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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	17.536	13.718	21.298	0.000	21.298	24.756	25.337	25.855	25.788	Continuing	Continuing
642597: <i>Noncooperative Identification Subsystems</i>	-	14.880	11.574	18.565	0.000	18.565	21.918	22.468	22.927	22.867	0.000	135.199
642599: <i>Cooperative Identification Techniques</i>	-	0.000	0.070	0.076	0.000	0.076	0.120	0.084	0.086	0.086	0.000	0.522
643420: <i>Combat ID Database Development</i>	-	2.656	2.074	2.657	0.000	2.657	2.718	2.785	2.842	2.835	Continuing	Continuing

A. Mission Description and Budget Item Justification

Combat Identification is the process of characterizing an entity in the battlespace. It is essential to determine if a battlespace entity is a friend, enemy, or neutral; this information provides battlespace commanders and aircrew with options, ranging from avoiding and monitoring to engagement. The Combat Identification team's mission is to identify new and promising technology candidates, evaluate the usefulness of the technologies, conduct demonstrations in operationally relevant environments, and coordinate strategies that expedite transition to more than one platform. This Program Element aims to integrate and transition new capabilities into fielded systems, and improve existing capabilities. The mission area consists of three projects: non-cooperative Combat Identification, cooperative Combat Identification, and Combat Identification database development.

Non-cooperative Combat Identification techniques do not depend on a response from the targeted platform - such as high range resolution radar that measures the length of a target. Cooperative Combat Identification systems require communication between two participating platforms. Combat Identification database development continues the maturation of target representations in all databases that enable non-cooperative and cooperative algorithms to perform correctly. Both non-cooperative and cooperative Combat Identification techniques are currently in the field, and are necessary elements of the kill chain that ensure mission success and reduce fratricide. Air Combat Command (ACC) established a Senior Advisory Group (SAG) as the governing authority to guide these efforts in partnership with AFRL/RV and SAF/AQR.

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

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

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

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	21.939	17.318	24.119	0.000	24.119
Current President's Budget	17.536	13.718	21.298	0.000	21.298
Total Adjustments	-4.403	-3.600	-2.821	0.000	-2.821
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-3.600			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.800	0.000			
• SBIR/STTR Transfer	-0.603	0.000			
• Other Adjustments	0.000	0.000	-2.821	0.000	-2.821

Change Summary Explanation

Decrease in FY 2023 is Congressionally directed. Decrease in FY 2024 is due to higher Air Force priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force										Date: March 2023		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
642597: <i>Noncooperative Identification Subsystems</i>	-	14.880	11.574	18.565	0.000	18.565	21.918	22.468	22.927	22.867	0.000	135.199
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Non-cooperative combat identification (CID) employs a number of sensing technologies and signal processing techniques designed to extract discriminating features from a battlespace entity (target). Specifically-designed algorithms compare those extracted features to a tailored database to identify those targets. These technologies include: (A) non-cooperative Air Target Identification (ATID) technologies, (B) non-cooperative Ground Target Identification (GTID) technologies, and (C) Studies and Analysis, evaluating potential new technologies.

ATID technology development focuses on platform centric CID technologies that enhance capability to determine enemy air threats. A primary area of focus is in the development/implementation of the Joint Multi-platform Advanced Combat identification (JMAC) architecture, which is a framework that allows multiple sensors (on-board and off-board) to provide a robust combat identification solution; and efforts aimed at the discovery and generation of features from fielded sensors to supply data to JMAC. JMAC is evolving into the primary Department of Defense air target identification architecture. Other areas of focus include combat identification technologies that broaden the application of CID across air platforms utilizing larger air kill-webs planned for employment by the United States Air Force (USAF) and utilize assets in unmanned aerial system and space to improve and enable CID in future threat air engagements.

GTID development focuses on platform centric CID technologies that enhance capability to determine enemy ground threats. Primary areas of focus include transitioning CID capability for denied access environments using passive radio frequency and electronic warfare information, integrating radio based technologies into the cockpit to increase confidence of target identification and situational awareness as well as reduce fratricides, and to demonstrate weapon-based combat identification back to the launch platform using a communication link from that launched weapon. GTID is also focused on developing technology to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative monostatic and bi-static synthetic aperture radar aided target recognition algorithms and databases. Other areas of focus include combat identification technologies that broaden the application of CID across air platforms utilizing larger air kill-webs planned for employment by the United States Air Force and utilize assets in unmanned aerial system and space to improve and enable CID in future threat ground engagements.

Studies and Analysis discovers novel technologies that are ready to become transitionable projects, and includes Enhanced Combat ID (ECID), an activity to develop a robust ability to quantitatively evaluate promising combat identification technologies using enhanced modeling and simulation capabilities, database generation, database enhancement/employment (machine learning, deep learning, and artificial intelligence) to employ CID technologies in an operationally useful manner. The Studies and Analysis effort also performs early assessments of promising technologies through Concept Calls to determine if the program should incorporate them as a formal project within the CID portfolio.

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Combat Identification technologies. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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

	FY 2022	FY 2023	FY 2024
<p>Title: Hydra Vision/Air to Air</p> <p>Description: Hydra Vision Air-to-Air project discovers, matures and integrates features collected from any battlespace sensor into the Joint Multiplatform Advanced Combat identification (JMAC) air target CID architecture, and transitions the mode to tactical aircraft.</p> <p>FY 2023 Plans: Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Air Target Identification (ATID) effort.</p> <p>FY 2024 Plans: N/A</p>	4.707	0.000	0.000
<p>Title: Compact Aided Target Recognition and Sustainable Environment (CASE)</p> <p>Description: Compact Aided Target Recognition and Sustainable Environment is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative Aided Target Recognition technology. Develop sustainable multi-phenomenology Aided Target Recognition based on low fidelity, compact, and inexpensive database technology.</p> <p>FY 2023 Plans: Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p>FY 2024 Plans: N/A</p>	0.500	0.000	0.000
<p>Title: Passive Radio Frequency Identification Environment (PRIDE)</p> <p>Description: Develop passive Radio Frequency target Identification capability for denied access environment utilizing passive Radio Frequency and Electronic Warfare information with potential non-traditional Intelligence, Surveillance and Reconnaissance capabilities.</p>	3.875	0.000	0.000

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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>FY 2023 Plans: Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p>FY 2024 Plans: N/A</p>				
<p>Title: Radio ID (RID)</p> <p>Description: Radio Identification will develop technologies to integrate radio based cooperative technologies with non-cooperative technologies into the cockpit. The benefits will be increased confidence target identification and situational awareness as well as reduced fratricides.</p> <p>FY 2023 Plans: Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p>FY 2024 Plans: N/A</p>		3.061	0.000	0.000
<p>Title: Studies</p> <p>Description: The studies effort serves to analyze all aspects of Air Target Identification and Ground Target Identification projects to mature combat identification (CID) technologies within the CID investment strategy. The studies effort covers low Technology Readiness Level (TRL 4) efforts which are funded through CID concept call. Areas include but are not limited to automatic target recognition, denied area access CID, CID sensor feature extraction, CID database use optimization, rapid database creation/employment for CID, synthetic data, CID focused training, off-board sensor feature employment, on-board sensor feature employment, United States Air Force CID architecture enhancements. Air Combat Command chartered this PE to make the above stated intent; in doing so it established a Senior Advisory Group as the authority overseeing this thrust.</p> <p>FY 2023 Plans: Continue to conduct CID related studies. Continue modeling, simulation and analysis of CID technologies and also new Concept Call technology development. Initiate machine learning and synthetic/real data operational use. Continue planning demonstrations in relevant operational environment. Continue development of a technical roadmap for CID Technologies to inform future studies.</p> <p>FY 2024 Plans: Continue to conduct CID related studies. Continue modeling, simulation and analysis of CID technologies and also new Concept Call technology development. Continue machine learning and synthetic/real data operational use. Continue planning</p>		1.371	1.250	1.200

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
demonstrations in relevant operational environment. Continue development of a technical roadmap for CID Technologies to inform future studies.				
FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 decreased compared to FY 2023 by \$0.050 million. Justification for this decrease is described in the plans above.				
Title: Kill-chain Weapon Integrated CID (KWIC) Description: Kill-chain Weapons Integrated Combat Identification will use air to ground sensors to provide better situational awareness and Combat Identification of target area FY 2023 Plans: Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort. FY 2024 Plans: N/A		1.366	0.000	0.000
Title: Air Target Identification Description: The Air Target Identification (ATID) project discovers, matures and integrates features collected from any battlespace sensor into the Joint Multiplatform Advanced Combat Identification (JMAC) air target data-fusion architecture, and transitions the mode to tactical aircraft. ATID efforts include: (1) Air-to-Air Hydra Vision (AAHV), developing methods to extract and exploit features from fielded sensors to provide data to JMAC; (2) F-16 Joint Multiplatform Advanced Combat Identification Open Mission System Rapid Development (FJORD), the effort to demonstrate Joint Multiplatform Advanced Combat Identification on the F-16; the effort includes feature extraction/incorporation from the F-16 electronic warfare suite to enhance the JMAC. (3) F-15 Joint Multiplatform Advanced Combat Identification (JMAC-15), investigating transition of JMAC into the F-15E/EX fleet. (4) Exploration of sensor feature extraction for use within the JMAC architecture. FY 2023 Plans: Continue implementing and demonstrating JMAC in an F-16 test aircraft. Continue planning for JMAC integration and demonstration on F-15. Continue test and insertion of electronic warfare features into the JMAC architecture for maturation over future years. Initiate and complete demonstration of feature extraction algorithms within the JMAC construct in concert with the Army Aviation and Missile Center and Missile Defense Agency through F-16 testbed flights. Continue developing advanced data extraction algorithms. Continue planning for JMAC and other advanced CID technique integration onto 5th Generation air dominance platforms begins under this project with focus on F-35 and F-22 platforms. Initiate planning for on-board/off-board		0.000	4.670	10.149

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>sensor employment for JMAC and non-JMAC instantiations of Combat Identification (CID) on assets within USAF planned kill-web to include both unmanned and space assets.</p> <p>FY 2024 Plans: Continue maturation of sensor feature extraction algorithms. Continue maturation and effectiveness testing of the Joint Multiplatform Advanced Combat Identification algorithms on both F-16 and F-15; algorithm optimization on 4th generation air dominance platforms through software and hardware laboratory testing. Continue feature extraction use and database incorporation of extracted features. Continue flight demonstration and data analysis of feature extraction algorithms. Initiate JMAC integration efforts on 5th generation air dominance platforms. Continue integration planning for JMAC and non-JMAC CID on unmanned and space assets.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024 increased compared to FY 2023 by \$5.479 million. Justification for this increase is due to an increased emphasis in air-to-air engagement feature extraction.</p>				
<p>Title: Ground Target Identification</p> <p>Description: Ground Target Identification (GTID) technologies consist of (1) Compact Aided target recognition (ATR) and Sustainable Environments (CASE), an approach that focuses on tailoring algorithms to use small, efficient databases that are relatively affordable to generate and maintain; (2) Passive Radio-frequency IDentification Environment (PRIDE), an effort to develop a bistatic synthetic aperture radar (SAR) ATR capability useful in a denied access environment; (3) Radio Identification (RID), an effort to develop methods (including machine learning and artificial intelligence algorithms) paired with advances in software defined radios to provide ground emitter ID to improve aircrew situational awareness; and (4) Kill-chain Weapon Integrated CID (KWIC), an effort that will use information from launched weapons through a back channel communication link to provide CID from within the hot battlespace. (5) Exploration of sensor feature extraction for use within the Joint Multiplatform Advanced Combat Identification (JMAC) architecture.</p> <p>FY 2023 Plans: Continue analysis of data collections and verification/validation of technique effectiveness based on data analysis. Initiate platform integration planning and demonstration planning. Continue investigation of machine learning algorithms to continue to provide CID ranges for ground targets and look at viability of implementing synthetic data and machine learning algorithms for ground target engagements. Continue verification/validation and analysis of data collected. Continue analysis of RID algorithm development from demonstration flight information. Initiate planning for off-board sensor employment for JMAC and non-JMAC instantiations of CID on assets within USAF planned kill-web to include both unmanned and space assets.</p> <p>FY 2024 Plans:</p>		0.000	5.654	7.216

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Initiate development efforts toward identification of enemy targets in an actively denied ground environment (camouflage, concealment, denial and decoy conditions). This effort will look at sensor modes and sensor fusion to provide technical solutions to this critical challenge. Continue PRIDE efforts; finish Phase 2 efforts with an offline demonstration in Phase 2 and will ramp up for Phase 3. Continue CASE efforts; complete algorithm and database use optimization as new feature use cases are developed. Initiate integration of Kill-chain Weapon Integrated CID into program of record with potential for use application to be applied to other weapon systems. Continue planning for on-board/off-board sensor employment for JMAC and non-JMAC instantiations of CID on assets within United States Air Force planned kill-web to include both unmanned and space assets. Initiate ground components of JMAC architecture activity.</p> <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY 2024 increased compared to FY 2023 by \$1.562 million. Increased is due to an increase in emphasis of integration of ground targets into the Joint Multi-platform Advanced Combat identification architecture.</p>				
Accomplishments/Planned Programs Subtotals		14.880	11.574	18.565
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
<p>Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Award multiple, competitive contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.</p>				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Passive Radar Identification Environment (PRIDE) - Air to Ground Prime	C/CPFF	Leidos : McLean, VA	-	1.715	Jul 2022	-		-		-		-	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE) - Air to Ground SME 1	C/CPFF	AFRL : Wright-Patterson AFB, OH	-	0.116	Jul 2022	-		-		-		-	0.000	0.116	-
Passive Radar Identification Environment (PRIDE) - Air to Ground SME 2	C/CPFF	Leidos : Beavercreek, OH	-	1.680	May 2022	-		-		-		-	0.000	1.680	-
Passive Radar Identification Environment (PRIDE) - Air to Ground SME 3	C/CPFF	GTRI : Atlanta, GA	-	0.179	Jul 2022	-		-		-		-	0.000	0.179	-
Studies - CID Digital Engineering Accelerator/ ePRIDE	C/CPFF	AFRL : Wright-Patterson AFB, OH	-	0.400	Jun 2022	-		-		-		-	0.000	0.400	-
Studies - WSU SAR ATR	C/CPFF	Wright State University : Fairborn, OH	-	0.100	Jun 2022	-		-		-		-	Continuing	Continuing	-
Studies - AudaCID	C/CPAF	Northrop Grumman : Baltimore, MD	-	0.200	Jun 2022	-		-		-		-	0.000	0.200	-
Concept Call - Multi-look SAR ATR	MIPR	Sandia Ntnl Laboratory : Albuquerque, NM	-	0.450	Aug 2022	-		-		-		-	Continuing	Continuing	-
Concept Call - Low Shot Learning for SAR ATR	MIPR	Sandia Ntnl Laboratory : Albuquerque, NM	-	0.200	Jun 2022	0.200		-		-		-	0.000	0.400	-
Radio Identification (RID)	MIPR	DMEA : Sacramento, CA	-	3.061	Jun 2022	-		-		-		-	0.000	3.061	-
HydraVision - Air-to-Air	C/CPFF	Raytheon : El Segundo, CA	-	1.080	May 2022	-		-		-		-	0.000	1.080	-

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Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603742F / <i>Combat Identification Technology</i>				642597 / <i>Noncooperative Identification Subsystems</i>								
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
HydraVision - Air-to-Air - SME	C/CPFF	AFRL : Wright-Patterson AFB, OH	-	0.162	May 2022	-		-		-		-	0.000	0.162	-	
HydraVision - PRECISE-R	C/CPFF	Raytheon : El Segundo, CA	-	0.263	May 2022	-		-		-		-	0.000	0.263	-	
HydraVision - PRECISE-N	C/CPFF	Northrop Grumman : Baltimore, MD	-	1.090	May 2022	-		-		-		-	0.000	1.090	-	
HydraVision - DOS	C/CPFF	Leidos : Beavercreek, OH	-	0.485	May 2022	-		-		-		-	0.000	0.485	-	
HydraVision - PRECISE-M	C/CPFF	Matrix Research : Beavercreek, OH	-	0.269	Jul 2022	-		-		-		-	0.000	0.269	-	
Kill Chain Weapons Integrated CID (KWIC) - Air to Ground Prime	C/CPAF	Raytheon : El Segundo, CA	-	1.165	May 2022	-		-		-		-	0.000	1.165	-	
Kill Chain Weapons Integrated CID (KWIC) - Air to Ground SME 1	C/CPFF	AFRL : Wright-Patterson AFB, OH	-	0.100	Jun 2022	-		-		-		-	0.000	0.100	-	
HydraVision DOS/ Compact AiTR Sustainable Environment (CASE)	C/CPFF	Leidos : Beavercreek, OH	-	0.594	Jul 2022	-		-		-		-	0.000	0.594	-	
Compact AiTR and Sustainable Environment (CASE)	C/CPFF	Leidos : Dayton, OH	-	0.500	Jul 2022	-		-		-		-	Continuing	Continuing	-	
Air Target Identification (ATID) - ID Algorithm / JMAC Features	TBD	Not specified. : TBD	-	-		2.512	Feb 2023	6.017	Feb 2024	-		-	6.017	Continuing	Continuing	-
Air Target Identification (ATID) - Air Platform (F16/ F15/F35/F22) JMAC Integration	TBD	Not specified. : TBD	-	-		2.087	Dec 2022	2.217	Dec 2023	-		-	2.217	Continuing	Continuing	-
Air Target Identification (ATID) - Study 1	TBD	Not specified. : TBD	-	-		0.200	Jan 2023	0.450	Jan 2024	-		-	0.450	Continuing	Continuing	-
Air Target Identification (ATID) - Study 2	TBD	Not specified. : TBD	-	-		0.271	Nov 2023	0.168	Nov 2024	-		-	0.168	Continuing	Continuing	-

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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Target Identification (ATID) - Study 3	TBD	Not specified. : TBD	-	-		-		0.350	Aug 2024	-		0.350	Continuing	Continuing	-
Ground Target Identification (GTID) - ID Algorithm / JMAC Features	TBD	Not specified. : TBD	-	-		2.700	Apr 2023	4.700	Apr 2024	-		4.700	Continuing	Continuing	-
Ground Target Identification (GTID) - PRIDE	TBD	Not specified. : TBD	-	-		1.200	Jun 2023	-		-		-	Continuing	Continuing	-
Ground Target Identification (GTID) - KWIC	TBD	Not specified. : TBD	-	-		-		0.943	Dec 2023	-		0.943	Continuing	Continuing	-
Ground Target Identification (GTID) - Study 1	TBD	Not specified. : TBD	-	-		0.283	Feb 2023	0.400	Feb 2024	-		0.400	Continuing	Continuing	-
Ground Target Identification (GTID) - Study 2	TBD	Not specified. : TBD	-	-		0.271	Nov 2023	0.168	Nov 2024	-		0.168	Continuing	Continuing	-
Ground Target Identification (GTID) - Study 3	TBD	Not specified. : TBD	-	-		-		0.300	Aug 2024	-		0.300	Continuing	Continuing	-
Subtotal			-	13.809		9.724		15.713		-		15.713	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ACC Modeling & Simulation Support	C/CPFF	ACC : Langley, AFB, VA	-	0.100	Jul 2022	-		-		-		-	0.000	0.100	-
ECID MS&A	C/CPFF	ACC : Langley, AFB, VA	-	0.600	Aug 2022	0.250		0.700		-		0.700	0.000	1.550	-
ATID/GTID MS&A	TBD	TBD : TBD	-	-		0.000		0.400		-		0.400	0.000	0.400	-
ATID/GTID JMAC	TBD	TBD : TBD	-	-		0.600		0.000		-		0.000	0.000	0.600	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603742F / Combat Identification Technology				642597 / Noncooperative Identification Subsystems								
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal			-	0.700		0.850		1.100		-		1.100	0.000	2.650	N/A	
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test and Evaluation	PO	704TSS : Holloman, NM	-	-		-		-		-		-	0.000	0.000	-	
Data Collection-AvMC	MIPR	AvMC : Huntsville, AL	-	-		-		-		-		-	0.000	0.000	-	
Data Collection-Eglin	PO	96th Test Wing : Eglin AFB, FL	-	0.210		-		-		-		-	0.000	0.210	-	
Data Collection-Yuma	MIPR	Yuma Proving Ground : Yuma, AZ	-	-		-		-		-		-	0.000	0.000	-	
Data Collection-NNSS	MIPR	NNSS : NNSS, NE	-	-		-		-		-		-	0.000	0.000	-	
Data Collection	MIPR	TBD : TBD	-	-		0.400		1.152		-		1.152	0.000	1.552	-	
Subtotal			-	0.210		0.400		1.152		-		1.152	0.000	1.762	N/A	
Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
AFRL PMA	Various	Various : Various, OH	-	0.161		0.600		0.500		-		0.500	0.000	1.261	0.000	
Management Services	C/CPFF	TBD : TBD	-	-		-		0.100		-		0.100	0.000	0.100	-	
Subtotal			-	0.161		0.600		0.600		-		0.600	0.000	1.361	N/A	
Project Cost Totals			-	14.880		11.574		18.565		-		18.565	Continuing	Continuing	N/A	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force							Date: March 2023			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>			Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Combat Identification Technology	
HydraVision FJORD Air to Air Phase 2 & 3 Features	[REDACTED]
HydraVision FJORD Air to Air Phase 2 Features	[REDACTED]
HydraVision FJORD Air to Air Phase 3 Features	[REDACTED]
HydraVision JMAC15	[REDACTED]
Passive RF ID (PRIDE)	[REDACTED]
Passive RF ID (PRIDE) - Lab Demo (Jun 2020)	[REDACTED]
Passive RF ID (PRIDE) - OPS Demo (Dec 2022)	[REDACTED]
Compact AiTR - Compact Feature AiTR	[REDACTED]
Radio ID (RID) Integrated CID w/Electronic Warfare	[REDACTED]
Radio ID n Lab Demo #2 (Jan 2021)	[REDACTED]
Radio ID - Flight Demo (Aug 2022)	[REDACTED]
Kill Chain Weapons Integration (KWIC)	[REDACTED]
Air Target Identification (ATID)	[REDACTED]
Ground Target Identification (GTID)	[REDACTED]
Studies	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Noncooperative Identification Subsystems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Combat Identification Technology</i>				
HydraVision FJORD Air to Air Phase 2 & 3 Features	1	2022	4	2024
HydraVision FJORD Air to Air Phase 2 Features	1	2022	2	2024
HydraVision FJORD Air to Air Phase 3 Features	4	2022	4	2024
HydraVision JMAC15	1	2022	4	2025
Passive RF ID (PRIDE)	1	2022	4	2024
Passive RF ID (PRIDE) - Lab Demo (Jun 2020)	3	2022	4	2023
Passive RF ID (PRIDE) - OPS Demo (Dec 2022)	1	2022	4	2024
Compact AiTR - Compact Feature AiTR	1	2022	4	2022
Radio ID (RID) Integrated CID w/Electronic Warfare	1	2022	4	2022
Radio ID n Lab Demo #2 (Jan 2021)	2	2022	4	2022
Radio ID - Flight Demo (Aug 2022)	3	2022	4	2024
Kill Chain Weapons Integration (KWIC)	1	2022	4	2025
Air Target Identification (ATID)	1	2023	4	2028
Ground Target Identification (GTID)	1	2023	4	2028
Studies	1	2022	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force										Date: March 2023		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
642599: <i>Cooperative Identification Techniques</i>	-	0.000	0.070	0.076	0.000	0.076	0.120	0.084	0.086	0.086	0.000	0.522
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 Air Force platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. The recent major effort funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet. The Department of Defense International Air Traffic Control Radar Beacon System (ATCRBS) Identification Friend or Foe (IFF) Mark XIIA/B System Program Office (AIMSPO) has system level interoperability testing and certification responsibilities for the present Mark XIIB system, development and integration of new Identification Friend or Foe (IFF) system capabilities, and development/integration of civil Mode S capabilities into Mark XIIB Identification Friend or Foe equipment. The AIMSPO ensures Identification Friend or Foe equipment/platform functionality in accordance with established standards and ensures total system interoperability to meet Department of Defense/Service mission areas (e.g. Offensive Counter Air, Defensive Counter Air, and Integrated Air and Missile Defense). This project transitioned to PE 0207420F at the end of FY 2021; all FY 2022 and beyond funding for the maturation and fielding of the Mark IIB system (Mode 5 Level 2B) moved to the above PE. This BPAC (642599) is preserved to initiate work on a follow-on cooperative system (Mode 6), and as such will remain in PE 0603742F. Initial studies related to Mode 6 will begin in FY 2023

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

	FY 2022	FY 2023	FY 2024
Title: Cooperative Follow-on System	0.000	0.070	0.076
Description: Perform studies to identify potential paths forward for a new Identification Friend or Foe (IFF) system. Evaluate weakness in the current Mode 5 Identification Friend or Foe (IFF) system to inform required research areas. Establish transition path for current production/support to next generation cooperative system or systems. Continue evaluation of technologies necessary to employ operational useful next generation cooperative identification systems in conjunction with current system.			
FY 2023 Plans: Initiate studies to evaluate weakness in the Mode 5 Identification Friend or Foe system, and to identify potential paths forward for the next generation cooperative Identification Friend or Foe system.			
FY 2024 Plans: Continue studies for identifying the technologies necessary for next generation cooperative IFF. Initiate transition path planning for technology incorporation of USAF platforms.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
N/A			
Accomplishments/Planned Programs Subtotals	0.000	0.070	0.076

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

N/A

Remarks

D. Acquisition Strategy

Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Award multiple, competitive contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<i>Cooperative Identification Techniques</i>	
Cooperative Follow On System	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cooperative Identification Techniques</i>				
Cooperative Follow On System	1	2023	4	2028

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force										Date: March 2023		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 643420 / <i>Combat ID Database Development</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
643420: <i>Combat ID Database Development</i>	-	2.656	2.074	2.657	0.000	2.657	2.718	2.785	2.842	2.835	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Database Initiative (DBI) is a project designed to remove the "hard-coded" static identification (ID) parameters (typically updated every 4-5 years) from the host platform's sensor(s) and replace them with parameterized values that are more easily and rapidly updated when new intelligence inputs come available (this allows maximum flexibility to tailor each aircraft's Combat Identification (CID) database(s) based on assigned theater of operation, threat country of interest, and assigned mission tasks).

This project primarily consists of four objectives: A.) determining a sensor's capability to capture target features for CID, B) designing and developing a database to contain the CID features identified in Objective A, C) developing techniques to generate the requisite features, and D) provide CID features developed from measured or modeled data.

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

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

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

	FY 2022	FY 2023	FY 2024
Title: Database Development	2.656	2.074	2.657
Description: Develop techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values that are dynamic.			
FY 2023 Plans: Continue collecting data to populate the databases for developmental test/debug. Continue developing techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values for Joint Multi-sensor Advanced Combat Identification (JMAC) architecture. Add new features into the JMAC architecture.			
FY 2024 Plans: Continue collecting data to populate the databases for developmental test/debug. Continue developing techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values for Joint			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 643420 / <i>Combat ID Database Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Multi-sensor Advanced Combat Identification (JMAC) architecture. Add additional supported sensor modalities into the JMAC architecture.			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY 2024 increased compared to FY 2023 by \$0.577 million. Increase is described in the above plans.			
Accomplishments/Planned Programs Subtotals	2.656	2.074	2.657

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

Remarks

D. Acquisition Strategy
 Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Implement end product investment in government organizations that will maintain database infrastructures and utilize information to inform combat identification (CID) across all USAF platforms. Use of competitive contract awards and existing contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 643420 / <i>Combat ID Database Development</i>

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<i>Combat ID Database Development</i>	
Combat ID Database Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 643420 / <i>Combat ID Database Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Combat ID Database Development</i>				
Combat ID Database Development	1	2022	4	2028