Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force											Date: February 2018	
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 0603742F / *Combat Identification Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	23.551	24.397	18.194	0.000	18.194	27.085	26.444	24.834	25.287	Continuing	Continuing
642597: *Noncooperative Identification Subsystems*	-	21.186	22.442	18.194	0.000	18.194	21.907	22.287	22.749	23.164	Continuing	Continuing
642599: *Cooperative Identification Techniques*	-	2.365	1.955	0.000	0.000	0.000	5.178	4.157	2.085	2.123	Continuing	Continuing

A. Mission Description and Budget Item Justification

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges; (2) Hydra Vision, a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets potentially including fusion with intelligence sources, identification of non-traditional targets, fusion to counter camouflage, concealment and deception (CCD), and multi-phenomenology features for sustainable databases; (3) Compact AiTR (Aided Target Recognition) and Sustainable Environments (CASE), a CID approach that focuses on tailoring algorithms to utilize smaller, more efficient databases that are faster and less expensive to generate and maintain; (4) Passive RF ID Environment (PRIDE), a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (5) Radio ID (RID) will develop methods for utilizing advances in digital radio technologies such as software defined radios, to provide low cost ID solutions to enhance Combat ID, improve aircrew situational awareness and assist in fratricide prevention with military and civil air platforms, potentially fusing non-cooperative techniques and cooperative technologies; and (6) Enhanced Combat ID (ECID), a program under Studies to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

Cooperative Combat Identification (CID) employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. Development funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet.

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 Combat Identification technologies. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

The FY19 funding request was reduced by $5.461M to account for the availability of prior year execution balances.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force	Date: February 2018
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 0603742F / *Combat Identification Technology*

In FY19 project 642599 (Cooperative ID) was erroneously zeroed out. A correction will be made during the execution year to reflect the following: project 642599 (Cooperative ID) - $1.53M; project 642597 (Non-Cooperative ID) - $16.664M.

BA4 - 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.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	24.418	24.397	23.655	0.000	23.655
Current President's Budget	23.551	24.397	18.194	0.000	18.194
Total Adjustments	-0.867	0.000	-5.461	0.000	-5.461
• 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	-0.867	0.000			
• Other Adjustments	0.000	0.000	-5.461	0.000	-5.461

Change Summary Explanation

The FY 2019 funding request was reduced by $5.461M to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642597 / *Noncooperative Identification Subsystems*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
642597: *Noncooperative Identification Subsystems*	-	21.186	22.442	18.194	0.000	18.194	21.907	22.287	22.749	23.164	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges; (2) Hydra Vision, a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets potentially including fusion with intelligence sources, identification of non-traditional targets, fusion to counter camouflage, concealment and deception (CCD), and multi-phenomenology features for sustainable databases; (3) Compact AiTR (Aided Target Recognition) and Sustainable Environments (CASE), a CID approach that focuses on tailoring algorithms to utilize smaller, more efficient databases that are faster and less expensive to generate and maintain; (4) Passive RF ID Environment (PRIDE), a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (5) Radio ID (RID) will develop methods for utilizing advances in digital radio technologies such as software defined radios, to provide low cost ID solutions to enhance Combat ID, improve aircrew situational awareness and assist in fratricide prevention with military and civil air platforms, potentially fusing non-cooperative techniques and cooperative technologies; and (6) Enhanced Combat ID (ECID), a program under Studies to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

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

In FY19 project 642599 (Cooperative ID) was erroneously zeroed out. A correction will be made during the execution year to reflect the following: project 642599 (Cooperative ID) - $1.53M; project 642597 (Non-Cooperative ID) - $16.664M.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Laser Vision/SIREN	1.412	0.000	0.000
Description: Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The Vibrometry Advanced Mode Processor (VAMP) program is research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition software.			
FY 2018 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
N/A ***FY 2019 Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No change, FY17 was the final year to fund this program			
Title: Laser Vision/VAMP ***Description:*** Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The VAMP program exploits research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition (AiTR) software. ***FY 2018 Plans:*** - Continue to develop ID algorithm with relevant data from SIREN sensor - Develop surrogate target measurement capabilities for ground testing and affordable sustainment - Integrate an AiTR software algorithm into the SIREN surrogate targeting pod - Lab demo AiTR with the SIREN sensor ***FY 2019 Plans:*** - Will conduct MASINT flights to collect in-range vibrometry sensor data and associated meta data - Will continue assessments of advanced algorithms for feature extraction and classifier functions - Will update Interface Control Documents to latest vibrometer sensor revision level - Will initiate vehicle database collection and associated software development - Will perform ground/flight Testing ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Initial software spiral development and ground flight testing will be completed in FY18, therefore, funds will be decreased for FY19.	0.700	2.455	1.800
Title: Laser Vision/3-D Ladar ***Description:*** Laser Vision, a family of electro-optical (EO) systems that significantly increase ID ranges. Provide the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID, including 3-D (3-dimensional) imaging laser radar (Ladar) and exploration of advanced concepts. The 3-D ladar technology provides a display of a	2.901	1.550	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
3-D EO image to the pilot for high confidence combat identification and is a potential for the next generation targeting pods for the USAF. ***FY 2018 Plans:*** - Deliver Flight Receiver Package with re-spun Readout Integrated Circuit (ROIC) and final Focal Plane Arrays (FPA) - Conclude Pod Integration contract with Field/Tower - Award Pod Integration Flight Test contract (DMEA Phase II) - Accomplish Pod-Integration ground test for pre-flight check out ***FY 2019 Plans:*** Complete in FY18. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Laboratory Class flights will be cancelled for FY18. All Flight Receiver Packages, Award Pod Integration Flight Test for FY17 and FY18 will be completed and no funding is required for FY19.			
Title: Hydra Vision/Air to Air ***Description:*** Hydra Vision (Multi-Sensor Enhanced ID) is a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets. There are two main thrusts occurring simultaneously, Air-to-Air and Air-to-Ground. ***FY 2018 Plans:*** - Investigate other phenomenology (such as laser radar and Infra-Red Search and Track (IRST)) - Evaluate and select available technology suitable for inclusion into Air Target ID (ATID) - Investigate potential for implementing AAHV techniques in ISR platforms ***FY 2019 Plans:*** - Down select from FY18 phenomenology - Study and refine the most promising solutions - Adapt target recognition algorithms - Generate models and update database to incorporate information from chosen phenomenologys - Prepare for demonstration flights of developed technology ***FY 2018 to FY 2019 Increase/Decrease Statement:***	4.410	5.100	4.300

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
To generate models and update database information will require additional funding, along with increased cost for flight demonstrations for FY18 & FY19.			
Title: Hydra Vision/Air to Ground ***Description:*** Hydra Vision (Multi-Sensor Enhanced ID) is a family of balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets. ***FY 2018 Plans:*** - Complete actions associated with AGHV Operational Demo with MQ-9 Reaper - Investigate potential transition of AGHV technology into their platform ***FY 2019 Plans:*** Complete in FY18. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Initial Capability Demonstration Completed	0.899	0.065	0.000
Title: Compact AiTR (Aided Target Recognition) and Sustainable Environment (CASE) ***Description:*** CASE is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative AiTR technology. Develop sustainable multiphenomenology AiTR based on low fidelity, compact, and inexpensive database technology. ***FY 2018 Plans:*** - Complete real time flight demonstration of a compact SAR AiTR algorithm - Investigate feasibility of addressing High Resolution Radar (HRR) AiTR sustainment issues. ***FY 2019 Plans:*** - Will continue flight demo analysis ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Will no longer cover the cost of lab demos transitioning to flight demos	3.685	3.615	2.700
Title: Passive RF ID Environment (PRIDE) ***Description:*** Develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities. ***FY 2018 Plans:***	4.684	5.720	3.558

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
- Develop a passive radar based ID capability and will assess integration for the strike fighter - Develop initial designs for integration of PRIDE capabilities into platform relevant hardware ***FY 2019 Plans:*** - Will conduct Proof-of-concept on target platform to facilitate timely transition ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funds increased in FY19 due to inflation.			
Title: Radio ID (RID) ***Description:*** RID will develop technologies to integrate radio based cooperative technologies with non-cooperative technologies into the cockpit. The benefits will be increased confidence target ID and situational awareness as well as reduced fratricides. RID will start in FY17. ***FY 2018 Plans:*** - Finalize RID Phase 1 development efforts - Plan and execute RID Critical Design Review and Technical Interchange Forums - Down-select vendors for RID Phase II development and demonstration activities ***FY 2019 Plans:*** - Conduct Risk Reduction, Initial Development, PDR, and Lab Demo ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Concept Definition, Risk Analysis and Analyst of Alternative will be completed in FY18, therefore, funds will be decreased for FY19.	1.000	2.000	1.725
Title: Studies ***Description:*** Conduct CID-related studies/demos. ***FY 2018 Plans:*** - Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts - Initiate ECID tool set integration across CID organizations for effective decision making - Continue ECID study projects to evaluate feasibility of new concepts for non-cooperative and cooperative CID efforts ***FY 2019 Plans:*** - Will develop architecture	1.495	1.937	4.111

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
- Will develop algorithm - Will design system ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase needed to study Combat Air Support (CAS) scenarios with high potential for fratricide			
Accomplishments/Planned Programs Subtotals	21.186	22.442	18.194

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Combat Identification develops technologies for exploitation by the USAF and other services.
Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).
Management develops a technology to a point it can be demonstrated in a relative combat environment.

E. Performance Metrics

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642597 / *Noncooperative Identification Subsystems*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision (Air-to-Air) - L	C/CPFF	Leidos : Reston, VA	-	0.750	Feb 2017	0.900	Oct 2017	0.900	Oct 2018	-		0.900	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - N	C/CPFF	Northrop Grumman : Linthicum Heights, MD	-	1.500	Oct 2016	1.600	Oct 2017	1.000	Oct 2018	-		1.000	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - R	C/CPFF	Raytheon Company : El Segundo, CA	-	1.900	Oct 2016	1.600	Oct 2017	1.000	Jan 2019	-		1.000	Continuing	Continuing	-
SIREN	C/CPFF	Northrop Grumman : Rowling Meadows, IL	-	1.412	Oct 2016	-		-		-		-	Continuing	Continuing	-
VAMP - EO X DWARVES	C/CPFF	Etegent : Cincinnati, OH	-	0.700	Dec 2016	2.455	Nov 2017	1.800	Nov 2018	-		1.800	Continuing	Continuing	-
3-D Ladar	C/CPFF	Northrop Grumman : Rolling Meadows, IL	-	2.901	Nov 2016	1.550	Dec 2017	-		-		-	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE-S	MIPR	Sandia : Albuquerque, NM	-	0.940	Dec 2016	1.300	Mar 2018	1.200	Mar 2019	-		1.200	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE-Key W	C/CPAF	Key-W : Hanover, MD	-	0.075	Jan 2017	0.100		-		-		-	Continuing	Continuing	-
Software on Chip for Classification, Exploitation and Reconnaissance (SOCCER)	C/CPAF	AER : TBD	-	0.281	May 2018	0.800	Jan 2019	0.800	Jan 2020	-		0.800	Continuing	Continuing	-
Studies - ECID	MIPR	Booz Allen Hamilton : McLean, VA	-	0.898	Dec 2016	0.422	Feb 2018	0.800	Dec 2018	-		0.800	Continuing	Continuing	-
Studies - Decision making for an Integrated CID Environment (DICE) - SBIR Phase III	C/CPFF	Frontier Technologies, Inc : Dayton, OH	-	0.600	Oct 2016	0.317	Apr 2018	-		-		-	Continuing	Continuing	-
Hydra Vision - Air to Ground - R	C/CPFF	Raytheon : ElSegundo, CA	-	0.000	Dec 2016	-		1.000	Jan 2019	-		1.000	Continuing	Continuing	-
Hydra Vision - Air to Ground - L	C/CPAF	Leidos : McLean, VA	-	0.000	Dec 2016	-		0.600	Jan 2019	-		0.600	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision- Ops Demo	C/CPFF	General Atomics : San Diego, CA	-	0.119	Dec 2016	0.065	Feb 2018	-		-		-	Continuing	Continuing	-
Hydra Vision Ops Demo	C/CPAF	Yuma Proving Ground : Yuma, AZ	-	0.249	Mar 2017	0.249	May 2018	-		-		-	Continuing	Continuing	-
Hydra Vision Ops Demo - M	C/CPAF	Matrix : Dayton, OH	-	0.150	Mar 2017	0.150	May 2018	-		-		-	Continuing	Continuing	-
Hydra Vision Ops Demo - I	C/CPAF	Infoscitex : Dayton, OH	-	0.200	Mar 2017	0.200	Jan 2018	-		-		-	Continuing	Continuing	-
Hydra Vision Ops Demo - B	C/CPAF	BAE : Dayton, OH	-	0.100	Mar 2017	0.100	May 2018	-		-		-	Continuing	Continuing	-
Hydra Vision - Compact AiTR and Sustainable Environment Analysis - L	C/CPFF	Leidos : Mclean, VA	-	1.872	Oct 2016	1.495	Nov 2017	1.000	Nov 2018	-		1.000	Continuing	Continuing	-
Hydra Vision - Compact AiTR and Sustainable Environment Analysis - R	C/CPFF	Raytheon : El Segundo, CA	-	1.548	Dec 2016	1.000	Nov 2017	1.000	Nov 2018	-		1.000	Continuing	Continuing	-
OPERA	C/CPAF	Not specified. : TBD	-	0.300	Aug 2017	0.300	Oct 2017	-		-		-	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) - L	C/CPFF	Leidos : Mclean, VA	-	1.089	Dec 2016	1.000	Jan 2018	1.050	Jan 2019	-		1.050	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) -STR	C/CPFF	Systems and Technology Research : Woburn, MA	-	0.489	Dec 2016	1.000	Jan 2018	1.050	Jan 2019	-		1.050	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) - IAI	C/CPFF	Integrated Applications Inc : Chantilly, VA	-	0.485	Dec 2016	1.000	Jan 2018	1.050	Jan 2019	-		1.050	Continuing	Continuing	-
Radio Identification (RID)	C/CPFF	TBD : TBD	-	0.370	Jan 2018	2.200	Apr 2018	1.725	Feb 2019	-		1.725	Continuing	Continuing	-
Alternate Band CID (ABC)	C/CPAF	Matrix : Dayton, OH	-	0.480	May 2017	0.800	Jul 2017	-		-		-	Continuing	Continuing	-
Air Target IR Discrimination (ATID)	C/CPFF	TBD : TBD	-	-		-		0.969	Aug 2019	-		0.969	Continuing	Continuing	-
		Subtotal	-	19.408		20.603		16.944		-		16.944	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support	MIPR	MITRE : Rome, NY	-	0.084	Mar 2017	0.334	Mar 2018	0.350	Mar 2019	-		0.350	Continuing	Continuing	-
		Subtotal	-	0.084		0.334		0.350		-		0.350	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PRIDE Data Collection	MIPR	46th Test Wing : Eglin AFB, FL	-	0.305	Feb 2017	0.305	Feb 2019	0.200	Feb 2020	-		0.200	Continuing	Continuing	-
PRIDE Data Collection - R	MIPR	Redstone Arsenal : Huntsville, AL	-	0.584	Oct 2017	0.300	Nov 2018	-		-		-	Continuing	Continuing	-
Air-to-Air Hydra Vision Flight Test	MIPR	Redstone Arsenal : Huntsville, AL	-	0.260	Sep 2017	0.200	Oct 2017	-		-		-	Continuing	Continuing	-
		Subtotal	-	1.149		0.805		0.200		-		0.200	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFRL PMA	MIPR	GSA : Denver, CO	-	0.545	Nov 2016	0.700	Mar 2018	0.700	Mar 2019	-		0.700	Continuing	Continuing	-
		Subtotal	-	0.545		0.700		0.700		-		0.700	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	21.186		22.442		18.194		-		18.194	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

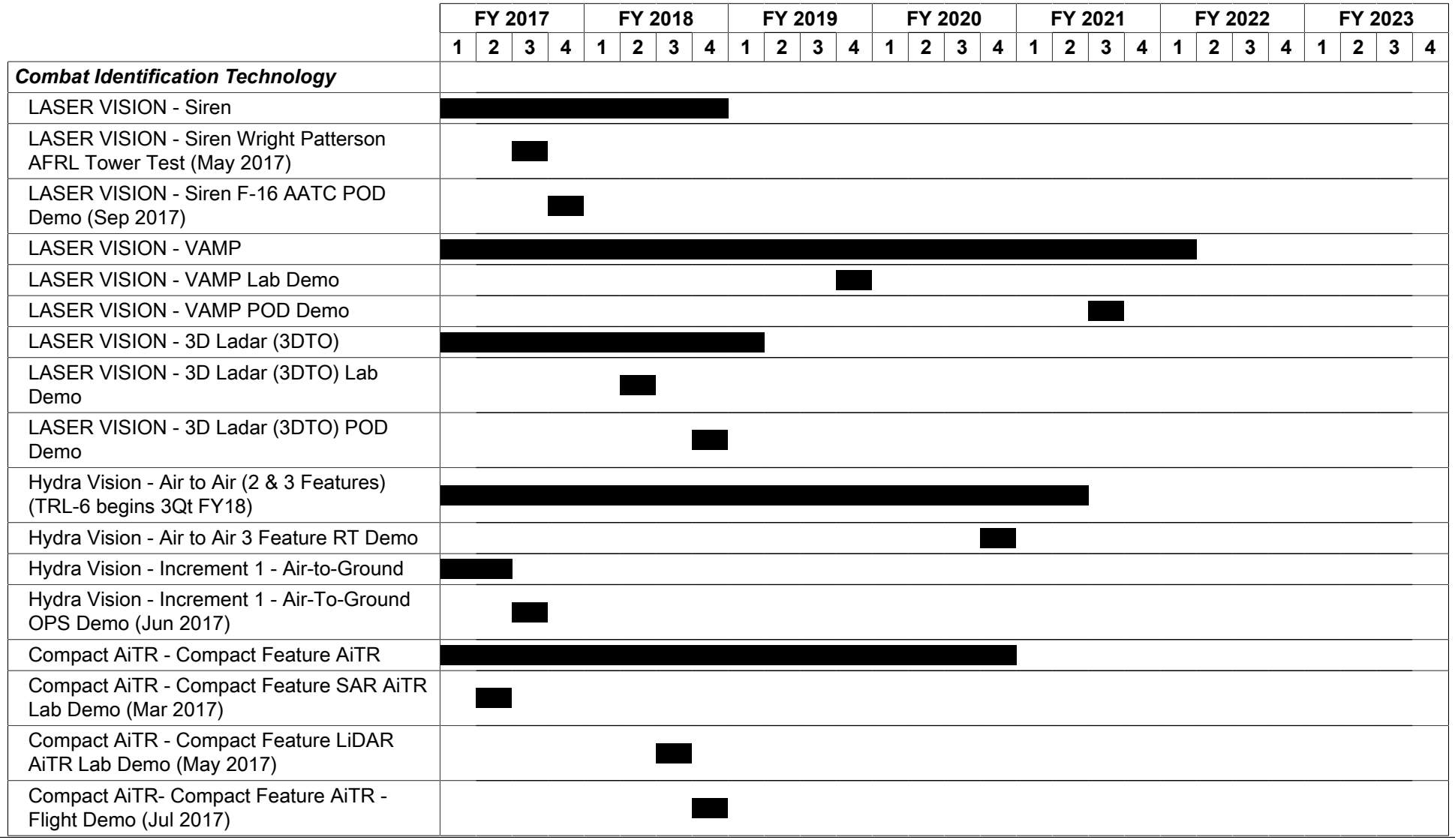

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

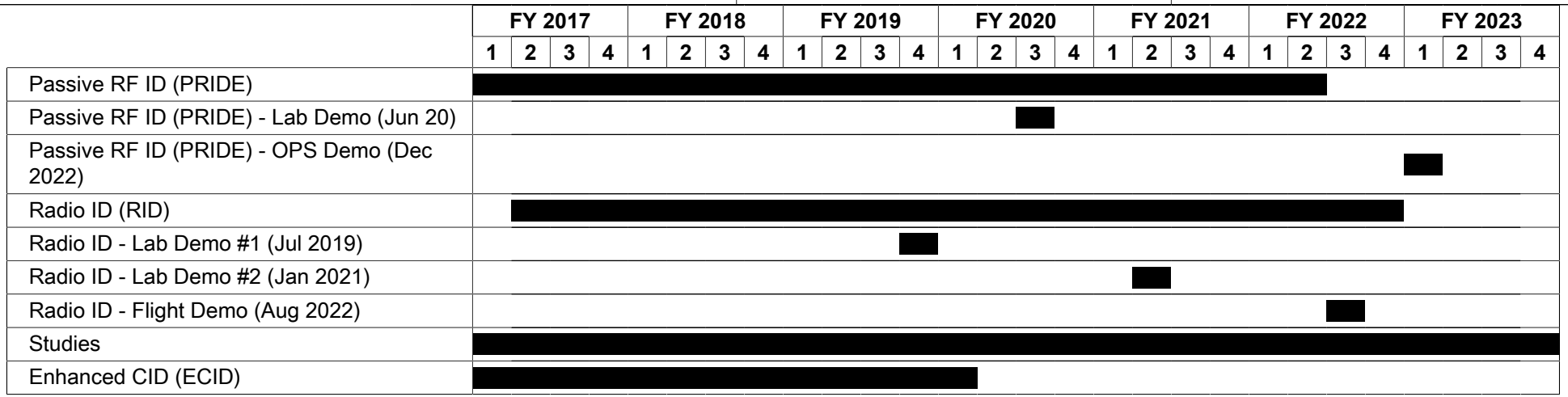

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Combat Identification Technology				
LASER VISION - Siren	1	2017	4	2018
LASER VISION - Siren Wright Patterson AFRL Tower Test (May 2017)	3	2017	3	2017
LASER VISION - Siren F-16 AATC POD Demo (Sep 2017)	4	2017	4	2017
LASER VISION - VAMP	1	2017	1	2022
LASER VISION - VAMP Lab Demo	4	2019	4	2019
LASER VISION - VAMP POD Demo	3	2021	3	2021
LASER VISION - 3D Ladar (3DTO)	1	2017	1	2019
LASER VISION - 3D Ladar (3DTO) Lab Demo	2	2018	2	2018
LASER VISION - 3D Ladar (3DTO) POD Demo	4	2018	4	2018
Hydra Vision - Air to Air (2 & 3 Features) (TRL-6 begins 3Qt FY18)	1	2017	2	2021
Hydra Vision - Air to Air 3 Feature RT Demo	4	2020	4	2020
Hydra Vision - Increment 1 - Air-to-Ground	1	2017	2	2017
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo (Jun 2017)	3	2017	3	2017
Compact AiTR - Compact Feature AiTR	1	2017	4	2020
Compact AiTR - Compact Feature SAR AiTR Lab Demo (Mar 2017)	2	2017	2	2017
Compact AiTR - Compact Feature LiDAR AiTR Lab Demo (May 2017)	3	2018	3	2018
Compact AiTR- Compact Feature AiTR - Flight Demo (Jul 2017)	4	2018	4	2018
Passive RF ID (PRIDE)	1	2017	2	2022
Passive RF ID (PRIDE) - Lab Demo (Jun 20)	3	2020	3	2020
Passive RF ID (PRIDE) - OPS Demo (Dec 2022)	1	2023	1	2023
Radio ID (RID)	2	2017	4	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Noncooperative Identification Subsystems*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Radio ID - Lab Demo #1 (Jul 2019)	4	2019	4	2019
Radio ID - Lab Demo #2 (Jan 2021)	2	2021	2	2021
Radio ID - Flight Demo (Aug 2022)	3	2022	3	2022
Studies	1	2017	4	2023
Enhanced CID (ECID)	1	2017	1	2020

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642599 / *Cooperative Identification Techniques*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
642599: *Cooperative Identification Techniques*	-	2.365	1.955	0.000	0.000	0.000	5.178	4.157	2.085	2.123	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cooperative Combat Identification (CID) employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. Development funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet.

Fund AIMS Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of the new Mark XIIA (Mode 5) IFF system, and development/integration of civil Mode S capabilities into Mark XIIA IFF equipment. The AIMS PO ensures IFF equipment equipment/platform functionality IAW established standards and ensures total system interoperability to meet DoD/ Service mission areas (e.g. Offensive Counter Air, Defensive Counter Air, and Integrated Air and Missile Defense). DoD International AIMS PO will continue to test and certify IFF equipment for the Services for as long as IFF is used for CID.

In FY19 project 642599 (Cooperative ID) was erroneously zeroed out. A correction will be made during the execution year to reflect the following: project 642599 (Cooperative ID) - $1.53M; project 642597 (Non-Cooperative ID) - $16.664M.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office	2.365	1.955	0.000
Description: Develop and maintain technical standards on development, integration, testing, and certification of DoD IFF (Identification Friend or Foe) equipment. Coordinated and executed equipment/subsystem-level certifications and platform certifications of IFF capabilities (33 equipment and 84 platform certifications performed in FY17). Support Foreign Military Sales of U.S. IFF equipment. Support NATO IFF Capabilities Team (Mode 5 IFF is a NATO waveform). Support International Civil Aviation Organization (ICAO) Technical Support Group (develops standards for world-wide civil Air Traffic Control). Create and maintain civil Mode S address assignments and military Mode 5 Platform ID Number (PIN) assignments for every DoD platform using these waveforms in their interrogator and/or transponder equipment.			
FY 2018 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642599 / *Cooperative Identification Techniques*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
- Continue to fund AIMS for interoperability IFF testing (civil and military), FAA liaison, to support of Mode 4 / Mode 5 equipment, updating and developing IFF standards. N/A ***FY 2019 Plans:*** - Will continue to fund AIMS for interoperability IFF testing (civil and military), FAA liaison, to support of Mode 4 / Mode 5 equipment, updating and developing IFF standards. N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Project funding erroneously zeroed out.			
Accomplishments/Planned Programs Subtotals	2.365	1.955	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE 06 N/A: *None*	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Remarks

D. Acquisition Strategy

Combat Identification develops technologies for exploitation by the USAF and the other services. Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relative combat environment.

E. Performance Metrics

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force			Date: February 2018
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642599 / *Cooperative Identification Techniques*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering / Program Management (AIMSPO)	C/Various	WRALC/ENT : Robins AFB, GA	-	2.165	May 2017	1.805	Feb 2018	0.000		-		0.000	Continuing	Continuing	-
		Subtotal	-	2.165		1.805		0.000		-		0.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support	Various	Various : Various	-	0.200	Oct 2016	0.150	Oct 2017	-		-		-	Continuing	Continuing	-
		Subtotal	-	0.200		0.150		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.365		1.955		0.000		-		0.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642599 / *Cooperative Identification Techniques*

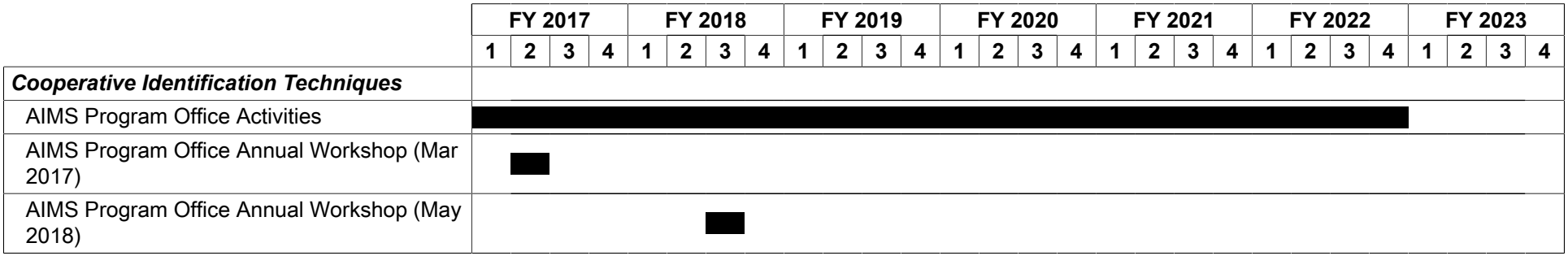

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642599 / *Cooperative Identification Techniques*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Cooperative Identification Techniques				
AIMS Program Office Activities	1	2017	4	2022
AIMS Program Office Annual Workshop (Mar 2017)	2	2017	2	2017
AIMS Program Office Annual Workshop (May 2018)	3	2018	3	2018