Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force											Date: February 2016	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	-	10.606	21.790	24.418	0.000	24.418	24.327	23.645	24.084	24.510	Continuing	Continuing
642597: *Non-cooperative Identification Subsystems*	-	8.730	19.893	22.506	0.000	22.506	22.378	21.660	22.062	22.452	Continuing	Continuing
642599: *Cooperative Identification Techniques*	-	1.876	1.897	1.912	0.000	1.912	1.949	1.985	2.022	2.058	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Combat Identification (CID) Technology program element analyzes, develops, demonstrates and evaluates promising target identification technologies to facilitate platform transition decisions prior to Engineering and Manufacturing Development (EMD). The Joint Capability Document (JCD) for CID BFT (Blue Force Tracking), operational documents, lessons learned, and NATO requirements state the need for positive CID. High confidence CID increases combat effectiveness, prevents fratricide, and reduces collateral damage. It also enables combatant commanders to effectively command and control their forces in all weather, day or night. This program element focuses on the cooperative and non-cooperative technologies that have the capability to positively identify surface and air targets in both air-to-surface and air-to-air engagements.

In order to rapidly make available promising CID technologies for platform EMD decisions, the program element funds design studies, engineering analysis, and other efforts associated with demonstration of prototype CID related technologies and subsystems on platforms. It also supports the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

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) 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; (3) A new program called Radio ID (RID) will develop methods for utilizing advances in radio technologies such as software defined radios, to provide low cost ID solutions for situational awareness and fratricide prevention, potentially fusing non-cooperative techniques and cooperative technologies; (4) 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; (5) Compact ATR (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; and (6) Enhanced Combat ID (ECID), a program to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

Cooperative 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 ID capabilities. Development funded by this

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*

program element ensures availability of Automatic Dependent Surveillance - Broadcast (ADS-B) as well as Mode 5 IFF (Identification Friend or Foe) 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.

Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XIIA System (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 Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. AIMS PO will continue to test and certify IFF equipment for the services now as long as IFF is used for combat identification.

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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.980	21.790	24.661	0.000	24.661
Current President's Budget	10.606	21.790	24.418	0.000	24.418
Total Adjustments	-0.374	0.000	-0.243	0.000	-0.243
• 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	-0.374	0.000			
• Other Adjustments	0.000	0.000	-0.243	0.000	-0.243

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642597 / *Non-cooperative Identification Subsystems*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
642597: *Non-cooperative Identification Subsystems*	-	8.730	19.893	22.506	0.000	22.506	22.378	21.660	22.062	22.452	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 EO/IR imaging system that significantly increases ID ranges;(2) 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; (3) A new program called RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention potentially fusing non- cooperative techniques and cooperative technologies. (4) 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; (5) 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; and (6) ECID, a program 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Laser Vision/SIREN	2.664	3.721	1.811	0.000	1.811
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 2015 Accomplishments: - Conducted subsystem verification experiments. - Conducted laboratory calibration and system tests. - Targeting pod system level tower testing at NG evaluated range requirements					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Test utilized canonical and military targets. - Initiated flight test planning and add work. - Initiated SEEK EAGLE certification. - Continued AiTR development (VAMP). ***FY 2016 Plans:*** - Targeting pod testing will be conducted at the Northrup Grumman facility in 3rd quarter of 2016 - Targeting pod system tower testing will be conducted at Wright Patterson AFB in 4th quarter 2016. - SIREN sensor flight test will demonstrate the vibrometry sensing technology in a surrogate targeting Pod in 4th quarter 2016. - Laser vibrometry provides a valuable target recognition capability for determining ground targets engine type, with potential to counter enemy Camouflage, Concealment and Deception (CC&D) techniques as well as a valuable battle damage assessment tool. - SIREN provides the warfighter with a critical complement to image based ID tools and has the potential for air target ID as well as ground target ID. ***FY 2017 Base Plans:*** - A demonstration will be accomplished on a modified LITENING Pod flying on an test F-16 ***FY 2017 OCO Plans:*** N/A					
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 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** - Kickoff of new VAMP algorithm development contract - Initiate ID algorithm development with relevant data from SIREN sensor	0.000	0.611	1.211	0.000	1.211

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Explore surrogate target measurement capabilities for ground testing and affordable sustainment ***FY 2017 Base Plans:*** - ID algorithm development will continue with relevant data from SIREN sensor - Surrogate target measurement capabilities will be developed for ground testing and affordable sustainment - An AiTR will be integrated into the SIREN surrogate targeting pod - An AiTR lab demo will be accomplished with the SIREN sensor ***FY 2017 OCO Plans:*** N/A					
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 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 2015 Accomplishments:*** - The 3D video human perception experiment tool was completed. Trials started late FY15. - Discoveries were used to optimize the display of 3D information on 2D cockpit displays. - A laboratory-class flight experiment (Unpackaged Demonstration Flights) contract add-work was awarded 2QFY15. First flights are expected in 2QFY16. - Collaboration with the CID PE CASE Program was begun to investigate an AiTR capability. - The combination of advanced 3D sensing cockpit display modes with the CASE AiTR was expected to greatly enhance CID. - The 3DTO focal plane array fabrication was completed and performance evaluation started. - Sep 2015 Ground Test at AFRL with Phase II DRS lab dewar receiver enabled enhancement of AFRL signal correction and display mode algorithms. ***FY 2016 Plans:*** - The CIDS-3D performance modeling tool is expected to be ready to predict 3DTO flight performance. - The first Unpackaged Demonstration Flights will occur in 2QFY16 and yield the first 3DTO flight data. - This flight data will be analyzed, any necessary changes will be made to the system in preparation for a second flight demonstration.	0.800	1.711	2.311	0.000	2.311

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- The results from the Unpackaged Demonstration Flights will yield evidence to support predictions of mission-level (i.e. altitude/range/targets) 3DTO performance in the targeting pod. - Lessons learned from the Unpackaged Demonstration Flights will be used to further improve the signal correction and display mode algorithms for the podded flight demonstrations. - Award of the pod integration contract is expected in early FY16. The effort will add 3D sensing to a LITENING pod and retain the existing capabilities in the latest AF LITENING targeting pod. - The 3DTO flight receiver package will be completed. ***FY 2017 Base Plans:*** - The integration of the 3DTO receiver into the targeting pod will be completed late in FY17. - Receiver integration will be followed by ground performance and flight checkout. - It is expected the 3DTO demonstration pod will be ready for flight evaluation in early FY18. - Although the primary objective is to demonstrate enhanced CID in the air-to-ground precision strike, demonstration results will be used to look at the application of 3DTO in air-to-air engagements. ***FY 2017 OCO Plans:*** N/A					
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. PRIDE is a new start in FY15. ***FY 2015 Accomplishments:*** - New start established. - Explored concepts for RF-based CID to include bistatic / multi-static, passive incorporation of electronic warfare techniques and multi-mode applications. ***FY 2016 Plans:*** - Explore concepts for RF-based CID to include bi-static/multi-static, passive incorporation of electronic warfare techniques and multi-mode applications. ***FY 2017 Base Plans:*** - PRIDE will develop the technology to provide a passive radar based ID capability to the warfighter.	0.500	1.330	3.611	0.000	3.611

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- This technology development and demonstration will be critical for strike fighter fleet to operate in the Anti-Access/ Area Denial environment. ***FY 2017 OCO Plans:*** N/A					
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 be a new start in FY16. ***FY 2015 Accomplishments:*** N/A ***FY 2016 Plans:*** - New start efforts - RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention. ***FY 2017 Base Plans:*** - RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention potentially fusing non-cooperative techniques and cooperative technologies. - Future funding years will provide a laboratory and real time demonstrations. ***FY 2017 OCO Plans:*** N/A	0.000	0.550	2.041	0.000	2.041
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 2015 Accomplishments:*** - Continued to refine fusion algorithms to maximize performance.	1.000	4.917	5.567	0.000	5.567

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Demonstrated 2 feature fusion with ground based radar and investigated additional feature fusion for higher confidence ID performance. ***FY 2016 Plans:*** - Air-to-Air: Will perform a real time flight demonstration of a two feature air target Identification. - This demonstration will implement next generation air target identification for 5th generation fighter radar and upgraded 4th generation fighter radars. - These demos will be done on fighter aircraft radars on one of the prime radar developers (Raytheon or Northrup Grumman) surrogate platforms (Cost: $3.1M). ***FY 2017 Base Plans:*** - Development of third feature will be continued for fusion with previous two to enhance target identification confidence and accuracy. ***FY 2017 OCO Plans:*** N/A					
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 2015 Accomplishments:*** - A real-time engineering demonstration of full system capability was conducted over a variety of scenarios involving static and moving targets. - Completed verification of new High Range Resolution radar mode performance and its implementation. ***FY 2016 Plans:*** - Air to Ground: Will participate in a suitable operational demonstration such as Bold Quest to demonstrate AiTR for a MQ-9 (Reaper). - This critical capability will provide an operator the ability to quickly identify multiple targets of interests (automatically) or to focus an analyst to the most important targets. - This will benefit both ACC and AFSOC MQ-9's assuring more effective close in ID capabilities (Cost: $2.5M). ***FY 2017 Base Plans:*** - Performance results and overall system utility will be evaluated from FY16 demonstration.	1.715	3.211	0.667	0.000	0.667

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- System configuration and documentation will be finalized to deliver to transition partners. ***FY 2017 OCO Plans:*** N/A					
Title: Compact ATR (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 2015 Accomplishments:*** - Real time Synthetic Aperture Radar (SAR) AiTR source code delivered - Six target set baseline SAR AiTR comparison studies completed - Saliency assessment versus AiTR performance experiment/study performed - SAR metric specifications/requirements were defined - LiDAR AiTR source code delivered - There was close collaboration with 3DTO LiDAR team for eventual integration into LITENING Pod or surrogate - Formal performance metric tradeoff process definition developed ***FY 2016 Plans:*** - Laboratory 12-target SAR and LiDAR AiTR Demonstrations utilizing cost and performance metrics - Finalize master plan for follow-on flight testing demonstrations of CASE technologies - Initiate acquisition process for follow-on flight testing effort ***FY 2017 Base Plans:*** - A SAR and LiDAR AiTR 24-target set Lab Demonstration will be completed. (~Jan 2017) - A follow on flight testing effort contract will be awarded ***FY 2017 OCO Plans:*** N/A	1.925	3.148	4.511	0.000	4.511
Title: Enhanced Combat Identification (ECID) ***Description:*** Develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.	0.000	0.344	0.500	0.000	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
FY 2015 Accomplishments: N/A ***FY 2016 Plans:*** - ECIDs modeling and simulation tools will be provided to larger system of system simulations providing both mission and campaign level campaign level combat ID simulations. - This effort will provide valuable tools to support CID investments. ***FY 2017 Base Plans:*** - Tool sets will be integrated across CID organizations for effective decision making. ***FY 2017 OCO Plans:*** N/A					
Title: Studies ***Description:*** Conduct CID-related studies/demos. ***FY 2015 Accomplishments:*** - Continued study projects leading to new concepts for non-cooperative and cooperative CID efforts. ***FY 2016 Plans:*** - Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts. ***FY 2017 Base Plans:*** - Study projects will be continued leading to new concepts for non-cooperative and cooperative CID efforts. ***FY 2017 OCO Plans:*** N/A	0.126	0.350	0.276	0.000	0.276
Accomplishments/Planned Programs Subtotals	8.730	19.893	22.506	0.000	22.506

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.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

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 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642597 / *Non-cooperative Identification Subsystems*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision (Air-to-Air) - L	C/CPFF	Leidos : Reston, VA	-	0.525	Mar 2015	0.750	Feb 2016	0.750	Feb 2017	0.000		0.750	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - N	C/CPFF	Northrop Grumman : Linthicum Heights, MD	-	0.375	Apr 2015	2.000	Feb 2016	2.300	Feb 2017	0.000		2.300	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - R	C/CPFF	Raytheon Company : El Segundo, CA	-	0.125	Mar 2015	2.000	Feb 2016	2.350	Feb 2017	0.000		2.350	Continuing	Continuing	-
SIREN	C/CPFF	Northrop Grumman : Rowling Meadows, IL	-	2.175	Feb 2015	3.610	Feb 2016	1.700	Feb 2017	0.000		1.700	0.000	7.485	-
VAMP - EO X DWARVES/ New Contract	C/CPFF	Etegent/TBD : Cincinnati/TBD	-	0.100	Nov 2014	0.500	Feb 2016	1.100	Jan 2017	0.000		1.100	Continuing	Continuing	-
3-D Ladar	C/CPFF	Northrop Grumman : Rolling Meadows, IL	-	0.700	Nov 2014	1.600	Dec 2015	2.200	Mar 2017	0.000		2.200	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE	MIPR	Sandia : Albuquerque, NM	-	0.200	May 2015	0.250	May 2016	0.250	May 2017	0.000		0.250	Continuing	Continuing	-
Studies - ECID	MIPR	Booz Allen Hamilton : McLean, VA	-	0.050	Jun 2015	0.344	May 2016	0.776	Dec 2016	0.000		0.776	Continuing	Continuing	-
Hydra Vision - Air to Ground	C/CPFF	BAE Systems : Burlington, MA	-	0.572	Mar 2015	0.000		0.000		0.000		0.000	0.000	0.572	-
Hydra Vision- Ops Demo	C/CPFF	General Atomics : San Diego, CA	-	0.550	Dec 2014	2.400	Feb 2016	0.000		0.000		0.000	0.000	2.950	-
Hydra Vision - SCEPTIC	C/CPFF	Intelligent Software Solutions : Colorado Springs, CA	-	0.040	Aug 2015	0.000		0.000		0.000		0.000	0.000	0.040	-
Hydra Vision - Compact ATR and Sustainable Environment Agile CEM	C/CPFF	Signal Innovations Group : Durham, NC	-	0.150	May 2015	0.300	Jan 2016	0.250	Mar 2017	0.000		0.250	Continuing	Continuing	-
Hydra Vision - Compact ATR and Sustainable Environment Reliable ATR Features	C/CPFF	Matrix Research & Engineering : Dayton, OH	-	0.327	Nov 2014	0.344	Feb 2016	0.250	Mar 2017	0.000		0.250	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision - Compact ATR and Sustainable Environment Analysis - L	C/CPFF	Leidos : Mclean, VA	-	0.910	Nov 2014	1.338	Feb 2016	1.900	Dec 2016	0.000		1.900	Continuing	Continuing	-
Hydra Vision - Compact ATR and Sustainable Environment Analysis - R	C/CPFF	Raytheon : El Segundo, CA	-	0.760	Nov 2014	1.338	Dec 2015	2.250	Dec 2016	0.000		2.250	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE)	C/TBD	TBD : TBD	-	0.050	Mar 2016	1.219	Mar 2016	3.500	Dec 2016	0.000		3.500	Continuing	Continuing	-
Radio Identification (RID)	C/TBD	TBD : TBD	-	0.050	Jun 2016	0.550	Jun 2016	1.930	Jan 2017	0.000		1.930	Continuing	Continuing	-
		Subtotal	-	7.659		18.543		21.506		0.000		21.506	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering Support	MIPR	MITRE : Rome, NY	-	0.025	Dec 2014	0.000		0.000		0.000		0.000	0.000	0.025	-
Studies & Analysis	MIPR	DTIC : Ft Belvoir, VA	-	0.046	Apr 2015	0.350	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
		Subtotal	-	0.071		0.350		0.000		0.000		0.000	-	-	-

Test and Evaluation ($ in Millions)

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AFRL PMA	MIPR	GSA : Denver, CO	-	1.000	Jul 2015	1.000	Mar 2016	1.000	Mar 2017	0.000		1.000	Continuing	Continuing	-
		Subtotal	-	1.000		1.000		1.000		0.000		1.000	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	8.730		19.893		22.506		0.000		22.506	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

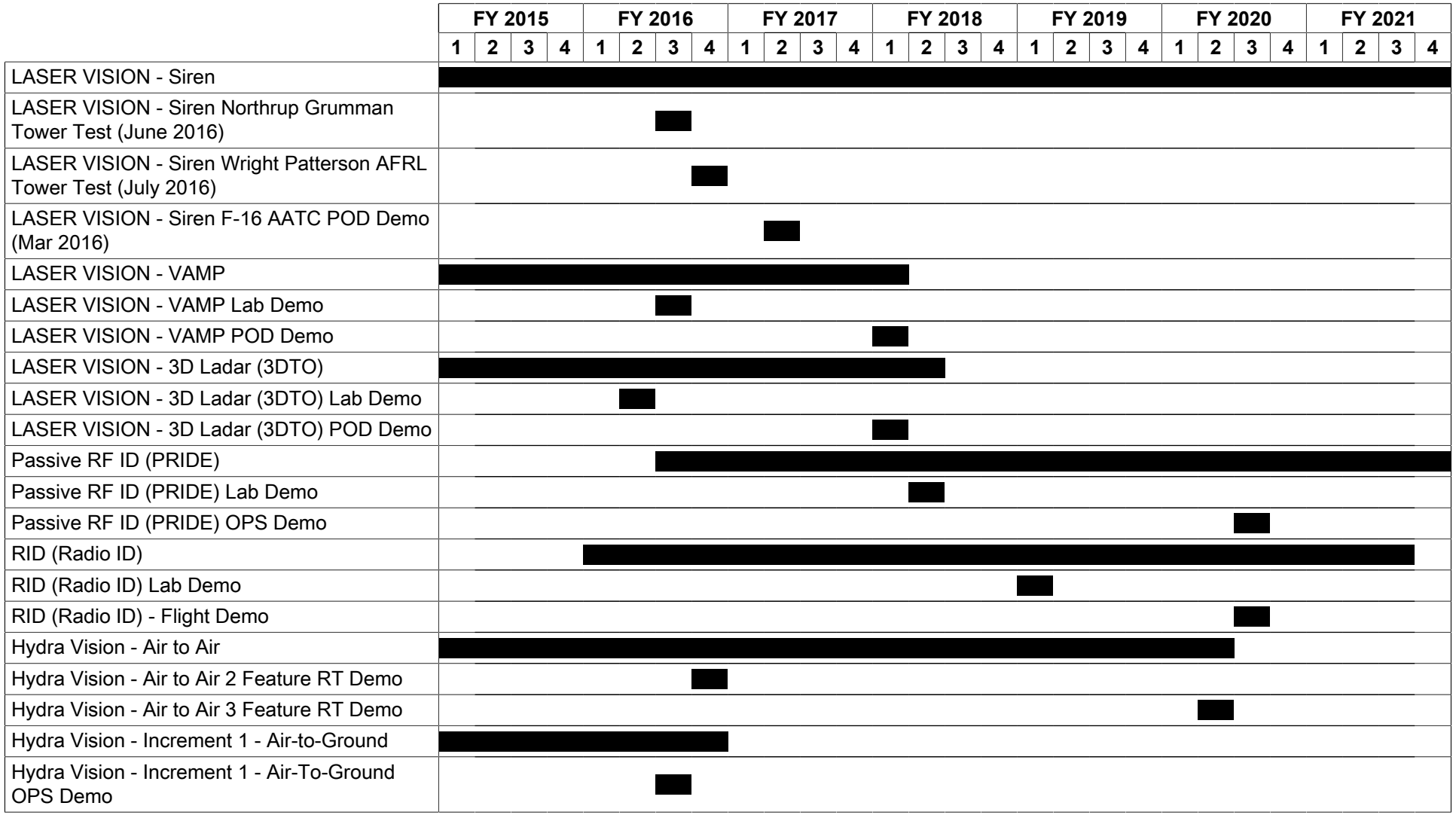

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

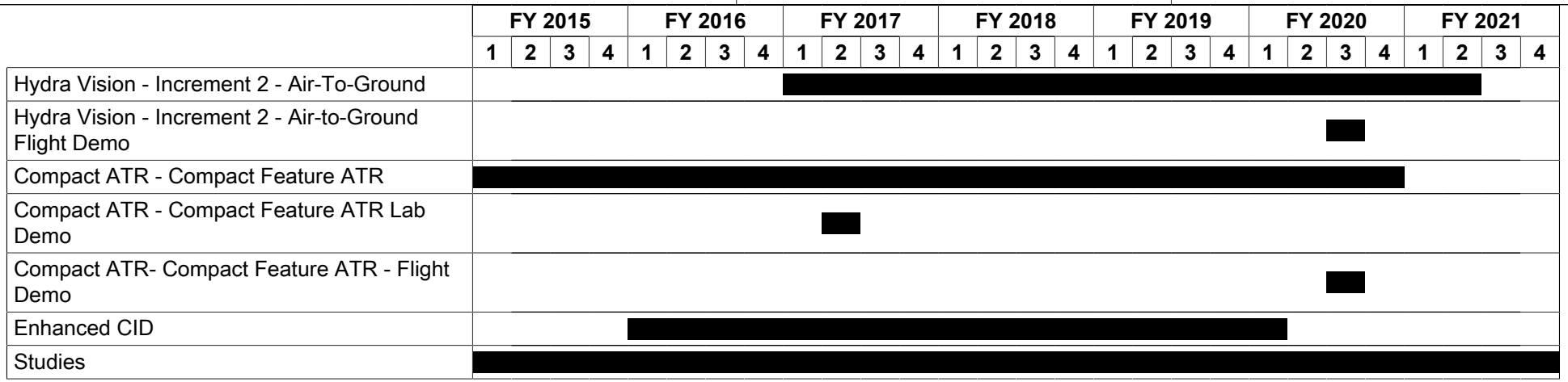

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
LASER VISION - Siren	1	2015	4	2021
LASER VISION - Siren Northrup Grumman Tower Test (June 2016)	3	2016	3	2016
LASER VISION - Siren Wright Patterson AFRL Tower Test (July 2016)	4	2016	4	2016
LASER VISION - Siren F-16 AATC POD Demo (Mar 2016)	2	2017	2	2017
LASER VISION - VAMP	1	2015	1	2018
LASER VISION - VAMP Lab Demo	3	2016	3	2016
LASER VISION - VAMP POD Demo	1	2018	1	2018
LASER VISION - 3D Ladar (3DTO)	1	2015	2	2018
LASER VISION - 3D Ladar (3DTO) Lab Demo	2	2016	2	2016
LASER VISION - 3D Ladar (3DTO) POD Demo	1	2018	1	2018
Passive RF ID (PRIDE)	3	2016	4	2021
Passive RF ID (PRIDE) Lab Demo	2	2018	2	2018
Passive RF ID (PRIDE) OPS Demo	3	2020	3	2020
RID (Radio ID)	1	2016	3	2021
RID (Radio ID) Lab Demo	1	2019	1	2019
RID (Radio ID) - Flight Demo	3	2020	3	2020
Hydra Vision - Air to Air	1	2015	2	2020
Hydra Vision - Air to Air 2 Feature RT Demo	4	2016	4	2016
Hydra Vision - Air to Air 3 Feature RT Demo	2	2020	2	2020
Hydra Vision - Increment 1 - Air-to-Ground	1	2015	4	2016
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo	3	2016	3	2016
Hydra Vision - Increment 2 - Air-To-Ground	1	2017	2	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642597 / *Non-cooperative Identification Subsystems*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Hydra Vision - Increment 2 - Air-to-Ground Flight Demo	3	2020	3	2020
Compact ATR - Compact Feature ATR	1	2015	4	2020
Compact ATR - Compact Feature ATR Lab Demo	2	2017	2	2017
Compact ATR- Compact Feature ATR - Flight Demo	3	2020	3	2020
Enhanced CID	1	2016	1	2020
Studies	1	2015	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
642599: *Cooperative Identification Techniques*	-	1.876	1.897	1.912	0.000	1.912	1.949	1.985	2.022	2.058	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 Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. AIMS PO will continue to test and certify IFF equipment for the services now as long as IFF is used for combat identification.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office	1.876	1.897	1.912	0.000	1.912
Description: 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 Mark XIIA (Mode 5) and transition to Mark XIIA Mode S (ADS-B) systems.					
FY 2015 Accomplishments: - Continued to fund AIMS for interoperability testing, Federal Aviation Administration (FAA) liason, and support of Mode 4 / Mode 5 equipment.					
FY 2016 Plans: - Continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.					
FY 2017 Base 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.					
FY 2017 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	1.876	1.897	1.912	0.000	1.912

C. Other Program Funding Summary ($ in Millions)

N/A

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 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / *Combat Identification Technology*	Project (Number/Name) 642599 / *Cooperative Identification Techniques*	

Product Development ($ in Millions)

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

Support ($ in Millions)

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

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering / Program Management (AIMSPO)	C/Various	WRALC/ENT : Robins AFB, GA	-	1.756	May 2015	1.777	May 2016	1.792	May 2017	0.000		1.792	Continuing	Continuing	-
		Subtotal	-	1.756		1.777		1.792		0.000		1.792	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Support	Various	Travel : TBD	-	0.120	Oct 2014	0.120	Oct 2015	0.120	Oct 2016	0.000		0.120	Continuing	Continuing	-
		Subtotal	-	0.120		0.120		0.120		0.000		0.120	-	-	-

	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.876		1.897		1.912		0.000		1.912	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642599 / *Cooperative Identification Techniques*

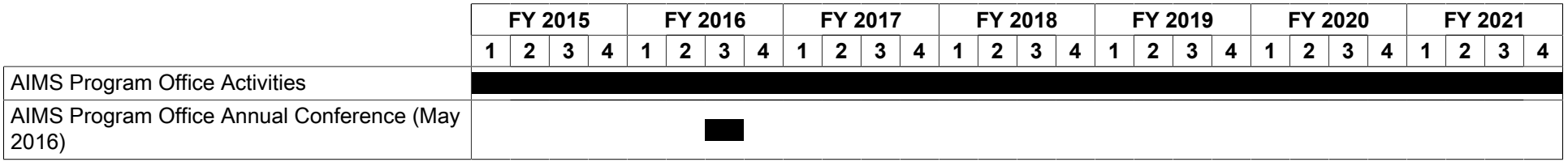

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603742F / *Combat Identification Technology*	**Project (Number/Name)** 642599 / *Cooperative Identification Techniques*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AIMS Program Office Activities	1	2015	4	2021
AIMS Program Office Annual Conference (May 2016)	3	2016	3	2016

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