Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force											Date: February 2016	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	-	37.649	60.142	3.841	0.000	3.841	3.419	3.479	3.544	3.607	Continuing	Continuing
674818: *Imaging and Targeting Support*	-	20.169	19.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	39.619
675092: *JTC/SIL MUSE*	-	3.934	3.475	3.841	0.000	3.841	3.419	3.479	3.544	3.607	Continuing	Continuing
675148: *Common-Airborne Sense and Avoid (C-ABSAA)*	-	0.000	19.735	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.735
675291: *Gorgon Stare*	-	10.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.000
675292: *Hyperspectral Sensors*	-	3.546	2.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.225
676025: *Data Compression*	-	0.000	4.803	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.803

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support (I&TS), efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support, in order to increase visibility into this technology maturation effort.

In FY2017, PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common-Airborne Sense and Avoid (C-ABSAA), efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 645148, Common Airborne Sense and Avoid (C-ABSAA), in order to provide greater visibility into this capability.

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression, in order to provide greater visibility into this capability.

In FY 2017, Project 675292, Hyperspectral Sensors, will terminate.

A. Mission Description and Budget Item Justification

The Airborne Reconnaissance Systems (ARS) program coordinates the development of advanced technologies (sensors, data links, targeting networks and products, and quick reaction capabilities) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objectives are to develop, demonstrate, and rapidly transition advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline, and to provide safe separation and collision avoidance for Remotely Piloted Aircraft (RPAs). It provides for modeling/simulation, training and systems engineering. This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time Intelligence, Surveillance, and Reconnaissance (ISR).

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	37.652	50.154	45.886	0.000	45.886
Current President's Budget	37.649	60.142	3.841	0.000	3.841
Total Adjustments	-0.003	9.988	-42.045	0.000	-42.045
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	10.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.003	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	-0.012	-42.045	0.000	-42.045

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Project: 675291: *Gorgon Stare*		
Congressional Add: *Beyond Line of Sight*	10.000	-
Congressional Add: *Wide-Area Motion Imagery*	-	10.000
Congressional Add Subtotals for Project: 675291	10.000	10.000
Congressional Add Totals for all Projects	10.000	10.000

Change Summary Explanation

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Projects 674818,675148,and 676025 (Imaging and Targeting Support, Common Airborne Sense and Avoid (C-ABSAA), and Data Compression) will transfer into PE 0604257F, Advanced Technology and Sensors, Projects 644818,645148, and 646025(Imaging and Targeting Support, Common Airborne Sense and Avoid, and Data Compression) in order to increase visibility into these efforts.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 674818 / *Imaging and Targeting Support*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
674818: *Imaging and Targeting Support*	-	20.169	19.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	39.619
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support (I&TS), efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support, in order to increase visibility into this technology maturation effort.

A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (I&TS) project is to develop and demonstrate next-generation, persistent, wide area surveillance, aircraft avoidance, and common imagery reconnaissance sensor capabilities (radar and electro-optical systems), including sensor data processing, for multiple airborne platforms, as well as 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(GMTI), foliage penetration, and additional radar, electro-optical, and other modalities; increased geolocation accuracy; increased dismount detection capability; 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. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability among developed systems by developing common standards and tools.

The funds in this project, less Congressional adds and Quick Reaction Capabilities (QRCs), are distributed in priority order, as supported by the Challenging Targets Initial Capabilities Document and set by the GEOINT Capabilities Working Group, for the goal of building a comprehensive Geospatial Intelligence (GEOINT) capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Imaging & Targeting Support (I&TS)	20.069	19.350	0.000	-	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Description: Develop/demonstrate and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation hyperspectral imaging (HSI), laser radar/light detection and ranging (LADAR/LIDAR), and data mitigation technologies). ***FY 2015 Accomplishments:*** - Demonstrated advanced HSI focal plane array material, sensors, and detection algorithms, multiband longer range EO/IR sensors, other GEOINT sensor modalities for cueing and future data fusion, improved on-board data processing, improved/ advanced radar sensor algorithms and capabilities, polarimetric imaging, and high volume on-board data storage. Enhanced capabilities of airborne LIDAR. - Modernized advanced SAR sensors for future high-altitude applications, Anti-Access Area Denial, and foliage penetration (FPEN). ***FY 2016 Plans:*** - Continue development, upgrade, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband EO/IR and SAR sensor systems, enhanced LIDAR capabilities, polarimetric imaging, and other GEOINT sensing modalities for Anti-Access Area Denial, permissive and non-permissive environments, FPEN, and littoral environments. ***FY 2017 Base Plans:*** FY 2017 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.					
Title: Advanced Synthetic Aperture Radar System (ASARS) 2B ***Description:*** Design/fabricate/integrate/demonstrate completion of technical maturation effort for deep look high altitude SAR. Includes total government and contractor costs for this project. ***FY 2015 Accomplishments:*** - Designed technical maturation effort for deep look high altitude SAR. ***FY 2016 Plans:*** - Continue technical maturation effort for deep look high altitude SAR. ***FY 2017 Base Plans:*** FY 2017 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.	0.100	0.100	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	20.169	19.450	0.000	-	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305202F: *Dragon U-2 (JMIP)*	5.511	34.471	37.217	0.000	37.217	6.942	1.487	0.000	0.000	-	-

Remarks

A portion of the funding within the U-2 RDTE line will be used to advance ASARS design, development, test and demonstration.

D. Acquisition Strategy

Imaging and Targeting Support efforts are prioritized on an annual basis by the GEOINT Capabilities Working Group (GCWG), in accordance with the validated gaps in the Challenging Targets ICD. Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies (OGAs).

ASARS technology maturation is conducted by AFLCMC/WIN, in conjunction and cooperation with AFLCMC/Warner Robbins (U-2 system program office).

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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Lidar-HSI Data Fusion	SS/CPFF	MIT LL : Lexington, MA	-	2.280	Jun 2015	2.220	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	4.500
HEIRS	SS/CPFF	Lockheed Martin, Leidos, UTC Aerospace Systems : Various	-	3.100	Oct 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	3.100
KeyRadar / AMMOD	SS/CPFF	KEYW : Severn, MD	-	3.500	Aug 2015	3.164	Mar 2016	0.000		0.000		0.000	Continuing	Continuing	6.664
SlimSAR Multi-INT	SS/FFP	Artemis, BAE : Hauppauge, NY	-	1.790	Aug 2015	2.369	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	4.159
LWIR PI	C/CPFF	Raytheon : El Segundo, CA	-	1.000	Feb 2015	1.000	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	2.000
HPC Processing	SS/CPFF	BAE, Leidos, KEYW : Dayton, OH	-	2.450	Oct 2014	2.050	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	4.500
Common Module Spectrometer	SS/CPFF	Raytheon : El Segundo, CA	-	0.000		4.000	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	4.000
Si:Ga Phase II	MIPR	Government : Washington, DC	-	1.500	May 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
MSGLPS	Various	Government, Ascendant Engineering Solutions : Austin, TX	-	1.645	Jun 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	1.645
MTS-B Turbulence Correction	SS/CPFF	Raytheon : McKinney, TX	-	0.800	Dec 2015	0.700	Jan 2016	0.000		0.000		0.000	Continuing	Continuing	1.500
DRACO for MQ-9	SS/CPFF	Lockheed Martin : King of Prussisa, PA	-	0.000		0.750	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	-
ASARS 2B	SS/CPFF	Raytheon : El Segundo, CA	-	0.100	Jun 2015	0.100	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
Other Tech Efforts (prioritized by GCWG)	Various	Various : Various	-	0.903	Dec 2014	1.647	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	19.068		18.000		0.000		0.000		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 674818 / *Imaging and Targeting Support*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

FY 2017 contract efforts reported under PE 0604257F, project 644818.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA: Other Govt Cost	SS/T&M	Various : Dayton, OH	-	1.101	Dec 2014	1.450	Jan 2016	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	1.101		1.450		0.000		0.000		0.000	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	20.169		19.450		0.000		0.000		0.000	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

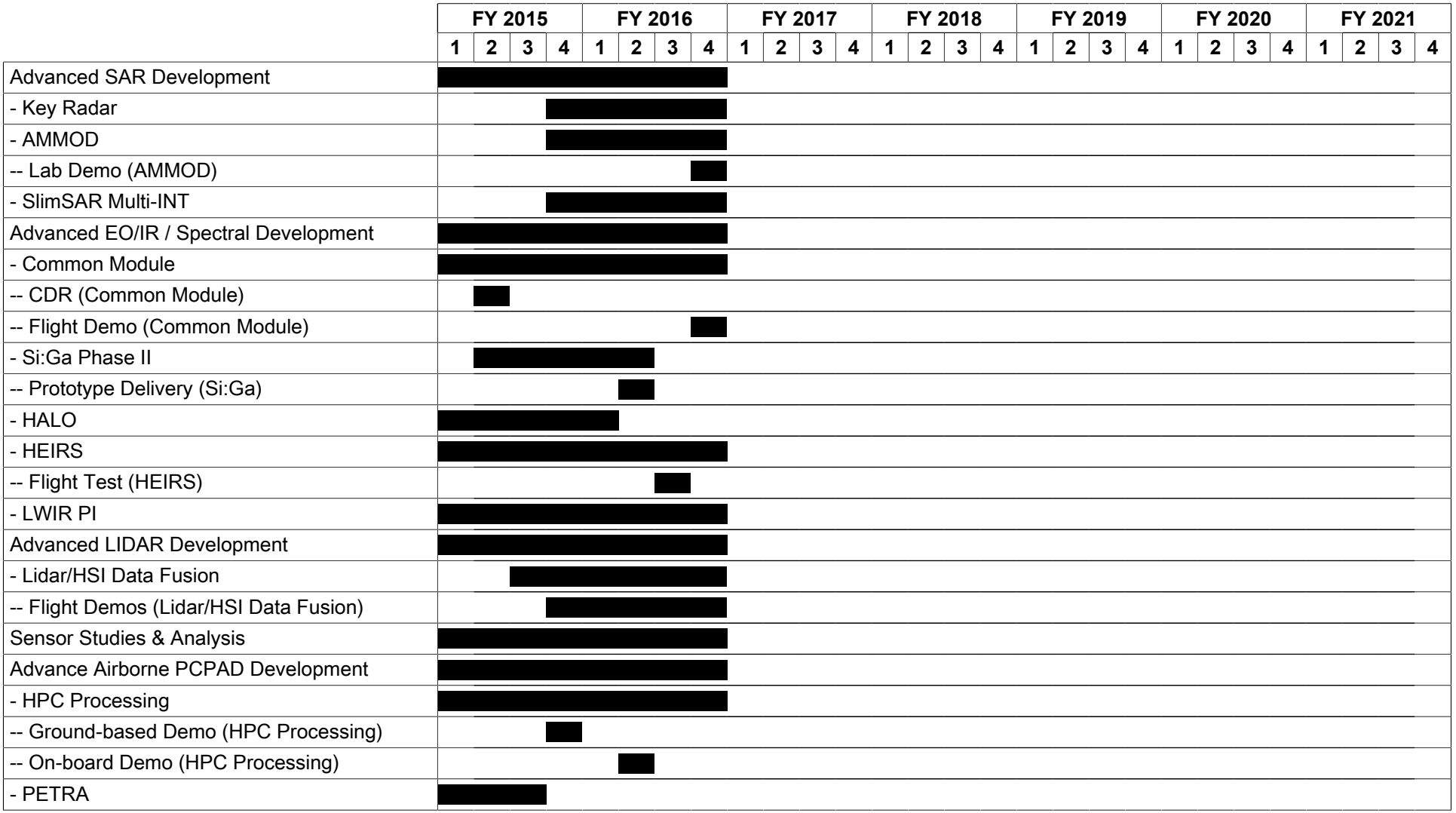

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

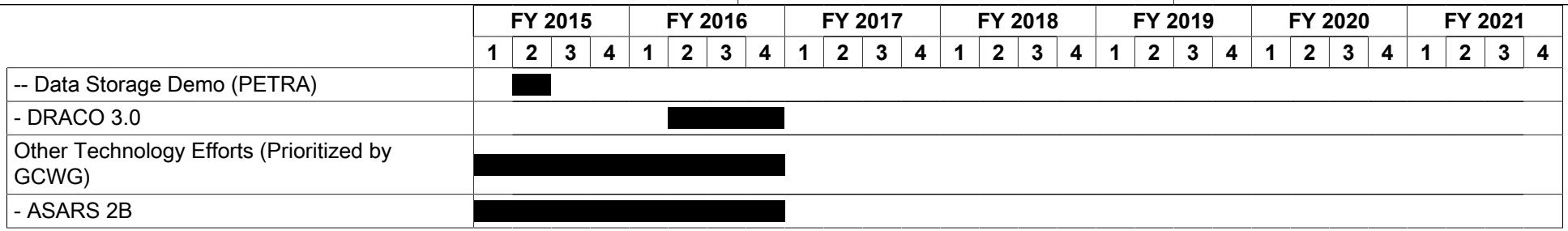

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Advanced SAR Development	1	2015	4	2016
- Key Radar	4	2015	4	2016
- AMMOD	4	2015	4	2016
-- Lab Demo (AMMOD)	4	2016	4	2016
- SlimSAR Multi-INT	4	2015	4	2016
Advanced EO/IR / Spectral Development	1	2015	4	2016
- Common Module	1	2015	4	2016
-- CDR (Common Module)	2	2015	2	2015
-- Flight Demo (Common Module)	4	2016	4	2016
- Si:Ga Phase II	2	2015	2	2016
-- Prototype Delivery (Si:Ga)	2	2016	2	2016
- HALO	1	2015	1	2016
- HEIRS	1	2015	4	2016
-- Flight Test (HEIRS)	3	2016	3	2016
- LWIR PI	1	2015	4	2016
Advanced LIDAR Development	1	2015	4	2016
- Lidar/HSI Data Fusion	3	2015	4	2016
-- Flight Demos (Lidar/HSI Data Fusion)	4	2015	4	2016
Sensor Studies & Analysis	1	2015	4	2016
Advance Airborne PCPAD Development	1	2015	4	2016
- HPC Processing	1	2015	4	2016
-- Ground-based Demo (HPC Processing)	4	2015	4	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 674818 / *Imaging and Targeting Support*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
-- On-board Demo (HPC Processing)	2	2016	2	2016
- PETRA	1	2015	3	2015
-- Data Storage Demo (PETRA)	2	2015	2	2015
- DRACO 3.0	2	2016	4	2016
Other Technology Efforts (Prioritized by GCWG)	1	2015	4	2016
- ASARS 2B	1	2015	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675092 / *JTC/SIL MUSE*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
675092: *JTC/SIL MUSE*	-	3.934	3.475	3.841	0.000	3.841	3.419	3.479	3.544	3.607	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a center of technical excellence to support Unmanned Aircraft Systems (UAS) and Remotely Piloted Aircraft (RPA) programs within the services. The mission includes Service-specific and Joint Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance (C4ISR) programs throughout DoD. The JTC/SIL provides a Government testbed for interoperability, rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and C4ISR optimization. The cornerstone of JTC/SIL's diverse tool set is the Multiple Unified Simulation Environment (MUSE), which is the DoD simulation/training system of choice for many UAS, RPA and ISR systems. The MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force application. The MUSE/AFSERS simulates Air Vehicles, Sensors, Datalinks, Takeoff and Landing Systems, and to some degree, surrogate UAS and RPA ground stations, when actual ground stations are unavailable.

The Services and combatant 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 employment development, and Tactics, Techniques, and Procedures (TTP) refinement, conduct emerging concepts experimentation, and optimize C4ISR within warfighting exercises and experiments. It is the preferred simulation system used by the combatant commanders and Joint Services to support command and battle staff C4ISR training.

The MUSE/AFSERS also creates a realistic operational environment that supports: an embedded training capability for multiple Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts; ability to conduct emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4ISR optimization.

MUSE/AFSERS is currently in use within all Services and most unified commands simulating MQ-1, MQ-9, RQ-4, MQ-1C, M/RQ-5, RQ-7, national and commercial satellite collectors, P-3, E-8, and the U-2. During warfighting exercises, the JTC/SIL integrates imagery simulations with associated C4ISR systems to support the execution of critical imagery processes. 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 military combat operations.

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

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675092 / *JTC/SIL MUSE*

Activities also include studies and analysis supporting current and future program planning and project execution.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) Development	1.934	3.475	3.841	-	3.841
Description: DoD's simulation/training system of choice for ISR systems, sensors, and platforms. Includes AFSERS, Common Ground Station Interface, and infrastructure support. ***FY 2015 Accomplishments:*** - Enhanced the Multiple Unified Simulation Environment (MUSE) mission planning training software to facilitate ease of use, concurrency and interoperability with current mission planning application capabilities. - Enhanced MUSE Service Oriented Architecture to support Cloud computing for US Air Force military exercises, to include Distributed Mission Operations Network (DMON) certification. - Enhanced MUSE interoperability with Air Force federations such as Air, Space, and Cyberspace Constructive Environment; joint,live, virtual, constructive training, and specific federated interfaces with the Air Force intelligence-operations simulation. - Developed new ISR sensor simulation training capabilities to reflect service emerging assets, such as multi-sensor platforms. - Developed and ported applicable training software for hosting on portable devices. Continued Intel Simulation Training support at Goodfellow Air Force Base. ***FY 2016 Plans:*** - Continue to redesign the Vignette Planning and Rehearsal Software by implementing a Service Oriented Architecture (SOA) to facilitate external users developing generic solutions and to optimize the software baseline to maintain pace with the training audience's requirements, thereby reducing the costs of travel and training. - Redesign MUSE/AFSERS U2/RQ-4 (FFI - Fixed Frame Imagery) simulation Capability. - Design and implement a Heads Up Display (HUD) wizard. - Complete the full virtualization of MUSE/AFSERS. - Continue to implement Web enabled MUSE/AFSERS that will allow users to train via a web browser, without needing the MUSE/AFSERS software installed on their systems. - Implement ports management into the MUSE/AFSERS baseline to better facilitate Information Assurance guidance and to be in accordance with the upcoming RMF (Risk Management Framework) that will replace DIACAP (Department of Defense Information Assurance and Accreditation Process). - Provide Exercise Support for Unified Endeavor, Key Resolve (KASC & KBSC - Korean Air Simulation Center & Korean Battle Simulation Center) & Ulchi Freedom Guardian (KASC & KBSC).					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675092 / *JTC/SIL MUSE*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue Intel Simulation Training support at Goodfellow Air Force Base. ***FY 2017 Base Plans:*** - Will continue Heads up Display (HUD) creator - Will redesign Windows Entity Server (WES) and NeLink software tools to support the increased scale of exercises - Will redesign Control Station Surrogate to rupport the increased scale of exercises while leveraging technology advances - Will continue migration of legacy code to C# and/or 64 Bit - Will be migrating from DIACAP (Department of Defense Information Assurance and Accreditation Process) to RMF (Risk Management Framework) - Will enhanced Weaponization capability - Will continue integration with NVIG (Night Vision Image Generator)					
Title: OSD Interoperability Support ***Description:*** Joint Technology Center (JTC)/Systems Integration Laboratory (SIL) support to OSD interoperability requirements. Air Force portion of joint funding requirement. ***FY 2015 Accomplishments:*** Completed Air Force support to OSD interoperability efforts, including support and configuration management of architecture products. ***FY 2016 Plans:*** N/A ***FY 2017 Base Plans:*** N/A	2.000	0.000	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	3.934	3.475	3.841	-	3.841

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305204A: *Tactical Unmanned Aerial Vehicles*	4.695	2.498	3.942	0.000	3.942	4.568	4.615	4.832	4.979	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675092 / *JTC/SIL MUSE*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0603261N: *Tactical Airborne Reconnaissance*	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

This is an enterprise services effort, jointly funded and centrally managed by the US Army. AFLCMC/WIN MIPRs funds in support of UAS modeling and simulation efforts.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675092 / *JTC/SIL MUSE*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFSERS Development	MIPR	Redstone Arsenal : Huntsville, AL	-	1.934	Jan 2015	3.475	Jan 2016	3.841	Jan 2017	0.000		3.841	Continuing	Continuing	-
		Subtotal	-	1.934		3.475		3.841		0.000		3.841	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OSD Interoperability Support	MIPR	Redstone Arsenal : Huntsville, AL	-	2.000	Feb 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	2.000		0.000		0.000		0.000		0.000	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	3.934		3.475		3.841		0.000		3.841	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675092 / *JTC/SIL MUSE*

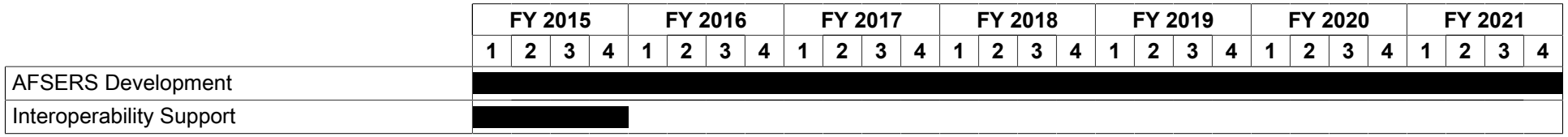

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675092 / *JTC/SIL MUSE*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AFSERS Development	1	2015	4	2021
Interoperability Support	1	2015	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
675148: *Common-Airborne Sense and Avoid (C-ABSAA)*	-	0.000	19.735	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.735
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, Common-Airborne Sense and Avoid(C-ABSAA) will transfer to PE 0604257F, Advanced Technology and Sensors, Project 645148, Common-Airborne Sense & Avoid (C-ABSAA), in order to provide greater visibility into this capability.

A. Mission Description and Budget Item Justification

Common-Airborne Sense and Avoid (C-ABSAA) is an analysis and developmental effort in the pre-Material Development Decision phase of the acquisition lifecycle which supports emerging warfighter requirements to fully integrate Group 4-5 RPA into the National Airspace System (NAS), international airspace, other nations' sovereign airspace, and operational combat airspace to conduct the entire range of military operations across all mission environments. C-ABSAA also supports the "Worldwide Operations" Key Performance Parameter (KPP) in larger Remotely Piloted Aircraft (RPA) requirement documents, and Public Law 112-239 directing DoD collaboration with the Federal Aviation Administration (FAA) and the National Air and Space Administration (NASA) to safely integrate RPA in the NAS. Funding in this project supports the development of a Sense and Avoid (SAA) capability for Group 4-5 RPA and covers analysis, research, and developmental activities as well as infrastructure and other government costs. Ongoing activities include support to the development of warfighter requirements and analysis of possible solution alternatives, collaboration with the FAA, NASA, and other Services to develop national policy and standards, and SAA related studies, analysis, modeling and simulation, program planning and project execution. RPA platform specific integration and testing is not included.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SAA-Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration	0.000	19.735	0.000	0.000	0.000
Description: Support development and analysis of warfighter requirements and analysis of possible solution alternatives. Develop Sense and Avoid (SAA) technology and capabilities for Group 4-5 RPA. Collaborate with the FAA, NASA, and other Services to develop national policy and standards. Conduct SAA related studies, analysis, modeling and simulation, demonstrations, program planning and project execution.					
FY 2015 Accomplishments: - Efforts prior to FY 2016 reported under PE 0305220F.					
FY 2016 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue to conduct Developmental Planning/Pre-Analysis of Alternatives activity leading to a Material Development Decision - Continue to collaborate with FAA, NASA, and other Services on national policy and standards, and to build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development - Continue SAA science and technology research and development with AFRL ***FY 2017 Base Plans:*** - FY 2017 efforts will be reported under PE 0604257F, Advanced Technology and Sensors, Project 645148, Common-Airborne Sense & Avoid (C-ABSAA). ***FY 2017 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	19.735	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

C-ABSAA will integrate Better Buying Power 3.0 initiatives throughout its acquisition lifecycle and rely upon acquisition of government data rights to maximize contractor competition from Technology Development through Production. The program uses an incremental acquisition strategy to provide the warfighter with SAA capability for Group 4-5 RPA with increased, time-phased capability improvements as technology and risks achieve satisfactory levels. Group 4-5 RPA platforms will be expected to integrate the C-ABSAA provided capability into their unique systems via retrofit or in design, development, and/or production.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C-ABSAA Technology Development	C/Various	Various : Various	-	0.000		18.936	Oct 2015	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		18.936		0.000		0.000		0.000	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	Various	Various : Dayton, OH	-	0.000		0.799	Oct 2015	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		0.799		0.000		0.000		0.000	-	-	-

Remarks

The Target supports multiple technology development contracts.

	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		19.735		0.000		0.000		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*	

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

The Target Value supports multiple technology development contracts.

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

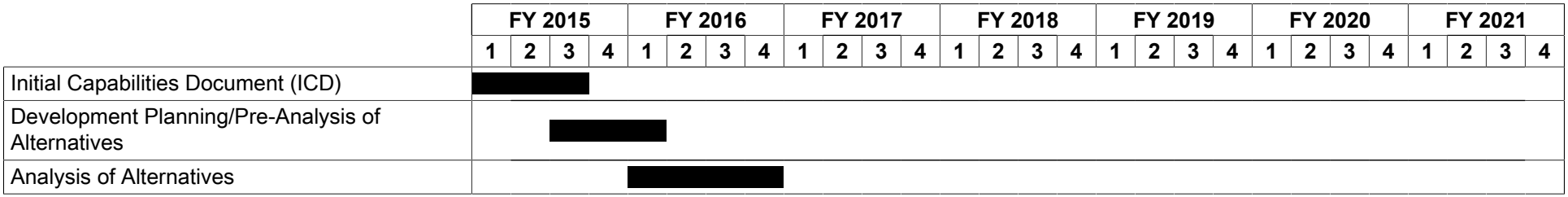

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Initial Capabilities Document (ICD)	1	2015	3	2015
Development Planning/Pre-Analysis of Alternatives	3	2015	1	2016
Analysis of Alternatives	1	2016	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675291 / *Gorgon Stare*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
675291: *Gorgon Stare*	-	10.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Gorgon Stare provides city-sized wide area airborne surveillance for Combatant Commanders and is managed by the 645th Aeronautical Systems Group, Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (ISR&SOF) Directorate. The Gorgon Stare system provides a podded wide area airborne sensor suite integrated on specially-modified MQ-9 Reaper Remotely Piloted Aircraft (RPA). The Air Force Requirements Oversight Council (AFROC) approved Air Combat Command's recommendation to transition Gorgon Stare from a Quick Reaction Capability to an Air Force Enduring Capability in November 2014. Gorgon Stare's requirements are documented in the Gorgon Stare Wide Area Airborne Sensor Capabilities Production Document (draft). The acquisition strategy for this Air Force podded sensor suite solution is sustainment of the currently fielded capabilities with any upgrades implemented via validated -1067s or Urgent Operational Needs.

Development efforts conducted with FY 2014 Congressionally added RDT&E funds included system integration lab testing of Near Vertical Direction Finding (NVDF) with Gorgon Stare Increment 2 Wide Area Motion Imagery (WAMI) sensors. Funds spent on NVDF will provide a ramp for future airborne integration efforts as required. Development efforts conducted with $10M of FY 2015 Congressionally added funds include efforts focused on Beyond Line of Sight (BLOS) in support of an Urgent Operational Need. Development efforts conducted with $10M of FY 2016 Congressionally added funds will continue the RDT&E efforts for persistent day and night wide-area motion imagery (WAMI) capability considered by operational commanders to be a critical ISR program for combat units.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016
Congressional Add: Beyond Line of Sight ***FY 2015 Accomplishments:*** Developed BLOS capability to enable near-real time data dissemination without reliance on ground-based data link.	10.000	-
Congressional Add: Wide-Area Motion Imagery ***FY 2016 Plans:*** Continue development of a persistent day and night wide-area motion imagery (WAMI) capability by ensuring the engineering team is kept intact to develop a multi-INT capable wide-area surveillance system considered critical to operational commanders and combat units.	-	10.000
Congressional Adds Subtotals	10.000	10.000

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675291 / *Gorgon Stare*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF: BP16: Line Item # PRDTB3: *MQ-9 UAS Payloads (Spares)*	6.790	5.342	2.905	0.000	2.905	0.216	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

The wide area airborne surveillance requirement is being delivered via the Gorgon Stare podded wide area motion imagery sensor suite integrated on dedicated, specially-modified MQ-9 Reaper RPAs. Gorgon Stare transitioned from a Quick Reaction Capability to an Air Force Enduring Capability under AFROC authority in November 2014. The program is executed by the 645th AESG as a post-MS C program. The sensor suite will be sustained in its current configuration. Any future capability upgrades will be fielded as a result of validated -1067s or Urgent Operational Needs.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675291 / *Gorgon Stare*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Beyond Line of Sight (BLOS)	SS/CPFF	Sierra Nevada Corporation : Sparks, NV	-	10.000	Feb 2016	0.000		0.000		0.000		0.000	0.000	10.000	0.000
WAMI	SS/CPFF	Sierra Nevada Corporation : Sparks, NV	-	0.000		10.000	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	10.000		10.000		0.000		0.000		0.000	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	10.000		10.000		0.000		0.000		0.000	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675291 / *Gorgon Stare*

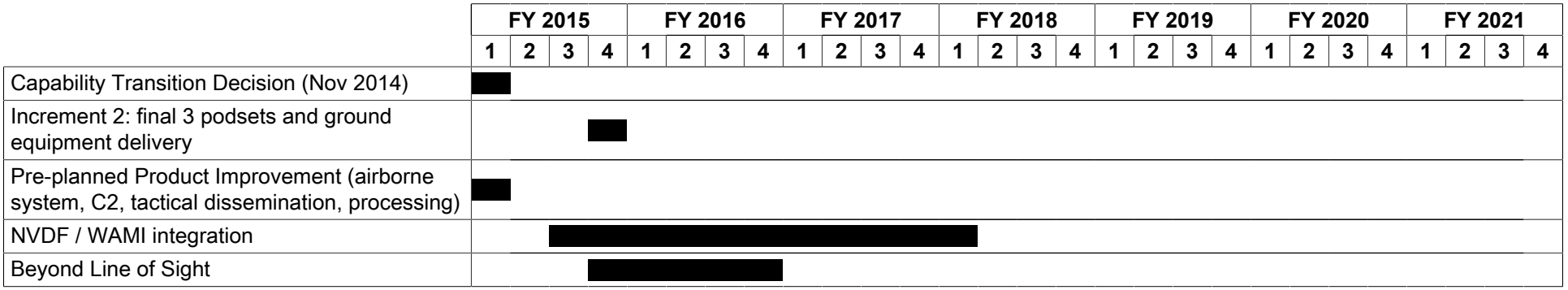

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675291 / *Gorgon Stare*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Capability Transition Decision (Nov 2014)	1	2015	1	2015
Increment 2: final 3 podsets and ground equipment delivery	4	2015	4	2015
Pre-planned Product Improvement (airborne system, C2, tactical dissemination, processing)	1	2015	1	2015
NVDF / WAMI integration	3	2015	1	2018
Beyond Line of Sight	4	2015	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675292 / *Hyperspectral Sensors*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
675292: *Hyperspectral Sensors*	-	3.546	2.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.225
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 675292, Hyperspectral Sensors, will be terminated.

A. Mission Description and Budget Item Justification

The Hyperspectral Sensors project develops Hyperspectral Imagery (HSI) sensors and capabilities for MQ-1 Remotely Piloted Aircraft (RPA) and other manned or unmanned aircraft. Within this project, the Airborne Cueing & Exploitation System-Hyperspectral (ACES HY) program helps to fulfill a portion of the sponsoring combatant command and Central Command's current HSI requirements. The ACES HY program developed sensors for the MQ-1B Predator Block 15 and included development of the required training, maintenance and fielding plans to support a working architecture.

Activities within this project also include studies and analysis supporting current and future program planning and tech development for advanced HSI sensors and capabilities, including high altitude HSI sensor developments per the HSI strategic roadmap.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Airborne Cueing & Exploitation System - Hyperspectral (ACES HY)	3.546	2.679	0.000	-	0.000
Description: Develop capability enhancements for the ACES HY sensor system. Provide support data to accompany sensors and modifications. Tech development supporting sensor improvements and possible integration on other platforms.					
FY 2015 Accomplishments: - Developed ACES HY upgrades, to include design development - Tested a new ACES HY high resolution camera to resolve image interpretability findings from Operational Test and Evaluation (OT&E). - Conducted preliminary and critical design reviews					
FY 2016 Plans: - Continue and complete high resolution camera development and test and prepare for camera production effort. - Design develop and test replacement ACES HY GPS/INS system element in response to supportability issues and operational requirements.					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675292 / *Hyperspectral Sensors*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Conduct prelimary and critical design reviews and build two units to support qualification testing. ***FY 2017 Base Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.546	2.679	0.000	-	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF: BA05: Line Item # PRDT01: *MQ-1 Mods*	4.755	3.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Remarks

A portion of the Predator modification funding listed above is used to support ACES HY integration.

D. Acquisition Strategy

ACES HY production sensor deliveries were completed in July of 2014, using the Advanced Technology Support Program process developed by Office of the Secretary of Defense (OSD)'s Defense MicroElectronics Activity (DMEA) at McClellan AFB, CA. Sensors are currently managed at AFLCMC/WIILR, the MQ-1 Predator sustainment program office, Warner-Robbins AFB GA.

ACES HY utilizes a sole source Basic Ordering Agreement with Raytheon (McKinney, TX) for system modifications.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675292 / *Hyperspectral Sensors*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HRI Upgrade	SS/CPFF	Raytheon : McKinney, TX	-	2.877	Jul 2015	1.490	Mar 2016	0.000		0.000		0.000	0.000	4.367	4.384
Other Upgrade Efforts	Various	Various : TBD	-	0.000		0.534	Dec 2015	0.000		0.000		0.000	0.000	0.534	-
		Subtotal	-	2.877		2.024		0.000		0.000		0.000	0.000	4.901	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	SS/CPFF	MIT/LL : Cambridge, MA	-	0.195	May 2015	0.195	May 2016	0.000		0.000		0.000	0.000	0.390	-
		Subtotal	-	0.195		0.195		0.000		0.000		0.000	0.000	0.390	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA: Other Govt Cost	SS/T&M	Various : Dayton, OH	-	0.474	Jan 2015	0.460	Jan 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.474		0.460		0.000		0.000		0.000	-	-	-

	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	3.546		2.679		0.000		0.000		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 675292 / *Hyperspectral Sensors*	

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675292 / *Hyperspectral Sensors*

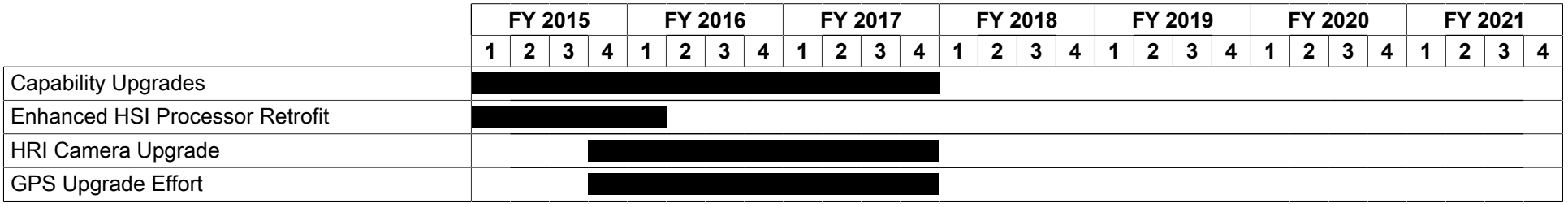

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 675292 / *Hyperspectral Sensors*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Capability Upgrades	1	2015	4	2017
Enhanced HSI Processor Retrofit	1	2015	1	2016
HRI Camera Upgrade	4	2015	4	2017
GPS Upgrade Effort	4	2015	4	2017

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 676025 / *Data Compression*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
676025: *Data Compression*	-	0.000	4.803	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.803
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, PE 0305208F, Distributed Common Ground/Surface Systems, Project 676025, Data Compression, efforts transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, in order to provide greater visibility into this capability.

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression, in order to provide greater visibility into this capability.

A. Mission Description and Budget Item Justification

The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort is developing, testing and will implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Data Compression	0.000	4.803	0.000	-	0.000
Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.					
FY 2015 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 676025 / *Data Compression*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Prior to FY 2016, efforts were reported under PE 0305208F, Distributed Common Ground/Surface Systems, Project 676025, Data Compression. ***FY 2016 Plans:*** - Develop and test Phase History SAR data compression capabilities, and other phenomenologies. - Develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. - Develop documentation for standards acceptance. - Provide engineering services for algorithm familiarization, assessment, and improvement. - Participate in SOSA planning and integration. ***FY 2017 Base Plans:*** FY 2017 activities will be reported under PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression.					
Accomplishments/Planned Programs Subtotals	0.000	4.803	0.000	-	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Data Compression acquisition approach is to design and develop compression and decompression technology hardware and software components, interfaces and standards for various airborne ISR platforms, ground stations, data storage facilities, and exploitation tools utilizing existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 676025 / *Data Compression*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technology Development	C/Various	TBD : TBD	-	0.000		1.520	Jul 2016	0.000		0.000		0.000	Continuing	Continuing	-
ISO Standards Development	C/Various	NASA JPL : Pasadena, CA	-	0.000		0.366	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	-
SAR Standards Development	C/Various	TBD : TBD	-	0.000		0.384	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
Platform Integration	C/Various	TBD : TBD	-	0.000		0.200	Jul 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		2.470		0.000		0.000		0.000	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Validation /Verification Support	C/Various	AFRL : Dayton, OH	-	0.000		0.450	May 2016	0.000		0.000		0.000	Continuing	Continuing	-
Algorithm Support	C/Various	Warner Robins AFB : Warner Robins, GA	-	0.000		0.100	Jan 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		0.550		0.000		0.000		0.000	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JPL Flight Demonstration	C/Various	NASA JPL : Pasadena, CA	-	0.000		0.250	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	-
HSI Demonstration	C/Various	TBD : TBD	-	0.000		0.250	Feb 2016	0.000		0.000		0.000	Continuing	Continuing	-
Technology Demonstration	C/Various	TBD : TBD	-	0.000		0.500	May 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		1.000		0.000		0.000		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / *Airborne Reconnaissance Systems*	Project (Number/Name) 676025 / *Data Compression*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support	Various	Govt/Contractors : TBD	-	0.000		0.783	Oct 2015	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		0.783		0.000		0.000		0.000	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		4.803		0.000		0.000		0.000	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 676025 / *Data Compression*

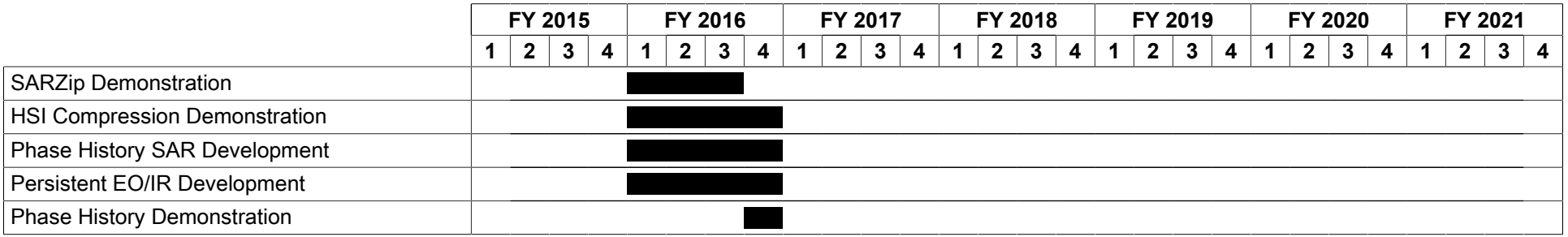

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305206F / *Airborne Reconnaissance Systems*	**Project (Number/Name)** 676025 / *Data Compression*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SARZip Demonstration	1	2016	3	2016
HSI Compression Demonstration	1	2016	4	2016
Phase History SAR Development	1	2016	4	2016
Persistent EO/IR Development	1	2016	4	2016
Phase History Demonstration	4	2016	4	2016

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