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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force **DATE:** February 2012

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603742F: <i>Combat Identification Technology</i>							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	35.208	38.447	32.243	-	32.243	25.052	25.564	26.274	26.621	Continuing	Continuing
642597: <i>Noncooperative Identification Subsystems</i>	20.722	36.356	22.879	-	22.879	23.178	23.654	24.311	24.632	Continuing	Continuing
642599: <i>Cooperative Identification Techniques</i>	14.486	2.091	9.364	-	9.364	1.874	1.910	1.963	1.989	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 System Development and Demonstration (SDD). Numerous joint needs statements, 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 SDD decisions, the program element funds design studies, engineering analysis, non-recurring engineering, and other efforts associated with integration and modification of CID related technologies and systems 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 and includes exploiting synergies between non-cooperative and cooperative identification systems (radio, millimeter wave, infrared, and laser). The Laser Vision Program is working on performance improvements, laser vibrometry development, 3-dimensional laser detection and ranging, laser radar, Synthetic Aperture Laser (SAL) radar, hyper spectral phenomenology exploitation, aided/automatic target recognition, image fusion and studies to support decisions on future EO/IR technologies; (2) Radar Vision, an air-to-ground radar imaging technique to identify stationary and moving targets using their radar signatures; (3) Hydra Vision (formerly Fusion 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 and (4) X-Patch, a validated set of prediction codes and analysis tools that use the Shooting-and-Bouncing Ray (SBR) method to predict realistic far-field radar signatures from 3D target models in order to predict 1D and/or 2D data. X-Patch is vital for development of radar signatures of potential high-threat weapons systems; it is a critical capability of database production centers which support Joint Sensors Signature Database (JSSD) pathfinders.

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

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APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>
<p>program element ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet. Within the air-to-air domain, programs funded to meet this intent include: (1) Mode 5 Technology Insertion Program (TIP): The program element funds preliminary RDT&E for Mark XIIA, the next generation Identification Friend or Foe (IFF) standard for the DoD and NATO. Mark XIIA represents a substantial enhancement to the Mark XII IFF system. It is expected to achieve joint initial operational capability in 2014. The "A" denotes the addition of Mode 5 (an encrypted challenge-and-reply mode) to the other Mark XII system modes (Modes 1, 2, 3/A, C, S, and 4). The Mode 5 secure IFF program is a DoD-wide, Navy-led development and acquisition program. The Mode 5 TIP specifically addresses implementing air platforms. (2) Automatic Dependent Surveillance-Broadcast (ADS-B)TIP: This program element will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA transponder. The ADS-B TIP will develop ADS-B "In" and "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2 (M5L2) to achieve M5L2 "In" capability. The ADS-B TIP specifically addresses implementing air platforms. (3) Digital IFF Control Panel: This program element is developing a Digital IFF Control Panel (DCP) to support Mode 5 and ADS-B insertion programs into Air Force platforms with an Aeronautics Research Incorporated (ARINC) 429 based avionics architecture. The DCP will provide a standard control panel for AF aircraft with growth capability for ADS-B and beyond.</p> <p>Within the air-to-ground domain, development funded by this program element ensures development, integration, test and evaluation of friendly identification systems focused on reducing air-to-ground fratricide. A potential program to meet this intent includes: (1) Radio Based Combat Identification: An active challenge reply system leveraging Single Channel Ground and Airborne Radio System (SINCGARS) capable ground and aircraft targeting pod mounted radios for air-to-ground friendly identification.</p> <p>This program element also funds the Air Traffic Control Beacon Systems Identification Friend or Foe Mark XII/XIIA Systems (AIMS) Program Office. The DoD International AIMS PO has system level interoperability management responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems.</p> <p>Activities also include studies and analysis to support both current program planning and execution and future program planning.</p> <p>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.</p>		

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3600: Research, Development, Test & Evaluation, Air Force		PE 0603742F: Combat Identification Technology			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	26.172	38.496	24.683	-	24.683
Current President's Budget	35.208	38.447	32.243	-	32.243
Total Adjustments	9.036	-0.049	7.560	-	7.560
• Congressional General Reductions	-	-0.049			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.749	-			
• Other Adjustments	9.785	-	7.560	-	7.560
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: 642597: Noncooperative Identification Subsystems					
Congressional Add: Fast Steering Mirror					
Congressional Add Subtotals for Project: 642597					
Congressional Add Totals for all Projects					
Change Summary Explanation					
FY11 Congressional Add of 9.785M for ADS-B in Other Adjustment row.					
FY12 Congressional General Reduction (FFRDC, Sec. 8023) of 0.049M.					
FY13 funding increase associated with the development of the ADS-B Technology Insertion Program for the APX-119 transponder.					

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology				PROJECT 642597: Noncooperative Identification Subsystems			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
642597: Noncooperative Identification Subsystems	20.722	36.356	22.879	-	22.879	23.178	23.654	24.311	24.632	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Non-cooperative Combat Identification (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 identification ranges and includes exploiting synergies between non-cooperative and cooperative ID systems (radio, millimeter wave, infrared, and laser). The Laser Vision Program is working on performance improvements, laser vibrometry development, 3-dimensional laser detection and ranging, laser radar, synthetic aperture laser (SAL) radar, hyper spectral phenomenology exploitation, aided/automatic target recognition, image fusion and studies to support decisions on future EO/IR technologies; (2) Radar Vision, an air-to-ground radar imaging technique to identify stationary and moving targets using their radar signatures; (3) Hydra Vision (formerly Fusion 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; and (4) X-Patch, a validated set of prediction codes and analysis tools that use the shooting-and-bouncing ray (SBR) method to predict realistic far-field radar signatures from 3D target models in order to predict 1D and/or 2D data. X-Patch is vital for development of radar signatures of potential high-threat weapons systems; it is a critical capability of database production centers which support Joint Sensors Signature Database (JSSD) pathfinders.

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

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

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

	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Laser Vision	0.912	0.226	-	-	-
Description: Laser Vision, a family of Electro-Optical (EO) systems that significantly increases ID ranges. Provides the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID.					
FY 2011 Accomplishments:					

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B. Accomplishments/Planned Programs (\$ in Millions)				FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Continued efforts to put EO polarization and improved Electro-Optical/ Infrared (EO/IR) imaging into a targeting pod as a low cost CID discriminator. FY 2012 Plans: Complete development of emerging EO/IR technologies that could be installed into platforms like targeting pods and RPAs. FY 2013 Base Plans: N/A FY 2013 OCO Plans: N/A								
Title: Siren Description: Provides the demonstration and evaluation data necessary to support laser vibrometry into a targeting pod as a low cost CID discriminator. FY 2011 Accomplishments: Continued pod and system assessment. Acquired pod shell for demonstrator. FY 2012 Plans: Initiate sensor design and procure long lead items. FY 2013 Base Plans: Will complete sensor design and conduct critical design review. Will begin component and system fabrication. FY 2013 OCO Plans: N/A				1.208	2.553	4.590	-	4.590
Title: Advanced Concepts Description: (Formerly 3D Ladar Sensor) 3-Dimensional laser detection and ranging, laser radar, Synthetic Aperture Laser (SAL) radar, aided/automatic target recognition, image fusion and studies to support decisions on future EO/IR technologies. FY 2011 Accomplishments: N/A FY 2012 Plans:				-	0.431	2.625	-	2.625

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B. Accomplishments/Planned Programs (\$ in Millions)				FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Continue 3-D laser detection and ranging, image fusion studies to support future EO/IO technologies. FY 2013 Base Plans: Will complete 3-D ladar detection and ranging sensor evaluations and will begin integration into targeting pods and RPAs. Will develop and integrate visualization (3D Advanced Mode Processing), automatic target recognition, and image fusion for flight demonstrations. FY 2013 OCO Plans: N/A								
Title: Radar Vision Description: The Radar Vision (RV) technology applies Aided Target Recognition (ATR) algorithms to Radar Imagery and Radar Signature returns which puts target ID labels on the radar imagery and tracks using a common database of target signatures. Develop technologies that can utilize new wide area radar sensors and signal processing. FY 2011 Accomplishments: Continued Increment 5 moving and stationary ATR development efforts. FY 2012 Plans: Perform final airborne demonstration of real-time combined fixed and moving target combat identification capability. Develop technologies that can utilize new wide area radar sensors and signal processing for improved all weather day night combat identification FY 2013 Base Plans: Will complete detailed final performance evaluation of combined fixed and moving target combat identification capability including algorithms and real sensor data. Will develop and implement technologies that will utilize wide area radar identification FY 2013 OCO Plans: N/A				9.315	6.808	2.437	-	2.437
Title: Hydra Vision Description: Hydra Vision (Multi Sensor Enhanced ID; formerly Fusion Vision) a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets.				4.141	7.921	8.627	-	8.627

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
FY 2011 Accomplishments: Air to air efforts development continued leading to a feature fusion demonstration. Air to ground efforts designed a system architecture and developed ATR fusion elements and interfaces. FY 2012 Plans: Air to air efforts continue to refine fusion algorithms to maximize performance. Air to Ground efforts integrate ATR fusion elements into a complete system followed by a lab demonstration. FY 2013 Base Plans: Air to air efforts will conduct a flight demonstration of fusion ATR performance. Air to Ground efforts will conduct a flight demonstration of near-real time ATR fusion capability. FY 2013 OCO Plans: N/A						
Title: Studies Description: Conduct CID-related studies/demos and conferences. FY 2011 Accomplishments: Continued AFIT CID related projects. FY 2012 Plans: Continue AFIT related CID projects and Enhanced Combat Identification (ECID) study. FY 2013 Base Plans: AFIT will continue to encourage CID related studies and will continue the ECIDs study. FY 2013 OCO Plans: N/A		0.368	1.246	1.439	-	1.439
Title: X-Patch Description: X-Patch consists of software code refinement based on feedback from the X-Patch user community. FY 2011 Accomplishments:		3.178	3.168	3.161	-	3.161

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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology		PROJECT 642597: Noncooperative Identification Subsystems		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Continued funding X-Patch RDT&E sustainment. FY 2012 Plans: Continue funding for X-Patch RDT&E sustainment. FY 2013 Base Plans: Will continue funding for X-Patch RDT&E sustainment. FY 2013 OCO Plans: N/A						
Title: Database Development Description: Establish and develop the Target Signature (multispectral) Database Development Program. FY 2011 Accomplishments: Completed the database development effort. FY 2012 Plans: N/A FY 2013 Base Plans: N/A FY 2013 OCO Plans: N/A		-	-	-	-	-
Title: JCTI-AoA Description: Joint Cooperative Target Identification - Ground (JCTI-G) Analysis of Alternatives (AoA). This is an OSD AT&L directed program for the services to conduct an AoA for Fires of Dismount (FoD) and Air to Ground (A-G). The Air Force has agreed to lead the A-G portion of the AoA. FY 2011 Accomplishments: JCTI-G Air to Ground AoA was completed with no new material solution selected. A JPO with the Army was not stood up. FY 2012 Plans:		1.600	-	-	-	-

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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology		PROJECT 642597: Noncooperative Identification Subsystems		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
N/A						
FY 2013 Base Plans:						
N/A						
FY 2013 OCO Plans:						
N/A						
Title: Automatic Dependent Surveillance-Broadcast (ADS-B)		-	14.003	-	-	-
Description: Automatic Dependent Surveillance-Broadcast (ADS-B) Technology Insertion Program (TIP): This program element will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA transponder. The ADS-B TIP will develop ADS-B "In" and "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2(M5L2) to achieve M5L2 "In" capability. The ADS-B TIP specifically addresses implementing air platforms.						
FY 2011 Accomplishments:						
ADS-B TIP: This program element funded preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA transponder. Contract Phase IA awarded in FY11.						
FY 2012 Plans:						
Continue ADS-B TIP development of hardware and software into the APX-119 transponder. Award contracts Phase IB and II.						
FY 2013 Base Plans:						
ADS-B will continue to be inserted into the APX-119 transponder as part of the ADS-B TIP Program.						
FY 2013 OCO Plans:						
N/A						
Accomplishments/Planned Programs Subtotals		20.722	36.356	22.879	-	22.879
		FY 2011	FY 2012			
Congressional Add: Fast Steering Mirror		-	-			

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force			DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>		PROJECT 642597: <i>Noncooperative Identification Subsystems</i>
			FY 2011	FY 2012
FY 2011 Accomplishments: Continued to insert Fast Steering Mirror technology into the Northrop Litening pod.				
FY 2012 Plans: Complete Fast Steering Mirror technology insertion into the Northrop Litening pod.				
Congressional Adds Subtotals			-	-

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
3600: Research, Development, Test & Evaluation, Air Force	PE 0603742F: Combat Identification	642597: Noncooperative Identification
BA 4: Advanced Component Development & Prototypes (ACD&P)	Technology	Subsystems

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Air Force			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642597: <i>Noncooperative Identification Subsystems</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LASER VISION - Combat Mode / EO Polarization	1	2011	1	2013
LASER VISION - Siren / Vibrometry	1	2011	4	2016
LASAR VISION - Advanced Concepts (formerly 3D Ladar Sensor)	2	2012	4	2017
LASER VISION - Fast Mirror Technology Insertion	3	2011	4	2012
RADAR VISION - Radar Vision Increment 5	1	2011	3	2013
RADAR VISION - Denied Target Development	1	2011	1	2013
RADAR VISION - Sterling Rose	1	2011	3	2011
Hydra VISION - Increment 1 - Air-to-Ground	1	2011	1	2015
Hydra VISION - Increment 2 - Air-to-Ground	2	2013	3	2017
Hydra VISION - Air-to-Air	1	2011	3	2017
Database Development	1	2011	2	2011
X-Patch Development	1	2011	4	2017
Studies / Enhanced CID (ECID)	1	2011	4	2017

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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
642599: Cooperative Identification Techniques	14.486	2.091	9.364	-	9.364	1.874	1.910	1.963	1.989	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 program element ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet. Within the air-to-air domain, programs funded to meet this intent include: (1) Mode 5 Technology Insertion Program (TIP): The Program Element (PE) funds preliminary RDT&E for Mark XIIA, the next generation Identification Friend or Foe (IFF) standard for the DoD and NATO. Mark XIIA represents a substantial enhancement to the Mark XII IFF system. It is expected to achieve Joint Initial Operational Capability in 2014. The "A" denotes the addition of Mode 5 (an encrypted challenge-and-reply mode) to the other Mark XII system modes (Modes 1, 2, 3/A, C, S, and 4). The Mode 5 secure IFF program is a DoD-wide, Navy-led development and acquisition program. The Mode 5 TIP specifically addresses implementing air platforms. (2) Automatic Dependent Surveillance-Broadcast (ADS-B) Technology Insertion Program (TIP): This PE will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA transponder. The ADS-B TIP will develop ADS-B "In" and "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2 (M5L2) to achieve M5L2 "In" capability. The ADS-B TIP specifically addresses implementing air platforms. (3) Digital IFF Control Panel: This PE is developing a Digital IFF Control Panel (DCP) to support Mode 5 and ADS-B insertion programs into Air Force platforms with an ARINC 429 based avionics architecture. The DCP will provide a standard control panel for AF aircraft with built in capability for IFF support of ADS-B and beyond.

Within the air-to-ground domain, development funded by this program element ensures development, integration, test and evaluation of friendly identification systems focused on reducing air-to-ground fratricide. A potential program to meet this intent includes: (1) Radio Based Combat Identification: An active challenge reply system leveraging Single Channel Ground and Airborne Radio System (SINCGARS) capable ground and aircraft targeting pod mounted radios for air-to-ground friendly identification.

This PE also funds the Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XII/XIIA System (AIMS) Program Office. The DoD International AIMS PO has system level interoperability management responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems.

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.

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Mode 5 Technology Insertion Program Description: Continue the Mode 5 upgrade to the APX-119 transponder, the APX-114 interrogator, and the APX-113 Combined Interrogator/Transponder (CIT). FY 2011 Accomplishments: Completed the testing and certification of the APX-113 and continue with aircraft integration support. FY 2012 Plans: N/A FY 2013 Base Plans: N/A FY 2013 OCO Plans: N/A			2.735	-	-	-	-
Title: ADS-B TIP Description: Automatic Dependent Surveillance-Broadcast (ADS-B) TIP: This program element will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA transponder. The ADS-B TIP will develop ADS-B "In" and "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2(M5L2) to achieve M5L2 "In" capability. The ADS-B TIP specifically addresses implementing air platforms. FY 2011 Accomplishments: Began ADS-B TIP program into the APX-119 transponder. FY 2012 Plans: Continue ADS-B TIP development of software and hardware into the APX-119 transponder. FY 2013 Base Plans: ADS-B TIP will continue development of software and hardware into the APX-119 transponder. FY 2013 OCO Plans: N/A			9.969	-	7.500	-	7.500
Title: AIMS Program Office			1.782	2.091	1.864	-	1.864

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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology		PROJECT 642599: Cooperative Identification Techniques			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
<p>Description: Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS)Program Office. The DoD International AIMS PO has system level interoperability management responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems.</p> <p>FY 2011 Accomplishments: Continued to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.</p> <p>FY 2012 Plans: Continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.</p> <p>N/A</p> <p>FY 2013 Base Plans: Will continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.</p> <p>FY 2013 OCO Plans: N/A</p>							
<p>Title: Digital IFF Control Panel</p> <p>Description: A Digital IFF Control Panel (DCP) is being developed to support Mode 5 and ADS-B insertion programs into Air Force platforms with an ARINC 429 based avionics architecture. The DCP will provide a standard control panel for AF aircraft with built in capability for IFF support of ADS-B and beyond.</p> <p>FY 2011 Accomplishments: Developed the DCP in support of the Mode 5 TIP and ADS-B TIP programs.</p> <p>FY 2012 Plans: Develop the DCP in support of the Mode 5 TIP and ADS-B TIP programs.</p> <p>FY 2013 Base Plans: N/A</p> <p>FY 2013 OCO Plans: N/A</p>			-	-	-	-	-
Accomplishments/Planned Programs Subtotals			14.486	2.091	9.364	-	9.364

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>	

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

D. Acquisition Strategy

Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).

E. Performance Metrics

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Air Force			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Mode 5 System Engineering and Program Support	1	2011	3	2014
Mode 5 TIP (APX-114 Design Development)	1	2011	3	2011
Mode 5 TIP (APX-119 Design Development)	1	2011	3	2011
Mode 5 TIP (APX-113 Design Development)	1	2011	4	2012
ADS-B / M5L2 TIP	4	2011	1	2014
Digital IFF Control Panel	4	2011	1	2013
AIMS Program Office Support	1	2011	4	2017