Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force											Date: February 2020	
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 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	34.585	23.145	24.747	0.000	24.747	60.729	61.415	34.818	10.123	Continuing	Continuing
644818: *Imaging and Targeting Support*	-	26.665	16.987	15.914	0.000	15.914	16.130	16.109	9.941	10.123	Continuing	Continuing
645148: *Common Airborne Sense and Avoid (C-ABSAA)*	-	7.920	6.158	8.833	0.000	8.833	44.599	45.306	24.877	0.000	Continuing	Continuing

Note

In FY2021, PE 0604257F (Advanced Technology and Sensors), Project 645148, (Common Airborne Sense and Avoid) funds were transferred to PE 0305206F, (Airborne Reconnaissance Systems), Project 674820,(Sensor Development) in order to align funding with Air Force project priorities and requirements.

A. Mission Description and Budget Item Justification

The Advanced Technology and Sensors (ATS) program coordinates the development of advanced technologies (sensors, data links, targeting support, 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 coordinates the development of common collection, processing, and dissemination solutions for near-real time intelligence, surveillance, and reconnaissance. The ATS program also increases interoperability by developing common standards and interfaces.

The funds in this program 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 rapidly initiate an Imaging & Targeting Support (I&TS) project in order to expedite development and acquisition of urgently needed capabilities for the warfighter.

The Air Force is pursuing a software intensive approach to maintain safe separation, avoid collisions, and provide the ability to safely integrate with other airspace users. The software solutions identified in this Information System Capability Development Document (IS-CDD) are open and modular and accept inputs from any type of sensor or data link and will operate any legacy and future Group 4 and 5 RPA. The effort includes technology maturation, risk reduction, EMD and life-cycle costs, such as: 1) prototyping activities, 2) streamlined development, test and implementation of the software, 3) development of open system architecture using modular design, standards-based interfaces, and widely-supported consensus-based standards, and 4) collaboration with the Federal Aviation Agency (FAA), National Aeronautics and Space Administration (NASA), and other services to develop national policy and standards.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force	Date: February 2020
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*

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 element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This effort 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.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	34.585	23.145	54.802	0.000	54.802
Current President's Budget	34.585	23.145	24.747	0.000	24.747
Total Adjustments	0.000	0.000	-30.055	0.000	-30.055
• 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	-30.055	0.000	-30.055

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
644818: *Imaging and Targeting Support*	-	26.665	16.987	15.914	0.000	15.914	16.130	16.109	9.941	10.123	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The purpose of the 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 (e.g., geolocation models, sensor-based exploitation tools, sensor networking capabilities).

Developmental efforts pursued include improved sensor performance, new and improved sensor capabilities and modes, new and/or unique modalities, and enabling technologies. Improved sensor performance includes but is not limited to: increased geolocation accuracy, increased dismount detection capability, and advanced sensor data correlation. New and improved sensor capabilities include but are not limited to: Hyperspectral Imagery (HSI), Polarimetric Imaging (PI), Ground and Dismount Moving target indicator (GMTI/ DMTI), maritime search/track, Inverse Synthetic Aperture Radar, Foliage Penetration (FOPEN), and nuclear event detection. New and improved sensor modes include but are not limited to: high resolution imagery, Ground and Dismount Moving Target Indicator (GMTI/DMTI), persistent surveillance, wide area motion imagery, and Spectral Identification. New and unique sensor modalities include but are not limited to: low frequency SAR, Hyperspectral Imagery (HSI), and Light Detection And Ranging (LIDAR). Enabling Technologies include but are not limited to: automated and assisted target detection/recognition, Artificial Intelligence (AI), Machine Learning (ML), network centric warfare, integrated multi-sensor capabilities to detect and identify obscured targets, TCPED (Tasking, Collection, Planning, Exploitation, and Dissemination) improvements related to sensors, automated registration, and imagery product quality assurance.

These efforts are intended to accelerate delivery of data from sensor to user for both target search and target engagement (kill-chain) activities. This project will also increase interoperability by developing and advancing common standards (e.g. Open Mission Systems (OMS), Sensor Open System Architecture (SOSA), Common Open Architecture Radar Programs (COARPS), Multi-INT Common Open Architecture Reconnaissance Program Standard (MI-COARPS), National Imagery Transmission Format, AgilePod and data reduction) and interfaces.

Activities also include studies and analysis to support both current program planning and execution and future program planning. This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: Imaging & Targeting Support (I&TS)	18.110	16.987	15.914

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
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 2019	FY 2020	FY 2021
Description: Corporately prioritized Air Force Multi-INT Portfolio of projects to develop and demonstrate next generation airborne sensors and processing technologies to further the art of the possible and/or transition ISR capabilities (ex: radar improvement, next-generation HSI, LIDAR, ISR Standards, EO/IR, and data mitigation technologies). ***FY 2020 Plans:*** Continue to develop, modernize, and demonstrate lower TRL projects into transition ready efforts based on the prioritized portfolio. Efforts include but are not limited to advanced sensors, processing algorithms, and other GEOINT capabilities and techniques. The majority of the following FY 2020 efforts support Advanced Technology Demonstrations (ATDs) and rapid acquisition. − Advanced Large Optical Freeform Telescope (ALOFT): Develop, demonstrate, & deliver a next-generation unobscured afocal (AFO) freeform optic telescope for long range ISR applications − Aether Spy: Initiate integration of future radar panels, DREX, processor, and power system into an AgilePod form factor - Work towards automating imagery exploitation and training using cloud services and deep learning running on processors carried by the platform aircraft (edge processing) − Common Open Architecture Radar Programs (COARPs) Compliant Detection Removal and Characterization Operation (DRACO): Development of COARPs compliant version of DRACO algorithms to serve as a pathfinder effort for the development of future on-board algorithms (edge processing) − Hyperspectral on a Chip (H-CHIP): Conduct SWIR/MWIR H-Chip Demonstration − Light Detection And Ranging (Lidar for Mid to High Altitude ISR and Battle Management): Conduct near term direct detect 3D lidar for multiple platforms, w/ readily upgradable architecture. − Multi-band Advanced Reconnaissance Long-range Image Experiment (MARLIE): Design, develop, and flight test a dual-band shortwave infrared/midwave infrared (SWIR/MWIR) fast framing capability − Multi-INT ATR for Geospatial Intelligence Capabilities (MAGIC): a multi-modal ATR (Assisted Target Recognition) system that combines complementary model-based (CAD) ATR and physics-based machine learning ATR via multi-modal, multi-look, multi-fidelity fusion − Predator/Reaper Off-board Sensing and Integrated Targeting (PROSIT): Integrate mature and emerging technologies for day and night targeting and laser target designation − Standoff High-altitude Enhanced Reconnaissance Long-range Operational Concept (SHERLOC): Extended range daytime imaging capability using fast-framing staring array camera with real-time image and full-motion video (FMV) products − SUAS Tactical Agile Gimbal (STAG): Develop the Air Force's modular gimbal housing enabling open competition for payloads ***FY 2021 Plans:*** Will continue to develop, modernize, and demonstrate lower TRL projects into transition ready efforts. The following FY20 efforts will continue into FY2021:			

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
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 2019	FY 2020	FY 2021
− Common Open Architecture Radar Programs (COARPs) Compliant Detection Removal and Characterization (DRACO) − Automated imagery exploitation − Aether Spy − Multi-INT ATR for Geospatial Intelligence Capabilities (MAGIC) These efforts and new proposed projects will be approved through the GEOINT Capabilities Working Group (GCWG) Executive Element process. Efforts are approved in the fall prior to the start of the new fiscal year. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funding decreased due to support for other GCWG priorities and fund new I&TS projects.			
Title: Advanced Synthetic Aperture Radar System (ASARS) 2B ***Description:*** Develop, design, fabricate, integrate, and test and field deep look high altitude ISR radar capabilities. ***FY 2020 Plans:*** In FY2020 all funding in PE 0604257F, (Advanced Technology and Sensors), Project 644818, (Imaging and Targeting Support), was realigned to operationalize ASARS 2B. ***FY 2021 Plans:*** N/A	8.555	0.000	0.000
Accomplishments/Planned Programs Subtotals	26.665	16.987	15.914

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Imaging and Targeting Support efforts are prioritized on an annual basis by the GCWG, 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.

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ALOFT	SS/CPFF	Collins : Westford, MA	-	1.078	Mar 2019	-		-		-		-	Continuing	Continuing	-
SHERLOC	SS/CPFF	Collins : Westford, MA	-	4.745	Nov 2018	4.700	Dec 2019	-		-		-	Continuing	Continuing	-
H-Chip	SS/CPFF	EO Vista : Acton, MA	-	4.030	Dec 2018	-		-		-		-	Continuing	Continuing	-
SUAS Tactical Agile Gimbal (STAG)	SS/CPFF	AES : Austin, TX	-	0.302	Nov 2018	-		-		-		-	Continuing	Continuing	-
Predator/Reaper Off-board Sensing and Improved Targeting (PROSIT)	SS/CPFF	Various : Various, OH	-	2.430	Nov 2018	0.799	Feb 2020	-		-		-	Continuing	Continuing	-
AgilePOD	SS/CPFF	Various : Various	-	1.597	Sep 2019	-		-		-		-	Continuing	Continuing	-
Multi-ATR	SS/CPFF	BAE : Durham, NC	-	1.388	Mar 2019	2.040	Feb 2020	0.360	Feb 2021	-		0.360	Continuing	Continuing	-
COARPS Compliant Detection Removal and Characterization (DRACO)	SS/CPFF	Lockheed Martin : Goodyear, AZ	-	-		1.800	Jun 2020	0.750	Jun 2021	-		0.750	Continuing	Continuing	-
Automated Electro-Optical Mobile Target Classification Deep Learning	SS/CPFF	Ball Aerospace : Dayton, OH	-	-		3.100	Feb 2020	2.640	Feb 2021	-		2.640	Continuing	Continuing	-
Aether Spy	SS/CPFF	Various : Various	-	-		2.600	Apr 2020	5.000	Mar 2021	-		5.000	Continuing	Continuing	-
New FY21 Technology Efforts (Prioritized by GCWG)	Various	Various : Various	-	-		-		5.619	Jan 2021	-		5.619	Continuing	Continuing	-
ASARS-2B operationalization	SS/CPIF	Raytheon : El Segundo, CA	-	9.368	Feb 2019	-		-		-		-	0.000	9.368	-
		Subtotal	-	24.938		15.039		14.369		-		14.369	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA: Other Govt Cost	Various	Various : Dayton, OH	-	1.727	Nov 2018	1.948	Nov 2019	1.545	Nov 2020	-		1.545	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force		Date: February 2020
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*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	1.727		1.948		1.545		-		1.545	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	26.665		16.987		15.914		-		15.914	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
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*

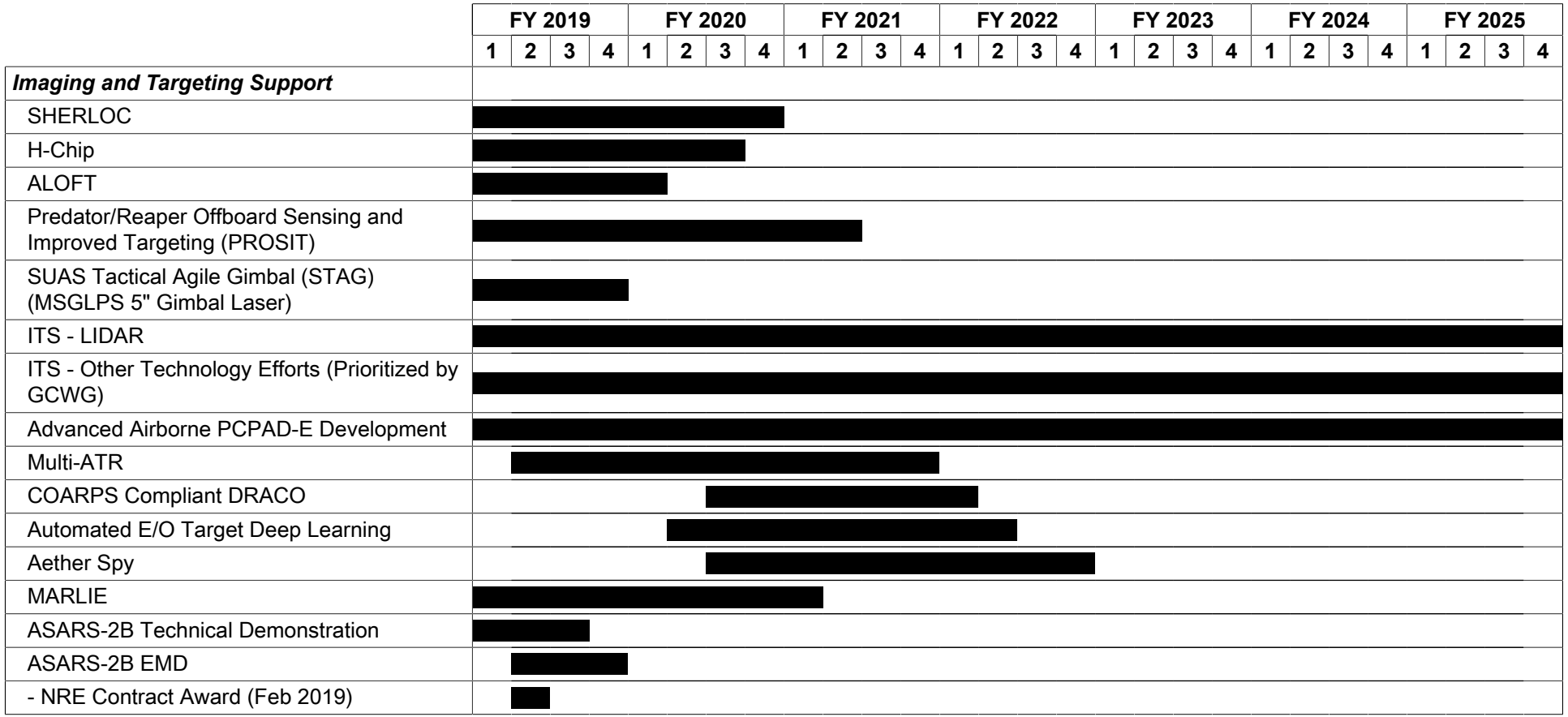

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 644818 / *Imaging and Targeting Support*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Imaging and Targeting Support				
SHERLOC	1	2019	4	2020
H-Chip	1	2019	3	2020
ALOFT	1	2019	1	2020
Predator/Reaper Offboard Sensing and Improved Targeting (PROSIT)	1	2019	2	2021
SUAS Tactical Agile Gimbal (STAG) (MSGLPS 5" Gimbal Laser)	1	2019	4	2019
ITS - LIDAR	1	2019	4	2025
ITS - Other Technology Efforts (Prioritized by GCWG)	1	2019	4	2025
Advanced Airborne PCPAD-E Development	1	2019	4	2025
Multi-ATR	2	2019	4	2021
COARPS Compliant DRACO	3	2020	1	2022
Automated E/O Target Deep Learning	2	2020	2	2022
Aether Spy	3	2020	4	2022
MARLIE	1	2019	1	2021
ASARS-2B Technical Demonstration	1	2019	3	2019
ASARS-2B EMD	2	2019	4	2019
- NRE Contract Award (Feb 2019)	2	2019	2	2019

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
645148: *Common Airborne Sense and Avoid (C-ABSAA)*	-	7.920	6.158	8.833	0.000	8.833	44.599	45.306	24.877	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common-Airborne Sense and Avoid (C-ABSAA) project provides Group 4 and 5 Remotely Piloted Aircraft (RPA) with the ability to safely and effectively operate in all classes of airspace worldwide. The C-ABSAA project acts as a replacement for the sense and avoid capability of the pilot on board a manned aircraft.

The Air Force is pursuing a software intensive approach to maintain safe separation, avoid collisions, and provide the ability to safely integrate with other airspace users. The software solutions identified in this Information System Capability Development Document (IS-CDD) are open and modular and accept inputs from any type of sensor or data link and will operate any legacy and future Group 4 and 5 RPA. The effort includes technology maturation, risk reduction, EMD and life-cycle costs, such as: 1) prototyping activities, 2) streamlined development, test and implementation of the software, 3) development of open system architecture using modular design, standards-based interfaces, and widely-supported consensus-based standards, and 4) collaboration with the Federal Aviation Agency (FAA), National Aeronautics and Space Administration (NASA), and other services to develop national policy and standards.

The program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: Sense and Avoid (SAA)-Related Activities	7.920	6.158	8.833
Description: Conduct risk reduction and prototyping activities to improve affordability, reduce cost, schedule and technical risk entering next milestone. Received Joint Staff approval of Information Systems CDD requirements. C-ABSAA uses an iterative and incremental approach to develop, test and implement high quality software in a cost effective and timely manner. The software utilizes Open System Architecture (OSA) principles, COTS, Application Programming Interfaces (APIs), and maximum software and interface module independence. ***FY 2020 Plans:*** - Continue C-ABSAA Technology Maturation & Risk Reduction Phase - Prepare/present all documentation/results as part of upcoming C-ABSAA Milestone A - Work toward Milestone B			

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020
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 2019	FY 2020	FY 2021
- Continue to collaborate with FAA, NASA, and other Services and agencies on national policy and standards - Continue development/test/certification of open modular architecture processes, standards and design - Begin technical data package generation ***FY 2021 Plans:*** - Will reach completion of RPA sense and avoid (C-ABSAA) Technology Maturation & Risk Reduction phase - Will generate and complete technical data package - Will reach Milestone B and award EMD contract - Will collaborate with FAA, NASA, and other Services and agencies on national policy and standards - Will develop, test, and certify within C-ABSAA Systems Integration Lab open modular architecture processes, standards and design ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funding increased due to continued TMRR efforts and technical data package preparation, and award of EMD contract.			
Accomplishments/Planned Programs Subtotals	7.920	6.158	8.833

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Contract will be competitively awarded.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force			Date: February 2020
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 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C-ABSAA Technology Development	C/Various	Various : Various	-	6.297	Feb 2019	4.678	Oct 2019	7.046	Nov 2020	-		7.046	Continuing	Continuing	-
		Subtotal	-	6.297		4.678		7.046		-		7.046	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Administration (PMA)	Various	Various : Various	-	1.623	Feb 2019	1.480	Oct 2019	1.787	Oct 2020	-		1.787	Continuing	Continuing	-
		Subtotal	-	1.623		1.480		1.787		-		1.787	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	7.920		6.158		8.833		-		8.833	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
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)*

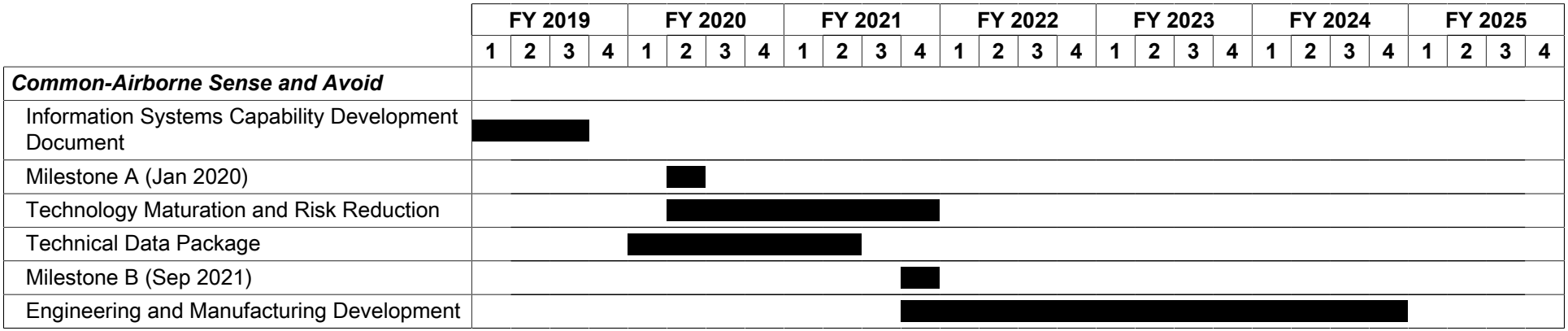

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0604257F / *Advanced Technology and Sensors*	**Project (Number/Name)** 645148 / *Common Airborne Sense and Avoid (C-ABSAA)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Common-Airborne Sense and Avoid				
Information Systems Capability Development Document	1	2019	3	2019
Milestone A (Jan 2020)	2	2020	2	2020
Technology Maturation and Risk Reduction	2	2020	4	2021
Technical Data Package	1	2020	2	2021
Milestone B (Sep 2021)	4	2021	4	2021
Engineering and Manufacturing Development	4	2021	4	2024