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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b>					<b>R-1 Program Element (Number/Name)</b>							
3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>					PE 0604257F / <i>Advanced Technology and Sensors</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	0.000	0.000	34.818	0.000	34.818	59.867	54.928	68.703	91.954	Continuing	Continuing
644818 (BA4 0604257F): <i>Imaging and Targeting Support</i>	-	0.000	0.000	18.583	0.000	18.583	17.857	15.656	28.699	51.239	Continuing	Continuing
645148 (BA4 0604257F): <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	0.000	14.784	0.000	14.784	40.530	37.765	38.465	39.148	Continuing	Continuing
646025 (BA4 0604257F): <i>Data Compression</i>	-	0.000	0.000	1.451	0.000	1.451	1.480	1.507	1.539	1.567	Continuing	Continuing

**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.

**A. Mission Description and Budget Item Justification**

The Advanced Technology and Sensors (ATS) 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). 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.

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

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	34.818	0.000	34.818
Total Adjustments	0.000	0.000	34.818	0.000	34.818
• 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	34.818	0.000	34.818

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>				<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
644818 (BA4 0604257F): <i>Imaging and Targeting Support</i>	-	0.000	0.000	18.583	0.000	18.583	17.857	15.656	28.699	51.239	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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

**A. Mission Description and Budget Item Justification**

The purpose of the Imaging and Targeting Support (I&TS) project is to mature and demonstrate 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 (MASINT), polarimetric imaging, ground moving target indication (GMTI), 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 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 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 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 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.

Traditional focus areas include, but are not limited to: development and demonstration 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 (WAMI), Spectral Identification) for multiple airborne platforms, including medium and high altitude platforms; development and demonstration of advanced tactical sensor and associated TPED processing algorithms and tools (automatic registration, automatic and assisted target detection, network centric warfare). Development of integrated multi-sensor capabilities to detect and identify obscured targets (OT); development and implementation of imagery standards (Common Ground/Dismount Moving Target

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>
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Indicator (GMTI/DMTI), National Imagery Transmission Format (NITF); and monitoring and enhancement of Imagery Intelligence (IMINT) product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user). 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><b>Title:</b> Imaging &amp; Targeting Support (I&amp;TS)</p> <p><b>Description:</b> 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).</p> <p><b>FY 2015 Accomplishments:</b> - FY 2015 efforts were reported under PE 0305206F</p> <p><b>FY 2016 Plans:</b> - FY 2016 efforts were reported under PE 0305206F</p> <p><b>FY 2017 Base Plans:</b> - 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.</p>	0.000	0.000	4.583	-	4.583
<p><b>Title:</b> Advanced Synthetic Aperture Radar System (ASARS) 2B</p> <p><b>Description:</b> Design/fabricate/integrate/demonstrate completion of technical maturation effort for deep look high altitude Synthetic Aperture Radar (SAR). Includes total government and contractor costs for this project.</p> <p><b>FY 2015 Accomplishments:</b> - FY 2015 efforts were reported under PE 0305206F.</p> <p><b>FY 2016 Plans:</b> - FY 2016 efforts were reported under PE 0305206F.</p> <p><b>FY 2017 Base Plans:</b> - Will continue technical maturation effort for deep look high altitude SAR.</p>	0.000	0.000	11.000	-	11.000
<p><b>Title:</b> Nuclear Forensics - Prompt Diagnostics</p>	0.000	0.000	3.000	-	3.000

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<p><b>Description:</b> Development of nuclear event detection and characterization capabilities.</p> <p><b>FY 2015 Accomplishments:</b> - FY 2015 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment.</p> <p><b>FY 2016 Plans:</b> - FY 2016 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment.</p> <p><b>FY 2017 Base Plans:</b> Will 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 to support nuclear event attribution.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	18.583	-	18.583

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RDTE: BA07: PE 0305202F: <i>Dragon U-2 (JMIP)</i>	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 support ASARS design, development, test and demonstration in accordance with SecAF Prudent Actions Memorandum, May 2015.

**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 Initial Capabilities Document (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).

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>
<p>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.</p> <p><b>E. Performance Metrics</b></p> <p>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.</p>		

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0604257F / Advanced Technology and Sensors				644818 (BA4 0604257F) / Imaging and Targeting Support								
<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Other Technology Efforts (Prioritized by GCWG)	Various	Various : Various	-	0.000		0.000		3.126	Dec 2016	0.000		3.126	Continuing	Continuing	-	
ASARS 2B	SS/CPFF	Raytheon : El Segundo, CA	-	0.000		0.000		11.000	Mar 2017	0.000		11.000	Continuing	Continuing	-	
Nuclear Forensics - Prompt Diagnostics	Various	Various : Various	-	0.000		0.000		3.000	Feb 2017	0.000		3.000	Continuing	Continuing	-	
<b>Subtotal</b>			-	0.000		0.000		17.126		0.000		17.126	-	-	-	
<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-	
<b>Management Services (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
PMA: Other Govt Cost	Various	Various : Dayton, OH	-	0.000		0.000		1.457	Dec 2016	0.000		1.457	Continuing	Continuing	-	
<b>Subtotal</b>			-	0.000		0.000		1.457		0.000		1.457	-	-	-	
<b>Project Cost Totals</b>			-	0.000		0.000		18.583		0.000		18.583	-	-	-	

**UNCLASSIFIED**

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2017 Air Force							<b>Date:</b> February 2016			
<b>Appropriation/Budget Activity</b> 3600 / 4			<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>			<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>				
	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

**Remarks**

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
I_TS - Advanced SAR Development																												
- Key Radar																												
-- Flight Demo (Key Radar)																												
--- SOCOM Demo (Key Radar)																												
- AMMOD																												
-- Data Collect (AMMOD)																												
- SlimSAR Multi-INT																												
-- System Demo (SlimSAR)																												
I_TS - Advanced Hyperspectral Development																												
I_TS - EO/IR																												
I_TS - LIDAR																												
- Lidar/HSI Data Fusion																												
-- Flight Demos (Lidar/HSI Data Fusion)																												
I_TS - Sensor Studies/Analysis																												
I_TS - Other Technology Efforts (Prioritized by GCWG)																												
ASARS 2B Tech Maturation																												
Nuclear Forensics - Prompt Diagnostics																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
I_TS - Advanced SAR Development	1	2017	4	2021
- Key Radar	1	2017	4	2017
-- Flight Demo (Key Radar)	1	2017	3	2017
--- SOCOM Demo (Key Radar)	2	2017	2	2017
- AMMOD	1	2017	4	2017
-- Data Collect (AMMOD)	3	2017	3	2017
- SlimSAR Multi-INT	1	2017	4	2017
-- System Demo (SlimSAR)	3	2017	3	2017
I_TS - Advanced Hyperspectral Development	1	2017	4	2021
I_TS - EO/IR	1	2017	4	2021
I_TS - LIDAR	1	2017	4	2021
- 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	2021
I_TS - Other Technology Efforts (Prioritized by GCWG)	1	2017	4	2021
ASARS 2B Tech Maturation	1	2017	2	2019
Nuclear Forensics - Prompt Diagnostics	1	2017	4	2021

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>				<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
645148 (BA4 0604257F): <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	0.000	14.784	0.000	14.784	40.530	37.765	38.465	39.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common Airborne Sense and Avoid (C-ABSAA) transferred to PE 0604257F, Advanced Technology and Sensors, Project 645148, Common Airborne Sense & Avoid (C-ABSAA).

**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 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, 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)**

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<b>Title:</b> SAA-Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration	0.000	0.000	14.784	0.000	14.784
<b>Description:</b> 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.					

**UNCLASSIFIED**

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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
<p><b><i>FY 2015 Accomplishments:</i></b> - In FY 2015, C-ABSAA effort was reported in PE 0305220F, RQ-4 UAV, Project 675148, Common Airborne Sense and Avoid (C-ABSAA).</p> <p><b><i>FY 2016 Plans:</i></b> - In FY 2016, C-ABSAA effort was reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common-Airborne Sense and Avoid (C-ABSAA).</p> <p><b><i>FY 2017 Base Plans:</i></b> - Will continue Sense and Avoid (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 continue to build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development - Will support Air Combat Command as they conduct analysis to identify possible materiel solutions to SAA gaps</p> <p><b><i>FY 2017 OCO Plans:</i></b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	14.784	0.000	14.784

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 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 PEO, ISR/SOF, 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 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 C-ABSAA provided capability into their unique systems either via retrofit or in design, development, and/or production.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C-ABSAA Technology Development	C/Various	Various : Various	-	0.000		0.000		13.946	Oct 2016	0.000		13.946	Continuing	Continuing	-
<b>Subtotal</b>			-	0.000		0.000		13.946		0.000		13.946	-	-	-

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Management Services (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA)	Various	Various : Various	-	0.000		0.000		0.838	Oct 2016	0.000		0.838	Continuing	Continuing	TBD
<b>Subtotal</b>			-	0.000		0.000		0.838		0.000		0.838	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	0.000	0.000	14.784	0.000	14.784	-	-	-

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Analysis of Alternatives																												
Material Solution Analysis																												
Capability Development Document (CDD)																												
Milestone A (MS-A)																												
Technology Development and Risk Reduction																												
Milestone B (MS-B)																												
Engineering and Manufacturing Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Analysis of Alternatives	1	2017	2	2018
Material Solution Analysis	1	2017	3	2018
Capability Development Document (CDD)	3	2018	2	2020
Milestone A (MS-A)	3	2018	3	2018
Technology Development and Risk Reduction	4	2018	2	2020
Milestone B (MS-B)	3	2020	3	2020
Engineering and Manufacturing Development	4	2020	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>				<b>Project (Number/Name)</b> 646025 (BA4 0604257F) / <i>Data Compression</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
646025 (BA4 0604257F): <i>Data Compression</i>	-	0.000	0.000	1.451	0.000	1.451	1.480	1.507	1.539	1.567	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, efforts transferred to PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression.

**A. Mission Description and Budget Item Justification**

The Data Compression effort provides the warfighter with 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 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 DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.

**B. Accomplishments/Planned Programs (\$ in Millions)**

**Title:** Data Compression

**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:***

In FY 2015, efforts were reported in PE 0305208F, Distributed Common Ground/Surface Systems, Project 676025, Data Compression.

***FY 2016 Plans:***

<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
0.000	0.000	1.451	-	1.451

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Air Force	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 646025 (BA4 0604257F) / <i>Data Compression</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
In FY 2016, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression.					
<b><i>FY 2017 Base Plans:</i></b>					
- Will develop and test Persistent electro-optical and infrared (EO/IR) and Phase History synthetic aperture radar (SAR) data compression capabilities, and other phenomenologies.					
- Will develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination.					
- Will develop documentation for standards acceptance.					
- Will provide engineering services for algorithm familiarization, assessment, and improvement.					
- Will participate in Sensor Open System Architecture (SOSA) planning and integration.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	1.451	-	1.451

**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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0604257F / Advanced Technology and Sensors				646025 (BA4 0604257F) / Data Compression								
<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Technology Development	C/Various	TBD : TBD	-	0.000		0.000		1.063	Nov 2016	0.000		1.063	Continuing	Continuing	-	
Platform Integration	C/Various	TBD : TBD	-	0.000		0.000		0.136	Nov 2016	0.000		0.136	Continuing	Continuing	-	
<b>Subtotal</b>			-	0.000		0.000		1.199		0.000		1.199	-	-	-	
<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-	
<b>Management Services (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Office Support	Various	Govt/Contractors : TBD	-	0.000		0.000		0.252	Oct 2016	0.000		0.252	Continuing	Continuing	-	
<b>Subtotal</b>			-	0.000		0.000		0.252		0.000		0.252	-	-	-	
<b>Project Cost Totals</b>			-	0.000		0.000		1.451		0.000		1.451	-	-	-	
<b>Remarks</b>																



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604257F / <i>Advanced Technology and Sensors</i>	<b>Project (Number/Name)</b> 646025 (BA4 0604257F) / <i>Data Compression</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Persistent E/O IR Data Compression Development	1	2017	4	2021
Phase History SAR Data Compression Development	1	2017	3	2017
-- Phase History SAR Data Compression Demonstration	3	2017	2	2018

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