD	
Subtotal Management			0.000	0.000		8.000		8.000		Continuing	TBD	0.000
Remarks:												
(U) Total Cost			0.000	0.000		34.000		46.000		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5291 Wide Area Airborne Surveillance (WAAS)

WAAS Schedule

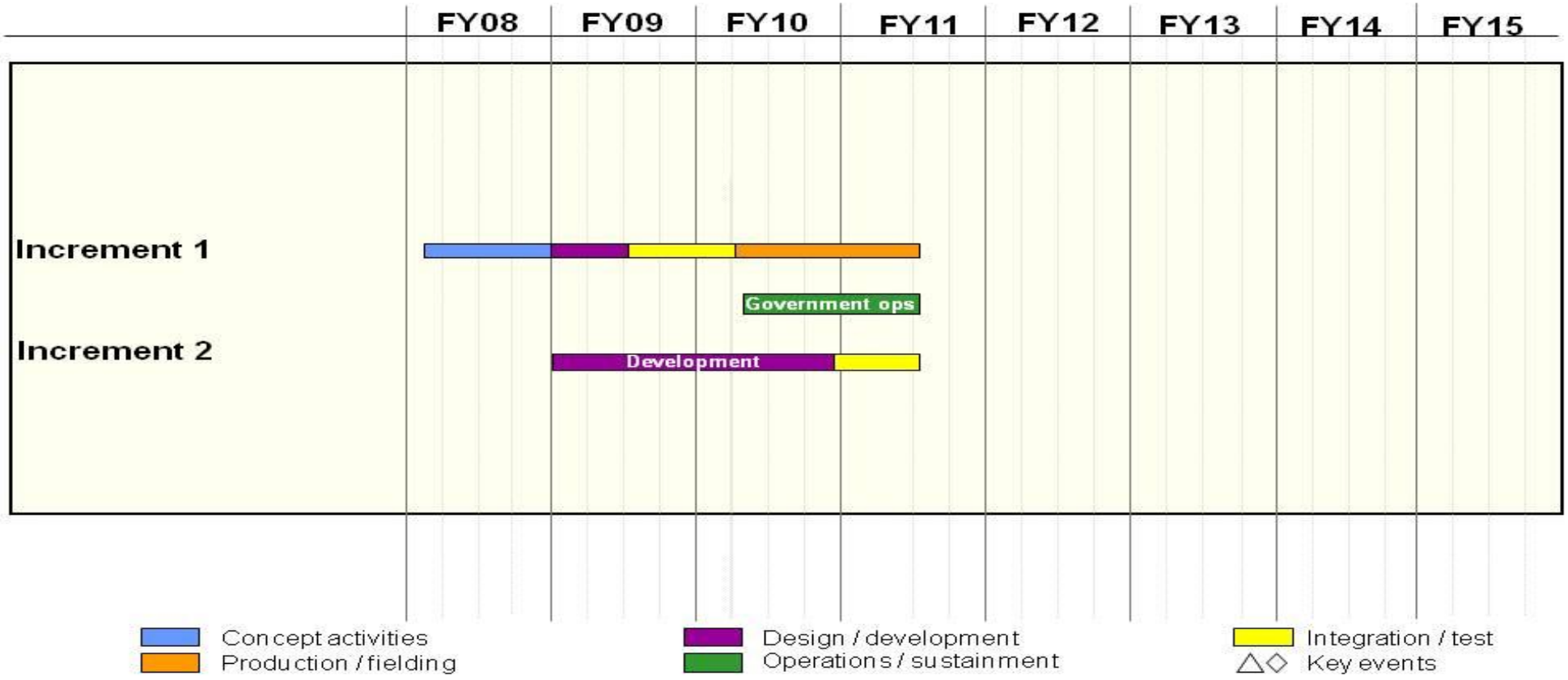


Exhibit R-4a, RDT&E Schedule Detail		DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5291 Wide Area Airborne Surveillance (WAAS)

(U) Schedule Profile	FY 2008	FY 2009	FY 2010
(U) Airborne System Element (Increment I)	1-4Q	1-4Q	1-4Q
(U) Airborne System Element (Increment II)		1-4Q	1-4Q

Exhibit R-2a, RDT&E Project Justification			DATE: May 2009
BUDGET ACTIVITY: 07 Operational System Development	PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE: 5292 Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)	

	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
5292	Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)	0.000	10.000	5.614	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

The purpose of the Airborne Cueing and Exploitation System Hyperspectral (ACES HY) project is to provide Hyperspectral Imagery (HSI) sensors and capabilities for MQ-1 Predator Unmanned Aircraft System (UAS) and other manned and unmanned aircraft. ACES HY supports the sponsoring combatant command, Central Command (CENTCOM), and other warfighter requirements.

ACES HY will initially procure multiple sensors, integrate them onto the MQ-1 and other platforms, and develop the necessary training, maintenance and fielding plans to support a working architecture.

FY08 funding ($10M) was executed out of PE 35206, BPAC 674818.

Activities also include studies and analysis to support both current and future program planning and execution.

This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.

	B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010
(U)	Procure three ACES HY sensors, integrated onto MQ-1 Predator UAS and provide training and support		8.359	4.130
(U)	Mission Support		1.641	1.484
(U)				
(U)	Total Cost	0.000	10.000	5.614

(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) FY08 funding ($10M) was executed out of PE 35206, BPAC 674818	10.000									

(U) D. Acquisition Strategy

Develop an industry partner to procure an improved, baseline deployable, supportable HSI sensor system. The system should support joint warfighter and ensure spiral upgrade capability. Utilize the Advanced Technology Support Program process developed by OSD DMEA at McClellan, CA. The contractor should provide a disciplined design process that is the lowest risk solution--cost, schedule, and performance and ensures logistic support with initial test spares, training and associated

Exhibit R-2a, RDT&E Project Justification		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0305206F Airborne Reconnaissance Systems**	PROJECT NUMBER AND TITLE **5292 Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)**

source data. Included in the scope of effort is aircraft integration support with a support contract with the MQ-1 contractor to ensure the necessary interface baseline is established for the National Air and Space Intelligence Center (NASIC) exploitation system.

Exhibit R-3, RDT&E Project Cost Analysis

DATE: May 2009

BUDGET ACTIVITY: 07 Operational System Development

PE NUMBER AND TITLE: 0305206F Airborne Reconnaissance Systems

PROJECT NUMBER AND TITLE: 5292 Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)

(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												
Raytheon	C/CPFF	McKinney, TX				8.359	Mar-09	4.130	Jun-10	Continuing	TBD	TBD
Subtotal Product Development			0.000	0.000		8.359		4.130		Continuing	TBD	TBD
Remarks:												
(U) Support												
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Test & Evaluation												
											0.000	
Subtotal Test & Evaluation			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
(U) Management												
						1.641		1.484		Continuing	TBD	
Subtotal Management			0.000	0.000		1.641		1.484		Continuing	TBD	0.000
Remarks:												
(U) Total Cost			0.000	0.000		10.000		5.614		Continuing	TBD	TBD

Exhibit R-4, RDT&E Schedule Profile		DATE May 2009
BUDGET ACTIVITY 07 Operational System Development	PE NUMBER AND TITLE 0305206F Airborne Reconnaissance Systems	PROJECT NUMBER AND TITLE 5292 Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)

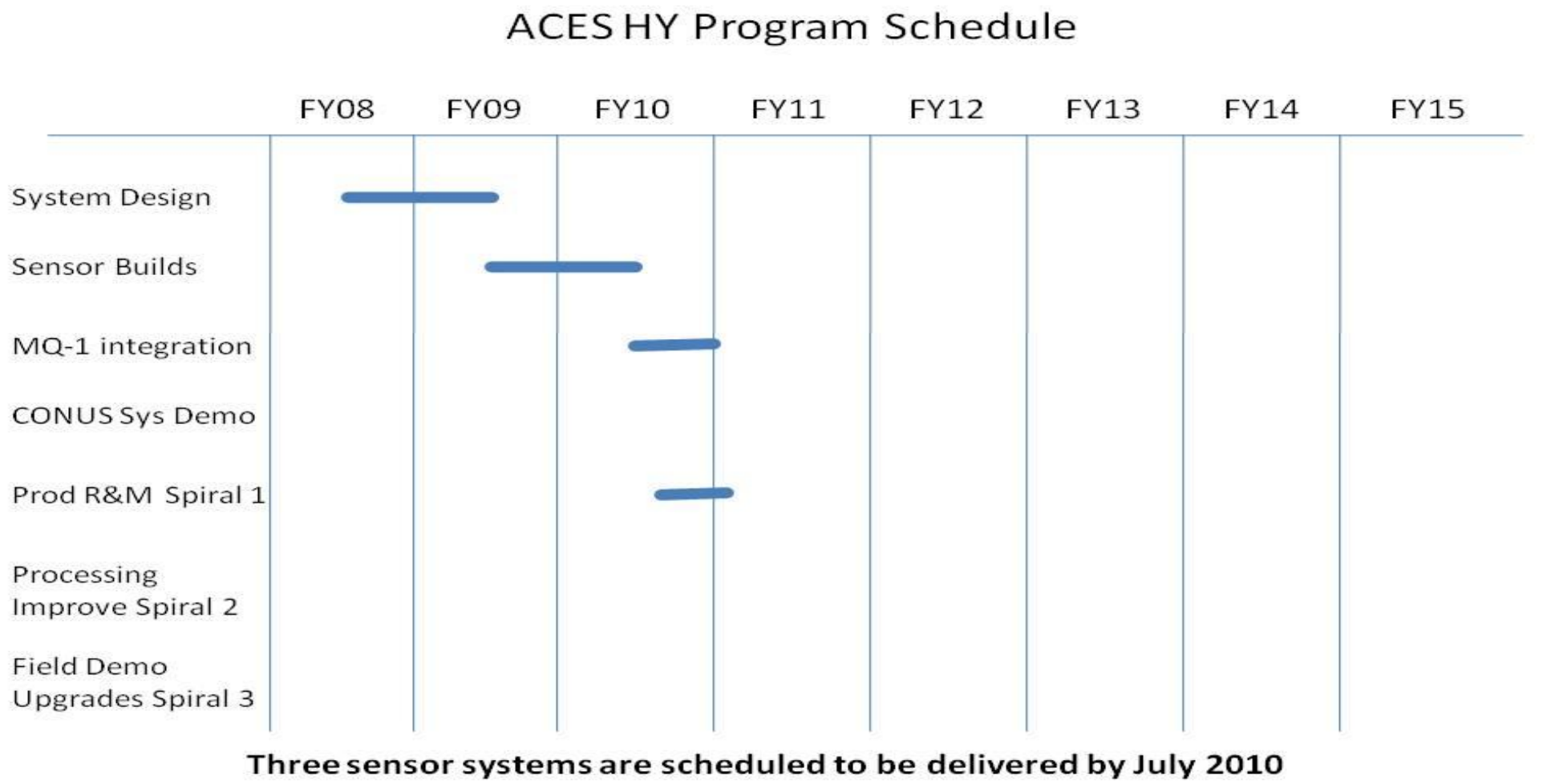


Exhibit R-4a, RDT&E Schedule Detail		DATE May 2009
BUDGET ACTIVITY **07 Operational System Development**	PE NUMBER AND TITLE **0305206F Airborne Reconnaissance Systems**	PROJECT NUMBER AND TITLE **5292 Airborne Cueing & Exploitation Sys-Hyperspectral(ACES HY)**

(U) **Schedule Profile**	FY 2008	FY 2009	FY 2010
(U) System Design	3-4Q	1-3Q	
(U) Sensor Builds		3-4Q	1-3Q
(U) MQ-1 Integration			3-4Q
(U) Prod R&M Spiral 1			3-4Q