

## UNCLASSIFIED

PE NUMBER: 0603742F

PE TITLE: Combat Identification Technology

## Exhibit R-2, RDT&amp;E Budget Item Justification

DATE

February 2005

## BUDGET ACTIVITY

## 04 Advanced Component Development and Prototypes (ACD&amp;P)

## PE NUMBER AND TITLE

## 0603742F Combat Identification Technology

Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	25.949	19.404	51.893	26.662	20.772	21.146	21.595	21.914	Continuing	TBD
2597 Noncooperative Identification Subsystems	25.949	19.404	19.892	20.542	20.772	21.146	21.595	21.914	Continuing	TBD
2599 Cooperative Identification Techniques	0.000	0.000	32.001	6.120	0.000	0.000	0.000	0.000	0.000	38.121

(U) **A. Mission Description and Budget Item Justification**

U.S. Combat Air Forces have a critical requirement to positively identify enemy, friendly, and neutral aircraft, battlefield equipment and personnel in order to increase combat effectiveness and prevent fratricide. Numerous Joint needs statements, operational documents, lessons learned, and NATO requirements documents also state the need for positive combat identification (ID). High confidence combat ID in all weather and day/night enables combatant commanders to effectively command and control their forces. This program will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

The Combat Identification (CID) Technology program analyzes, develops, and demonstrates promising target identification technologies in order to transition them into Systems Development/Demonstration (SD/D) programs. These technologies include both cooperative and non-cooperative techniques that will improve our ability to positively identify ground and air targets in both Air-to-Surface and Air-to-Air engagements.

Non-cooperative CID employs a number of sensing and signal processing techniques and compares the results against a database of known objects to determine identity. The non-cooperative CID techniques can be used for identifying surface or air threats from air platforms. Air-to-surface technologies include 1) Laser Vision, a 2-dimensional electro-optical imaging system that significantly increases ID ranges and other advanced laser sensing technologies; 2) Radar Vision, an air-to-ground radar imaging technique to identify objects using their radar signatures; and 3) algorithm maturation for supporting Automatic Target Cueing (ATC) and Automatic Target Recognition (ATR). Air-to-air technologies funded by this program include High Range Resolution (HRR) radar signals processing to increase ID range and confidence.

Cooperative CID techniques require a system that allows rapid identification of a friendly system. In an air-to-ground setting, this can be in the form of unique markings on a vehicle or a radio-based reply that is activated by a directed signal. In both an air-to-air and air-to-ground setting, this program element funds the development of Mode 5 of the NATO/Joint Mark XIIA standard for Identification Friend or Foe (IFF). IFF performance was highlighted as a significant deficiency in Operation Iraqi Freedom. The Mode 5 capability will begin with the fielding of Mode S IFF hardware and software, which will later be upgraded to Mode 5 with the addition of software and cryptologic gear. The synchronization of Mode 5 with the Mode S deployment and crypto modernization is critical to enable Mode 5 across the Air Force fleet.

Current and future space-based systems can facilitate these processes leading ultimately to Automatic Target Recognition (ATR) fusion and net-centric warfare. ATR focuses on development, demonstration and integration of technologies drawing upon all available information data elements or platforms e.g. (national, tactical, fighter, bomber, ISR). The desired outcome would provide the operational-level decision maker a single, fused display of all threats or assets. These technologies must

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**04 Advanced Component Development and Prototypes (ACD&P)**

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provide near-real time information, to include Special Compartmented Information (SCI) and classified data information, to the operational and tactical level decision makers for both ground and airborne systems. Efforts also focus on development and approval of new technologies so all this information can be shared across security levels, services and with foreign participants.

This program is in Budget Activity 4 - Advanced Component Development and Prototypes (ACD&P). The PE includes advanced technology demonstrations that help transition technologies from laboratory to operational use.

**(U) B. Program Change Summary (\$ in Millions)**

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Previous President's Budget	16.434	19.582	19.785	20.160
(U) Current PBR/President's Budget	25.949	19.404	51.893	26.662
(U) Total Adjustments	9.515	-0.178		
(U) Congressional Program Reductions				
Congressional Rescissions		-0.178		
Congressional Increases				
Reprogrammings	9.430			
SBIR/STTR Transfer	0.085			

**(U) Significant Program Changes:**

Between the time of the FY05 President's Budget and the development of the FY06 PB, the AF accelerated the ongoing Mode 5 IFF development program. Real-world operational requirements dictated the more secure and robust Mode 5 be developed more rapidly than planned to reduce fratricide and increase mission effectiveness. In addition, the National Security Agency decertified the encryption devices used by the previous version of IFF, Mode 4. This occurred too late in the programming and budgeting cycle to affect the FY05 PB request. However, the AF reprogrammed \$9.43M in FY04 to begin this acceleration and added \$32.5M of additional funds for FY06 as part of the regular budgeting process. The Air Force plans to reprogram funds to the appropriate level in FY05 creating a coherent funding stream bridging from FY04 to the FY06 PB.

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## Exhibit R-2a, RDT&amp;E Project Justification

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BUDGET ACTIVITY <b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>					PE NUMBER AND TITLE <b>0603742F Combat Identification Technology</b>			PROJECT NUMBER AND TITLE <b>2597 Noncooperative Identification Subsystems</b>		
Cost (\$ in Millions)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total
2597 Noncooperative Identification Subsystems	25.949	19.404	19.892	20.542	20.772	21.146	21.595	21.914	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

Non-cooperative CID employs a number of sensing and signal processing techniques and compares the results against a database of known objects to determine identity. The non-cooperative CID techniques can be used for identifying surface or air threats from air platforms. Air-to-surface technologies include 1) Laser Vision, a 2-dimensional electro-optical imaging system that significantly increases ID ranges and other advanced laser sensing technologies; 2) Radar Vision, an air-to-ground radar imaging technique to identify objects using their radar signatures; and 3) algorithm maturation for supporting Automatic Target Cueing (ATC) and Automatic Target Recognition (ATR). Air-to-air technologies funded by this program include High Range Resolution (HRR) radar signals processing to increase ID range and confidence.

This program is in Budget Activity 4 - Advanced Component Development and Prototypes (ACD&P). This project includes advanced technology demonstrations that help transition technologies from laboratory to operational use. Also, it will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue the High Range Resolution (HRR) synthetic target database development in conjunction with National Air and Space Intelligence Center (NASIC). Implement enhancement techniques to improve the HRR algorithm and increase the fidelity of the HRR database. Prepare for the transition of database management and maintenance from the lab environment to a SPO.	6.958	7.454	2.999	1.674
(U) Transition verified air-to-ground and air-to-air identification capabilities for reduced battle space fratricide and enhanced mission performance and develop/demonstrate promising future capabilities. Program candidates include the integration of Laser Vision into designated platforms, development of 1st generation Electro Optical/Automatic Target Cueing/Automatic Target Recognition (EO/ATC/ATR) Laser Vision capability, development/demonstration of laser vibrometry, and insertion of mature/hardened camera technologies into alternate platforms. Radar Vision's air-to-ground radar imaging technology is in its second phase and will release its third spiral development during FY06 which will integrate selected algorithms, data sets, and enhanced technologies into designated platforms.	6.350	8.583	12.971	15.403
(U) Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XII/XIIA Systems (AIMS) Program Office support of Mark XII systems to include current and next generation IFF equipment integration, including Mode 5 documentation and individual IFF system/box certification.	0.773	0.824	0.863	0.906
(U) Continue funding the CID Integrated Management Team and other engineering support necessary for	1.507	2.276	2.589	2.534

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Exhibit R-2a, RDT&E Project Justification								DATE February 2005	
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)				PE NUMBER AND TITLE 0603742F Combat Identification Technology		PROJECT NUMBER AND TITLE 2597 Noncooperative Identification Subsystems			
management of CID efforts. Includes support for Mode 5 IFF flight demonstration.									
(U)	Conduct CID-related studies/demos and conferences. Execute Mode 5 IFF flight test preparations and demonstration to assess system operational capacity, interoperability, and equipment integration. Studies and demonstrations will include those directed by Joint Staff and OSD to research and evaluate a family of CID systems, linkage between airborne and ground-based non-cooperative CID technologies/systems, and quantify the relationship between CID and improved combat effectiveness.					0.456	0.267	0.470	0.025
(U)	Continue Mode 5 development with an upgrade to the Combined Interrogator/Transponder (CIT), APX-113; Mode 5 upgrade to interrogator, UPX-39; AWACS risk mitigation prototype development/test for airborne interrogator APX-103C; fund the Mode 5 upgrade to transponder APX-119 and interrogator APX-114; as well as other planned platform integrations. Conduct integration and test. Fund Enterprise Management. Funding with all these efforts will continue in FY05 through reprogramming funds in Project number 2597 and in FY06 and beyond through the FY06 POM under Project number 2599, Cooperative Identification Techniques.					9.905			
(U)	Total Cost					25.949	19.404	19.892	20.542
(U)	<b><u>C. Other Program Funding Summary (\$ in Millions)</u></b>								
	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>
(U)	Not Applicable								
(U)	<b><u>D. Acquisition Strategy</u></b>								
The acquisition strategy for CID programs is and will continue to be to investigate, develop, and transition CID capabilities via contract vehicles that provide the greatest benefit to the end-user in the areas of performance, value, and transition timeline.									

Project 2597

R-1 Shopping List - Item No. 46-5 of 46-15

Exhibit R-2a (PE 0603742F)

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Exhibit R-3, RDT&E Project Cost Analysis												DATE February 2005		
BUDGET ACTIVITY 04 Advanced Component Development and Prototypes (ACD&P)						PE NUMBER AND TITLE 0603742F Combat Identification Technology					PROJECT NUMBER AND TITLE 2597 Noncooperative Identification Subsystems			
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2004 Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development														
Raytheon Co	C/CPFF	El Segundo CA	4.101	3.000	Dec-03	6.696	Nov-04	1.333	Nov-05	1.474	Nov-06	Continuing	TBD	TBD
General Dynamics	C/CPFF	Dayton OH	0.800	0.274	Nov-03	0.175	Dec-04	0.175	Nov-05				1.424	TBD
Simulation Support, Inc.	C/CP	Arlington VA	0.330										0.330	TBD
National Air Intel Center	MIPR	Dayton OH	4.329									0.000	4.329	TBD
Northrop Grumman Corp	C/CPFF	Baltimore MD	1.856	0.600	Mar-04	1.000	Apr-05	4.315	Nov-05	5.831	Nov-06	Continuing	TBD	TBD
ERASER-Raytheon	C/CPFF	Plano TX	0.462										0.462	TBD
Raytheon Co	C/TBD	El Segundo CA	0.150										0.150	TBD
Lockheed Martin	OTA	Orlando FL	13.624	2.021	Jan-04	0.200	Dec-04	0.200	Dec-05	0.200	Dec-06	Continuing	TBD	TBD
Northrop Grumman	CPFF	Rolling Meadows IL				2.800	Mar-05	3.400	Mar-06	3.500	Mar-07		9.700	
Northrop Grumman	OTA	Rolling Meadows IL	0.150										0.150	TBD
SAIC (Demaco, Inc)	SS/CPFF	Dayton OH	10.622	4.472	Jan-04	3.091	Dec-04						18.185	TBD
Cyberdynamics	SS/CPFF	Dayton OH	0.010										0.010	TBD
AIMS Program Office	MIPR	Warner Robins GA	1.627	0.773	Oct-03	0.824	Oct-04	0.863	Oct-05	0.906	Oct-06	Continuing	TBD	TBD
Air Force Research Laboratory (Camera & ATR development)	MIPR	Dayton OH						2.000	Jan-06				2.000	TBD
Air Force Research Laboratory (LV)	MIPR	Dayton OH						1.707	Nov-05	2.882	Nov-06	Continuing	TBD	TBD
Air Force Research Laboratory (Radar Vision)	MIPR	Dayton, OH						1.940	Nov-05	2.940	Nov-06	Continuing	TBD	TBD
Telephonics	C	Farmingdale, NY	0.586	0.305	Nov-03								0.891	TBD
NVESD	MIPR	Ft Belvoir, VA		0.167	Jun-04								0.167	TBD
MODE 5													0.000	
BAE (Mode 5 FY04 only)	C	Greenlawn, NY		6.220	Jun-04								6.220	TBD
Northrop Grumman (Mode 5 FY04 only)	C	Woodland Hills, CA		2.600	Jun-04								2.600	TBD
Boeing/Telephonics (Mode 5 FY04 only)	C	Farmingdale, NY		0.480	Jun-04								0.480	TBD
Veridian Engineering	C	Buffalo, NY		0.475	May-04	0.475	Apr-05						0.950	TBD
SVERDRUP Technology	C	Ft Walton Beach, FL		0.475	May-04	0.475	Apr-05						0.950	TBD
DOE - Sandia National Labs	MIPR	Albuquerque,		0.390	Nov-03								0.390	TBD
Project 2597			R-1 Shopping List - Item No. 46-6 of 46-15						Exhibit R-3 (PE 0603742F)					

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Exhibit R-3 (PE 0603742F)

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Exhibit R-3, RDT&E Project Cost Analysis											DATE			
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BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
04 Advanced Component Development and Prototypes (ACD&P)					0603742F Combat Identification Technology					2597 Noncooperative Identification Subsystems				
	Battelle Memorial Institute	C	NM Columbus, OH	0.125	Jan-04							0.125	TBD	
	Resource Consultants, INC	C	Vienna, VA	0.121	Jan-04							0.121	TBD	
	Subtotal Product Development			38.647	22.498		15.736		15.933		17.733	Continuing	TBD	TBD
	Remarks:													
(U)	Support													
	USAF Combat ID IMT and Engineering Support	Various	Hanscom AFB MA	5.958	1.571	Nov-03	1.083	Oct-04	1.104	Dec-05	1.123	Dec-06	Continuing	TBD
	Air Force Research Laboratory (HRR)	MIPR	Dayton OH	2.848	0.154	Nov-03	0.200	Oct-04	0.200	Oct-05	0.250	Oct-06		3.652
	Air Force Research Laboratory (ERASER)	MIPR	Dayton OH		0.003	Mar-04	0.000							0.003
	MODE 5 Engineering Support	Various	Hanscom AFB MA/Robins AFB, GA		0.522	Jul-04								0.522
	IMT Studies and Analysis	Various	Various	0.271	0.456	Oct-03	0.267	Nov-04	0.470	Nov-05	0.025	Nov-06	Continuing	TBD
	Subtotal Support			9.077	2.706		1.550		1.774		1.398	Continuing	TBD	0.000
	Remarks:													
(U)	Test & Evaluation													
	3246th Test Wing, Eglin AFB, FL 544th Range Group	MIPR	Eglin AFB FL / Nellis AFB NV	4.089										4.089
	412 Test Wing	MIPR	Edwards AFB CA	0.239	0.012	Oct-03	0.025	Dec-04	0.800	Nov-04				1.076
	552nd Air Control Wing	MIPR	Tinker AFB OK											0.000
	White Sands Missile Range	MIPR	WSMR, NM		0.110	Nov-03	0.100							0.210
	AFRL/DEB	MIPR	Kirtland, AFB, NM		0.033	Mar-04								0.033
	98 RANW	MIPR	Nellis AFB, NV		0.200	Apr-04	0.200							0.400
	422 Test	MIPR	Nellis AFB, NV				0.422	Nov-04						0.422
	Subtotal Test & Evaluation			4.328	0.355		0.747		0.800		0.000		0.000	6.230
	Remarks:													0.000
(U)	Management													
				0.837	0.390		1.371		1.385		1.411			5.394
	Subtotal Management			0.837	0.390		1.371		1.385		1.411		0.000	5.394
	Remarks:													0.000
(U)	Total Cost			52.889	25.949		19.404		19.892		20.542		Continuing	TBD
														TBD
Project 2597			R-1 Shopping List - Item No. 46-7 of 46-15								Exhibit R-3 (PE 0603742F)			

Project 2597

R-1 Shopping List - Item No. 46-7 of 46-15

Exhibit R-3 (PE 0603742F)

## Exhibit R-4, RDT&amp;E Schedule Profile

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BUDGET ACTIVITY

04 Advanced Component Development and Prototypes (ACD&amp;P)

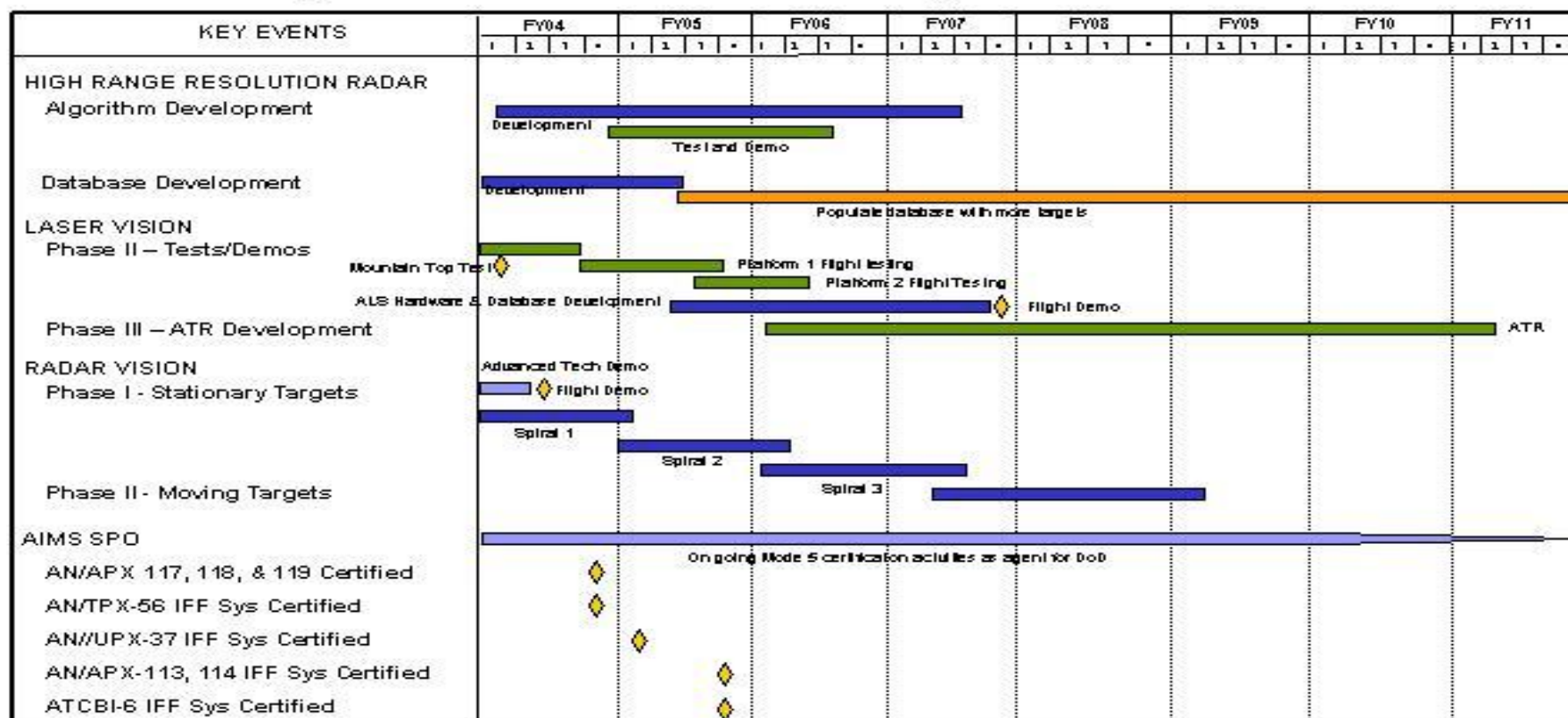
PE NUMBER AND TITLE

0603742F Combat Identification  
Technology

PROJECT NUMBER AND TITLE

2597 Noncooperative Identification  
Subsystems

## Non-cooperative Identification Subsystems Schedule Profile



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## Exhibit R-4a, RDT&amp;E Schedule Detail

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BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT NUMBER AND TITLE	
<b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>0603742F Combat Identification Technology</b>		<b>2597 Noncooperative Identification Subsystems</b>	
<b>(U) Schedule Profile</b>	<b><u>FY 2004</u></b>	<b><u>FY 2005</u></b>	<b><u>FY 2006</u></b>	<b><u>FY 2007</u></b>
(U) 1. HRR Classifier Dev/Qual				1-2Q
(U) Algorithm Development		3Q		
(U) Database Transitions to SPO		1-4Q		
(U) Algorithm Flight Test		3Q		1-2Q
(U) Algorithm transitions to SPO				1Q
(U) 2. LASER VISION / ADVANCED LASER SENSING (ALS)		4Q		
(U) Completion of Lab Demos	1Q			
(U) Phase II, Part III Contract Modification	1Q			
(U) Tower Demonstrations	2Q			
(U) Mountaintop Demo	2Q			
(U) CID Flight Testing	4Q	1-2Q		
(U) Completion of Phase II		2Q		
(U) Start of CID SDD		2Q		
(U) LV ATR Development		3Q	1-4Q	1-4Q
(U) Laser Vibration Analysis		2-4Q		
(U) ALS Database Development	4Q	1-4Q	1-4Q	1-4Q
(U) ALS Hardware Development/Flight Demo		4Q	1-4Q	1-4Q
(U) 3. RADAR VISION (Development and transition of air-to-ground radar imaging automatic target recognition)		4Q		
(U) Phase 1 - Stationary Target Recognition	1-4Q	1-4Q	1-4Q	1-4Q
(U) Radar Vision Spiral 1	1-4Q	1Q		
(U) Radar Vision Spiral 2		1-4Q	1-2Q	
(U) Radar Vision Spiral 3			1-4Q	1-3Q
(U) Phase 2 - Moving Target Recognition				3-4Q
(U) 4. AIMSPO Integration and Certification Support		4Q		
(U) AN/APX-117, 118, & 119 IFF Systems Certified	4Q			
(U) AN/TPX-56 IFF System Certified	4Q			
(U) AN/UPX-37 IFF System Certified		1Q		
(U) Complete AN/APX-113, 114 Certification		3Q		
(U) Complete ATCBI-6 Certification		3Q		
(U) C-35, C-40 IFF Integration Support Completed	4Q			
(U) Mode 5 Engineering Specification Comp		1Q		

Project 2597

R-1 Shopping List - Item No. 46-9 of 46-15

Exhibit R-4a (PE 0603742F)



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Exhibit R-4a, RDT&E Schedule Detail		DATE
		<b>February 2005</b>
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE
<b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>0603742F Combat Identification Technology</b>	<b>2597 Noncooperative Identification Subsystems</b>
(U) F-35 IFF Integration Support Started		4Q
(U) F-15, F-16 IFF Integration Support Started		4Q
(U) F-22 IFF Integration Support Started		4Q
(U) 5. INTEGRATED MANAGEMENT TEAM		4Q
(U) Air-to-Air CID Tech Roadmap Update	1Q	
(U) Air-to-Ground CID Tech Roadmap Update	1Q	
(U) Complete Mode V Acquisition Strategy	4Q	
(U) Start Mode V Fielding Support		1Q
(U) Start Mode V IFF Flight Demo Planning and Support	2Q	
(U) 6. CID Studies and Demos		4Q
(U) AFSAA Analysis of Alternative Start	3Q	
(U) AFSAA AoA Completion		1Q
(U) 7. MODE 5 - Funding Received	2Q	
(U) Mode 5 RDT&E Contracts	3-4Q	
(U) UPX-39 M5 RDT&E	3-4Q	
(U) APX-113 M5 RDT&E	3-4Q	
(U) Airborne Interrogator Risk Reduction	3-4Q	
(U) Enterprise Management	2-4Q	

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BUDGET ACTIVITY <b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>					PE NUMBER AND TITLE <b>0603742F Combat Identification Technology</b>			PROJECT NUMBER AND TITLE <b>2599 Cooperative Identification Techniques</b>		
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2599 Cooperative Identification Techniques	0.000	0.000	32.001	6.120	0.000	0.000	0.000	0.000	0.000	38.121
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0		

(U) **A. Mission Description and Budget Item Justification**

Cooperative CID techniques require a system that allows rapid identification of a friendly system. In an air-to-ground setting, this can be in the form of unique markings on a vehicle or a radio-based reply that is activated by a directed signal. In both an air-to-air and air-to-ground setting, this PE funds the development of Mode 5 of the NATO/Joint Mark XIIA standard for Identification Friend or Foe (IFF). IFF performance was highlighted as a significant deficiency in Operation Iraqi Freedom. The Mode 5 capability will begin with the fielding of Mode S IFF hardware and software, which will later be upgraded to Mode 5 with the addition of software and cryptologic gear. The synchronization of Mode 5 with the Mode S deployment and crypto modernization is critical to enable Mode 5 across the Air Force fleet.

This project is in Budget Activity 4 - Advanced Component Development and Prototypes (ACD&P). The PE includes advanced technology demonstrations that help transition technologies from laboratory to operational use. Also, the project will participate in the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Continue Mode 5 development with an upgrade to the Combined Interrogator/Transponder (CIT), APX-113; Mode 5 upgrade to interrogator, UPX-39; AWACS risk mitigation prototype development/test for airborne interrogator APX-103C; fund the Mode 5 upgrade to transponder APX-119 and interrogator APX-114; as well as other planned platform integrations. Conduct integration and test. Fund Enterprise Management. Funding in this project is a continuation of funds originally listed in FY04 under Project number 2597 and funding in FY05 through reprogramming efforts which will occur in the same project. Funding in FY06 and beyond is broken out separately in this project number to provide greater insight into the "cooperative" combat ID portion of the PE.			32.001	6.120
(U) Total Cost	0.000	0.000	32.001	6.120

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

	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
(U) Not applicable										

Exhibit R-2a, RDT&E Project Justification		DATE <b>February 2005</b>
BUDGET ACTIVITY <b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	PE NUMBER AND TITLE <b>0603742F Combat Identification Technology</b>	PROJECT NUMBER AND TITLE <b>2599 Cooperative Identification Techniques</b>
<p>(U) <b><u>D. Acquisition Strategy</u></b></p> <p>To demonstrate the Mode 5 capability in the digital Mark XII IFF equipment in or planned for use on AF platforms, and provide enterprise management in order to integrate into all AF mission design series (MDS), or platforms, and transition the AF cooperative ID capability to Mark XIIA.</p>		
Project 2599		
R-1 Shopping List - Item No. 46-12 of 46-15		
Exhibit R-2a (PE 0603742F)		

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Exhibit R-3, RDT&E Project Cost Analysis											DATE			
											February 2005			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT NUMBER AND TITLE				
04 Advanced Component Development and Prototypes (ACD&P)					0603742F Combat Identification Technology					2599 Cooperative Identification Techniques				
(U) Cost Categories (Tailor to WBS, or System/Item Requirements) (\$ in Millions)	Contract Method & Type	Performing Activity & Location	Total Prior to FY 2004 Cost	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(U) Product Development														
BAE	C	Greenlawn, NY						6.000	Nov-05				6.000	TBD
Northrop Grumman	C	Woodland Hills, CA						3.900	Nov-05				3.900	TBD
Boeing / Telephonics	C	Farmingdale, NY						12.000	Dec-05				12.000	TBD
TBD	TBD	TBD						4.000	Jan-06	5.370	Nov-06		9.370	TBD
Subtotal Product Development			0.000	0.000		0.000		25.900		5.370		0.000	31.270	TBD
Remarks:														
(U) Support														
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														
(U) Test & Evaluation														
Integration and Test													0.000	TBD
TBD	TBD	TBD						5.375	Dec-05				5.375	TBD
Subtotal Test & Evaluation			0.000	0.000		0.000		5.375		0.000		0.000	5.375	TBD
Remarks:														
(U) Management														
Enterprise Management	Various	Various						0.726	Nov-05	0.750	Nov-06	Continuing	TBD	TBD
Subtotal Management			0.000	0.000		0.000		0.726		0.750		Continuing	TBD	TBD
Remarks:														
(U) Total Cost			0.000	0.000		0.000		32.001		6.120		Continuing	TBD	TBD
</														

### Exhibit R-4, RDT&E Schedule Profile

DATE

February 2005

BUDGET ACTIVITY

#### 04 Advanced Component Development and Prototypes (ACD&P)

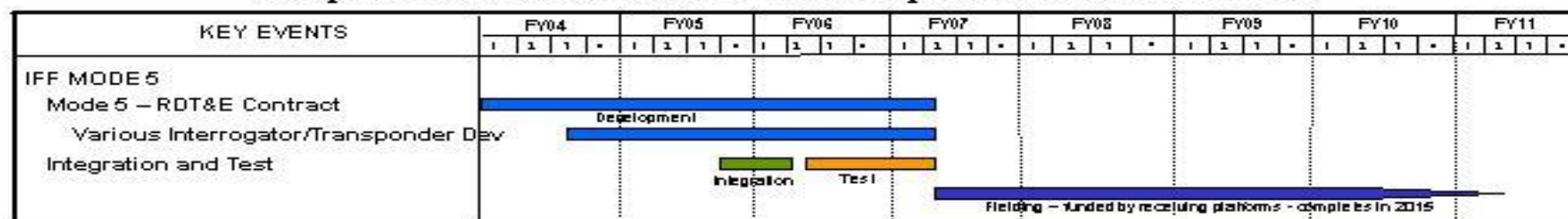
PE NUMBER AND TITLE

**0603742F Combat Identification Technology**

PROJECT NUMBER AND TITLE	
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## 2599 Cooperative Identification Techniques

## Cooperative Identification Techniques Schedule Profile



**UNCLASSIFIED**

Exhibit R-4a, RDT&E Schedule Detail			DATE February 2005	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT NUMBER AND TITLE		
<b>04 Advanced Component Development and Prototypes (ACD&amp;P)</b>	<b>0603742F Combat Identification Technology</b>	<b>2599 Cooperative Identification Techniques</b>		
<b>(U) <u>Schedule Profile</u></b>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
(U) Mode 5 RDT&E Contracts		1-4Q	1-4Q	1Q
(U) UPX-39 M5 RDT&E	3-4Q	1-4Q	1Q	
(U) APX-113 M5 RDT&E	3-4Q	1-4Q	1Q	
(U) APX-119 M5 RDT&E		2-4Q	1-3Q	
(U) APX-114 M5 RDT&E		2-4Q	1-3Q	
(U) Other Transponder Task Order Award		2-4Q	1-4Q	1Q
(U) Airborne Interrogator Task Order	3-4Q	1-4Q	1-4Q	1Q
(U) Integration & Test		3-4Q	1-4Q	1Q
(U) Enterprise Management	3-4Q	1-4Q	1-4Q	1-4Q

Project 2599

R-1 Shopping List - Item No. 46-15 of 46-15

Exhibit R-4a (PE 0603742F)