Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	-	0.000	34.818	68.719	0.000	68.719	68.155	105.347	115.565	118.408	Continuing	Continuing
644818: *Imaging and Targeting Support*	-	0.000	18.583	45.588	0.000	45.588	38.871	50.422	74.846	76.855	Continuing	Continuing
645148: *Common-Airborne Sense and Avoid (C-ABSAA)*	-	0.000	14.784	21.647	0.000	21.647	27.776	53.385	39.152	39.954	Continuing	Continuing
646025: *Data Compression*	-	0.000	1.451	1.484	0.000	1.484	1.508	1.540	1.567	1.599	Continuing	Continuing

Note

In FY 2018, PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support, Nuclear Forensics-Prompt Diagnostics efforts transferred to PE 0207573F, National Technical Nuclear Forensics, Project 674881, Prompt Diagnostics, in order to continue development of Prompt Diagnostics detection system.

A. Mission Description and Budget Item Justification

The Advanced Technology and Sensors 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. This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time intelligence, surveillance, and reconnaissance.

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.

This program is in Budget Activity 4, Advanced Component Development and Prototypes because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force					Date: May 2017
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*			**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	0.000	34.818	59.867	0.000	59.867
Current President's Budget	0.000	34.818	68.719	0.000	68.719
Total Adjustments	0.000	0.000	8.852	0.000	8.852
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	8.852	0.000	8.852

Change Summary Explanation

- FY 2018 funding increased by $8.852M to support increases in Advanced Synthetic Aperture Radar System development, demonstration, and transition efforts (Project 644818), combined with decreases in Common-Airborne Sense and Avoid (Project 645148) for higher Department of Defense Priorities.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*	Project (Number/Name) 644818 / *Imaging and Targeting Support*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
644818: *Imaging and Targeting Support*	-	0.000	18.583	45.588	0.000	45.588	38.871	50.422	74.846	76.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (I&TS) project is to develop, mature, demonstrate, and rapidly transition next-generation, persistent, wide area surveillance and common imagery reconnaissance sensor capabilities (active and passive 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 include: improved sensor capabilities such as hyperspectral imagery (HSI), measurement and signature intelligence, polarimetric imaging, ground moving target indication (GMTI), maritime search/track, Inverse Synthetic Aperture Radar, foliage penetration and additional radar, electro-optical, nuclear event detection, 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 planning and direction; collection; processing and exploitation; analysis and production; and dissemination 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 by developing common standards and interfaces.

The funds in this project are distributed in priority order 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 and on the results of the Airborne Sensors for ISR Analysis of Alternatives, as prefaced in the Challenging Targets Initial Capabilities Document. 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. The program office has the ability to initiate an I&TS project, within the GEOINT Capabilities Working Group (GCWG) construct but outside the normal annual GCWG vetting process, to expedite development and acquisition of urgently needed capabilities for the warfighter. Advanced Synthetic Aperture Radar System 2B efforts include, but are not limited to, development, design, fabrication, integration, demonstration, and transition of high altitude, deep look ISR radar.

Traditional focus areas include, but are not limited to: development, demonstration, and rapid transition of common radar and electro-optical sensors (Synthetic Aperture Radar (SAR), Low Frequency SAR, and antenna, Electro-Optical(EO), Infrared (IR), HSI, Low Light, Laser Radar (LADAR), Light Detection And Ranging (LIDAR) and their operational modes (high resolution imagery, Ground and Dismount Moving Target Indication (GMTI/DMTI), persistent surveillance, wide area motion imagery, Spectral Identification) for multiple airborne platforms, including medium and high altitude platforms; development and demonstration of advanced tactical sensor and associated tasking, processing, exploitation, and dissemination 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; development and implementation of standards (Common GMTI/DMTI, National Imagery Transmission Format; and monitoring and enhancement of Imagery Intelligence product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user). Development and integration of airborne sensors to support an open systems

architecture pod capability. 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.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Imaging & Targeting Support (I&TS) ***Description:*** Develop/demonstrate and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation Hyperspectral Imagery (HSI), laser detection and ranging/ laser identification detection and ranging, and data mitigation technologies). ***FY 2016 Accomplishments:*** - FY 2016 efforts were reported under PE 0305206F ***FY 2017 Plans:*** - Continue development, modernization, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband Electro-Optical/Infra-Red (EO/IR) and Synthetic Aperture Radar (SAR) sensor systems, enhanced LIDAR capabilities, polarimetric imaging, and other Geospatial Intelligence (GEOINT) sensing modalities for anti-access area denial, permissive and non-permissive environments, foliage penetration, and littoral environments. These include but are not limited to MQ-9 Multi-Spectral Targeting System (MTS-B), DRACO, Full Spectrum HSI MQ-9 Pod, Airborne Light Optical Fiber Technology (ALOFT), Long-Wave Infrared Polarimetric Imaging(LWIR PI), and other GEOINT Capabilities Working Group (GCWG) approved projects. ***FY 2018 Base Plans:*** - Will continue development, modernization, 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, foliage penetration, and littoral environments. These include but are not limited to MTS-B, DRACO, Full Spectrum HSI MQ-9 Pod, ALOFT, LWIR PI, and other GCWG approved projects.	0.000	9.505	22.588	-	22.588
Title: Advanced Synthetic Aperture Radar System (ASARS) 2B ***Description:*** Develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude Intelligence, Surveillance, and Reconnaissance (ISR) radar capabilities.	0.000	6.078	23.000	-	23.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: - FY 2016 efforts were reported under PE 0305206F. ***FY 2017 Plans:*** - Continue to develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude ISR radar capabilities. ***FY 2018 Base Plans:*** - Will continue to develop/design/fabricate/integrate/demonstrate/rapidly transition deep look high altitude ISR radar capabilities.					
Title: Nuclear Forensics - Prompt Diagnostics ***Description:*** Development of nuclear event detection and characterization capabilities. ***FY 2016 Accomplishments:*** - FY 2016 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment. ***FY 2017 Plans:*** - Continue development of Prompt Diagnostics detection system. Focused areas include but are not limited to prompt output signal detection and nuclear debris collection analysis and evaluation. ***FY 2018 Base Plans:*** - Effort will move to National Technical Nuclear Forensics (NTNF) program (0207573F) in FY18.	0.000	3.000	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	0.000	18.583	45.588	-	45.588

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305202F: *Dragon U-2 (JIMP)*	34.471	37.217	56.586	0.000	56.586	48.882	38.682	16.994	17.120	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

D. Acquisition Strategy

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

Advanced Synthetic Aperture Radar 2B efforts are conducted by Air Force Lifecycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Program Office(AFLCMC/WIN), in conjunction and cooperation with AFLCMC/Robins AFB for flight test support.

Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of Engineering Change Proposals 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: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MTS-B Track Through Launch Transient	SS/CPFF	Raytheon : McKinney, TX	-	0.000		1.045	Mar 2017	0.342	Nov 2017	0.000		0.342	Continuing	Continuing	1.400
DRACO 4.0	SS/CPFF	Lockheed Martin : King of Prussia, PA	-	0.000		2.000	Jan 2017	1.900	Nov 2017	0.000		1.900	Continuing	Continuing	3.900
Full Spectrum HSI MQ-9 Pod	SS/CPFF	Raytheon : McKinney, TX	-	0.000		2.600	Apr 2017	2.458	Jan 2018	0.000		2.458	Continuing	Continuing	2.000
ALOFT	SS/CPFF	UTC Aerospace Systems : Westford, MA	-	0.000		0.000		1.400	Dec 2017	0.000		1.400	Continuing	Continuing	1.400
LWIR PI	C/CPFF	Raytheon : El Segundo, CA	-	0.000		0.000		2.000	Jan 2018	0.000		2.000	Continuing	Continuing	-
Agile Pod Harvest Reaper	SS/CPFF	Various : Various	-	0.000		1.615	Feb 2017	0.131	Dec 2017	0.000		0.131	Continuing	Continuing	0.200
Other Technology Efforts (Prioritized by GCWG)	Various	Various : Various	-	0.000		1.118	Dec 2016	12.902	Dec 2017	0.000		12.902	Continuing	Continuing	-
ASARS 2B	SS/CPIF	Raytheon : El Segundo, CA	-	0.000		5.160	Mar 2017	21.400	Jan 2018	0.000		21.400	Continuing	Continuing	-
Nuclear Forensics - Prompt Diagnostics	Various	Various : Various	-	0.000		2.700	Feb 2017	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.000		16.238		42.533		0.000		42.533	-	-	-

Remarks

On an annual basis, the GEOINT Capabilities Working Group reviews developmental technologies against warfighter capabilities and requirements based on strategic roadmaps and on the Airborne Sensors for ISR Analysis of Alternatives. Projects advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement for the coming fiscal year.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-		-	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*	Project (Number/Name) 644818 / *Imaging and Targeting Support*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA: Other Govt Cost	Various	Various : Dayton, OH	-	0.000		2.345	Dec 2016	3.055	Nov 2017	0.000		3.055	Continuing	Continuing	-
		Subtotal	-	0.000		2.345		3.055		0.000		3.055	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		18.583		45.588		0.000		45.588	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

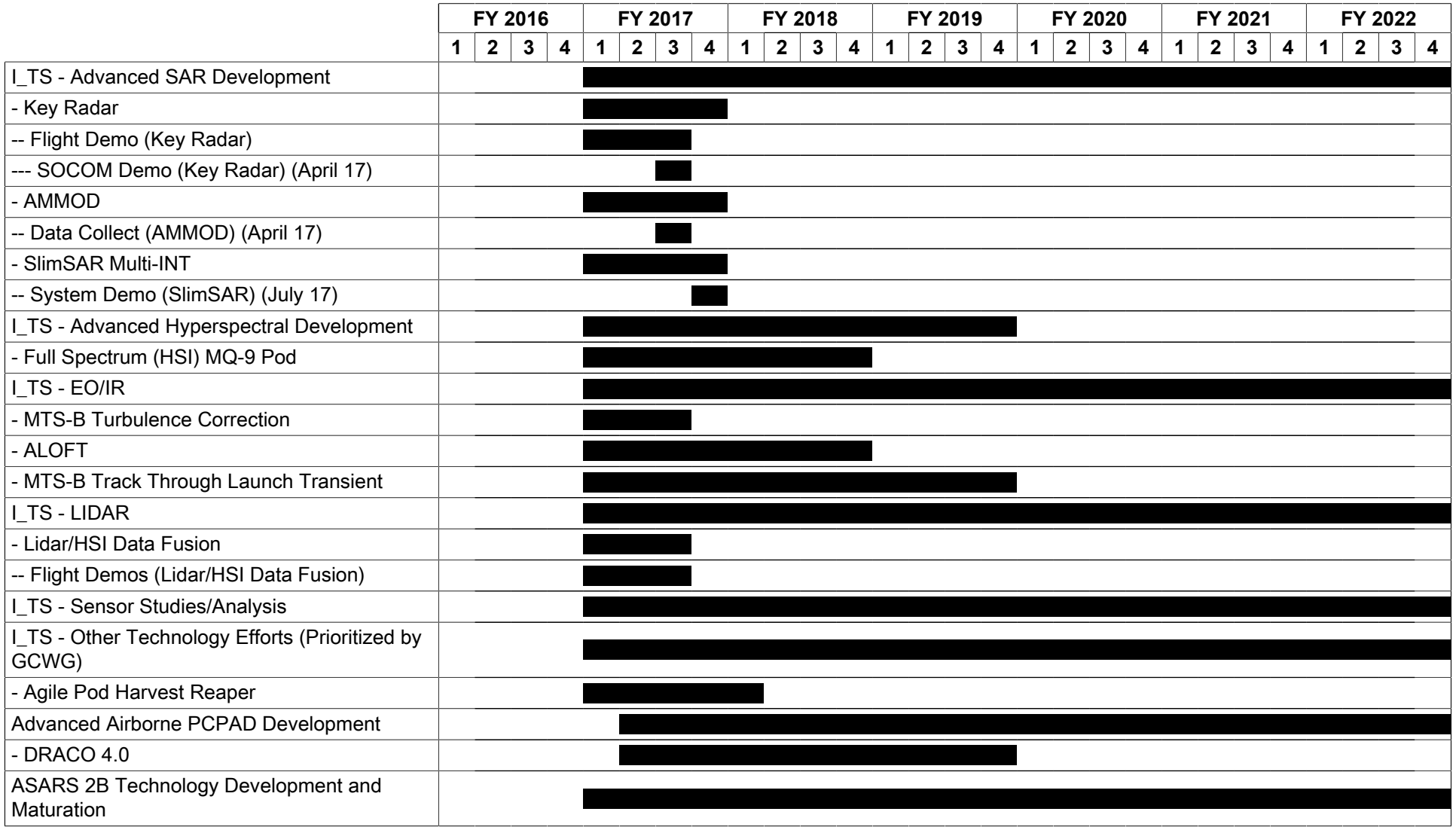

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
- ASARS 2B Flight Demonstration											[redacted]																	

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
I_TS - Advanced SAR Development	1	2017	4	2022
- Key Radar	1	2017	4	2017
-- Flight Demo (Key Radar)	1	2017	3	2017
--- SOCOM Demo (Key Radar) (April 17)	3	2017	3	2017
- AMMOD	1	2017	4	2017
-- Data Collect (AMMOD) (April 17)	3	2017	3	2017
- SlimSAR Multi-INT	1	2017	4	2017
-- System Demo (SlimSAR) (July 17)	4	2017	4	2017
I_TS - Advanced Hyperspectral Development	1	2017	4	2019
- Full Spectrum (HSI) MQ-9 Pod	1	2017	4	2018
I_TS - EO/IR	1	2017	4	2022
- MTS-B Turbulence Correction	1	2017	3	2017
- ALOFT	1	2017	4	2018
- MTS-B Track Through Launch Transient	1	2017	4	2019
I_TS - LIDAR	1	2017	4	2022
- Lidar/HSI Data Fusion	1	2017	3	2017
-- Flight Demos (Lidar/HSI Data Fusion)	1	2017	3	2017
I_TS - Sensor Studies/Analysis	1	2017	4	2022
I_TS - Other Technology Efforts (Prioritized by GCWG)	1	2017	4	2022
- Agile Pod Harvest Reaper	1	2017	1	2018
Advanced Airborne PCPAD Development	2	2017	4	2022
- DRACO 4.0	2	2017	4	2019

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ASARS 2B Technology Development and Maturation	1	2017	4	2022
- ASARS 2B Flight Demonstration	3	2018	4	2018

Note

Starting in FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support transferred to PE 0604257F, Advanced Technology and Sensors, Project 644818.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*	Project (Number/Name) 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
645148: *Common-Airborne Sense and Avoid (C-ABSAA)*	-	0.000	14.784	21.647	0.000	21.647	27.776	53.385	39.152	39.954	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Common-Airborne Sense and Avoid (C-ABSAA) is an analysis and developmental effort in the pre-Materiel Development Decision phase of the acquisition lifecycle which supports emerging warfighter requirements to fully integrate Group 4-5 Remotely Piloted Aircraft (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 in larger 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 set 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 the other Services to develop national policy and standards, and SAA related studies, analysis, modeling and simulation, flight demonstrations of critical technologies, and program planning and project execution. RPA platform specific integration and testing is not included.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Sense and Avoid (SAA)-Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration	0.000	14.784	21.647	0.000	21.647
Description: Support development and analysis of warfighter requirements and analysis of possible solution alternatives. Develop SAA technology and capabilities for Group 4-5 remotely. Collaborate with the Federal Aviation Administration, National Air and Space Administration, and other Services to develop national policy and standards. Conduct SAA related studies, analysis, modeling and simulation, demonstrations, program planning and project execution.					
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- In FY 2016, the Common-Airborne Sense and Avoid (C-ABSAA)effort was reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, C-ABSAA. ***FY 2017 Plans:*** - Assist/advise/support ACC with the Remotely Piloted Aircraft (RPA) Sense and Avoid (SAA) Analysis of Alternatives (AoA) effort - Support Air Combat Command (ACC) as they conduct analysis to identify possible materiel solutions to SAA gaps - Conduct C-ABSAA Materiel Solution Analysis activities - Continue SAA science and technology research and development with Air Force Research Laboratory (AFRL) - Collaborate with FAA, NASA, and other Services and agencies on national policy and standards - Build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development ***FY 2018 Base Plans:*** - Will conduct C-ABSAA Materiel Solution Analysis activities - Will begin C-ABSAA Technology Maturation & Risk Reduction Phase - Will develop Capabilities Development Document (CDD)for C-ABSAA Technology Maturation and Risk Reduction phase - Will prepare/present all documentation/results as part of C-ABSAA Milestone A decision review - Will continue to build and exercise modeling and simulation capabilities to support requirements, policy/ standards, and technology development - Will continue SAA science and technology research and development with AFRL - Will continue to collaborate with FAA, NASA, and other Services and agencies on national policy and standards - Will flight demonstrate SAA applications for various sensors such as radar, electro-optical, and infrared technologies - Will verify sensor, guidance, and control vulnerabilities and countermeasures through analysis and flight test for future planning and development - Will start development of open, scalable architecture to support automation and control for integration with other users operating in worldwide airspaces ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	14.784	21.647	0.000	21.647

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: *N/A*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

C-ABSAA materiel solutions will be developed by the Air Force Life Cycle Management Center's Sensors Division under direction of the Program Executive Office for Intelligence, Surveillance, and Reconnaissance and Special Operations Forces, in response to a deliberate requirements definition process. 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 intends to provide the warfighter with sense and avoid capability for Group 4-5 Remotely Piloted Aircraft (RPA) with increased, time-phased capability improvements as technology and risks achieve satisfactory levels. Group 4-5 RPA platforms will be expected to integrate C-ABSAA capability into their unique systems either 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: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*	Project (Number/Name) 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C-ABSAA Technology Development	C/Various	Various : Various	-	0.000		13.254	Oct 2016	20.071	Oct 2017	0.000		20.071	Continuing	Continuing	-
		Subtotal	-	0.000		13.254		20.071		0.000		20.071	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	Various	Various : Various	-	0.000		1.530	Oct 2016	1.576	Oct 2017	0.000		1.576	Continuing	Continuing	-
		Subtotal	-	0.000		1.530		1.576		0.000		1.576	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		14.784		21.647		0.000		21.647	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

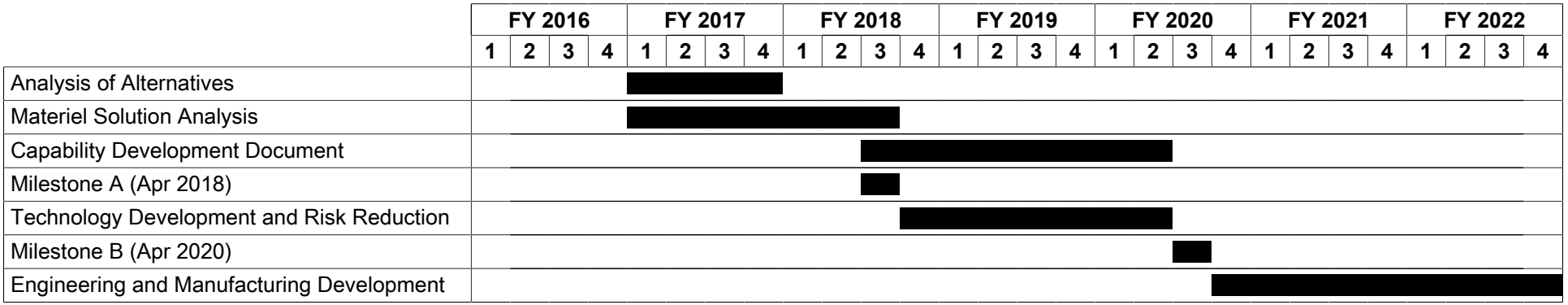

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 645148 / *Common-Airborne Sense and Avoid (C-ABSAA)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Analysis of Alternatives	1	2017	4	2017
Materiel Solution Analysis	1	2017	3	2018
Capability Development Document	3	2018	2	2020
Milestone A (Apr 2018)	3	2018	3	2018
Technology Development and Risk Reduction	4	2018	2	2020
Milestone B (Apr 2020)	3	2020	3	2020
Engineering and Manufacturing Development	4	2020	4	2022

Note

In FY15, efforts were reported in PE 0305220F, RQ-4, Project 675148, Common Airborne Sense and Avoid (C-ABSAA). In FY16, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, C-ABSAA.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force			Date: May 2017
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / *Advanced Technology and Sensors*	Project (Number/Name) 646025 / *Data Compression*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
646025: *Data Compression*	-	0.000	1.451	1.484	0.000	1.484	1.508	1.540	1.567	1.599	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Data Compression effort provides the warfighter with capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance (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 develops, tests, 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 Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Reduction of Data Using Compression Enhancements (RDUCE)	0.000	1.451	1.484	-	1.484
Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance (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 the Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.					
FY 2016 Accomplishments: In FY 2016, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression.					
FY 2017 Plans: - Develop and test persistent electro-optical and infrared (EO/IR) and phase history Synthetic Aperture Radar (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.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force		Date: May 2017
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 646025 / *Data Compression*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Provide engineering services for algorithm familiarization, assessment, and improvement. - Participate in Sensor Open System Architecture (SOSA) planning and integration. ***FY 2018 Base Plans:*** - Will continue to develop and test Persistent EO/IR and Phase History SAR data compression capabilities, and other phenomenologies, including but not limited to light detection and ranging (LIDAR) and Airborne Synthetic Aperture Radar System 2B (ASARS 2B) integration. - Will continue to develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. - Will continue to develop documentation for standards acceptance. - Will continue to provide engineering services for algorithm familiarization, assessment, and improvement. - Will continue to participate in SOSA planning and integration.					
Accomplishments/Planned Programs Subtotals	0.000	1.451	1.484	-	1.484

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• N/A: *N/A*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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 intelligence, surveillance, and reconnaissance 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.