

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	1.839	2.066	2.098	0.000	2.098	2.142	2.181	43.495	17.734	Continuing	Continuing
653891: <i>Adv Infrared Counter Measures(Aircm)</i>	-	1.839	2.066	2.098	0.000	2.098	2.142	2.181	43.495	17.734	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Advanced Infrared Countermeasure (AIRCМ) project contains related aircraft self-protection efforts aimed at increasing aircraft survivability against the increasing threat of sophisticated surface-to-air and air-to-air missiles. These missiles may employ sophisticated next-generation Electro-Optics (EO), Infrared (IR), Radio Frequency (RF), dual-mode (i.e. IR and RF), or multi-mode seekers. AIRCM will provide advanced expendable countermeasures and/or techniques that will be functionally compatible with existing dispenser systems and employed across multiple USAF weapons systems. This also explicitly includes any and all flare, chaff, decoy, and associated components development and testing that may be demanded or needed in current operations supporting the war on terrorism regardless of aircraft platform. Similar activities that are supplementary to this effort may be accomplished ad hoc using platform specific funding or through other activities such as joint services or NATO test groups.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Advanced Infrared Countermeasure weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	1.909	2.066	2.102	0.000	2.102
Current President's Budget	1.839	2.066	2.098	0.000	2.098
Total Adjustments	-0.070	0.000	-0.004	0.000	-0.004
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.070	0.000			
• Other Adjustments	0.000	0.000	-0.004	0.000	-0.004

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation/Budget Activity**  
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
PE 0604270F / *Electronic Warfare Development*

**Change Summary Explanation**

No Significant Changes

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Air Force										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 3600 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>				<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
653891: <i>Adv Infrared Counter Measures(Aircm)</i>	-	1.839	2.066	2.098	0.000	2.098	2.142	2.181	43.495	17.734	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Advanced Infrared Countermeasure (AIRCМ) project contains related aircraft self-protection efforts aimed at increasing aircraft survivability against the increasing threat of sophisticated surface-to-air and air-to-air missiles. These missiles may employ sophisticated next-generation Electro-Optics (EO), Infrared (IR), Radio Frequency (RF), dual-mode (i.e. IR and RF), or multi-mode seekers. AIRCM will provide advanced expendable countermeasures and/or techniques that will be functionally compatible with existing dispenser systems and employed across multiple USAF weapons systems. This also explicitly includes any and all flare, chaff, decoy, and associated components development and testing that may be demanded or needed in current operations supporting the war on terrorism regardless of aircraft platform. Similar activities that are supplementary to this effort may be accomplished ad hoc using platform specific funding or through other activities such as joint services or NATO test groups.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Advanced Infrared Countermeasure weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> Countermeasure Testing	1.839	2.066	2.098	-	2.098
<b>Description:</b> Testing and qualification of EO, IR, and RF countermeasures on aircraft					
<b>FY 2020 Plans:</b> Activities include threat analysis, development, modeling & simulation, testing and qualification of expendable countermeasure cocktails on various aircraft.					
<b>FY 2021 Base Plans:</b> Activities include development, testing and qualification of expendable countermeasures or cocktails on various aircraft.					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding increased due to inflation.					
<b>Accomplishments/Planned Programs Subtotals</b>	1.839	2.066	2.098	-	2.098

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>	<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>			<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• PAAF 01 352010: <i>Cartridges</i>	188.227	193.091	123.365	40.434	163.799	161.666	145.812	109.608	122.330	Continuing	Continuing
• PAAF 01 356010: <i>Flares</i>	109.402	129.388	40.088	21.171	61.259	91.329	94.254	67.301	66.715	Continuing	Continuing

**Remarks**

Qualified flares, if not in AF inventory, will be procured under program 0208030F War Reserve Munitions, Flares.

**D. Acquisition Strategy**

Contracts are awarded through the Department of Defense Ordnance Technology Consortium (DOTC), or other OTAs, such as Cornerstone Industrial Base Analysis & Sustainment (IBAS), which facilitates collaborative Government, Industry, and Academic ordnance technology development and prototyping initiatives. They serve as a single point contracting agent for development/technology demonstrations needed to advance and expand our military technological superiority.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>	<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>
--	---	--

<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Pulse Kinematic Development	C/CPFF	DOTC : ARDEC, PA	-	-		0.857	Jun 2020	-		-		-	Continuing	Continuing	-
IR/UV	C/CPAF	DOTC : ARDEC, PA	-	-		0.209	Jun 2020	1.098	Jun 2021	-		1.098	Continuing	Continuing	-
<b>Subtotal</b>			-	-		1.066		1.098		-		1.098	Continuing	Continuing	N/A

**Remarks**  
Development of Advanced Expendable Countermeasures to defeat currently fielded threats from which aircraft are not sufficiently protected.

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Support	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Aircraft/Unit Support	MIPR	AATC : Tucson, AZ	-	0.260	Jun 2019	-		-		-		-	Continuing	Continuing	-
Mission Planning	MIPR	MTSI : Las Vegas, NV	-	0.260	Jun 2019	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	0.520		-		-		-		-	Continuing	Continuing	N/A

**Remarks**  
AATC (Air National Guard Air Force Reserve Test Center) supports ACC/CAF in coordinating and managing aircraft use to conduct advanced expendable countermeasure testing (this does not support other AMC or AFSOC)  
  
Mission planning: Provides for programming of mission data required for each airframe and each expendable countermeasure or flare cocktail; this does not support AMC or AFSOC

<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>	<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>
--	---	--

<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Modeling and Simulation	MIPR	Air Force Research Laboratory : WPAFB, OH	-	0.245	Jun 2019	1.000	Jun 2020	1.000	Jun 2021	-		1.000	Continuing	Continuing	-
Range Test	MIPR	96th Test Wing : Eglin AFB, FL	-	1.016	Jun 2019	-		-		-		-	Continuing	Continuing	-
Test Support	MIPR	Various : NV	-	0.038	Jun 2019	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	1.299		1.000		1.000		-		1.000	Continuing	Continuing	N/A

**Remarks**

Modeling and simulation

- This entails performance of modeling and simulation (to include threat hardware in-the-loop) which helps to predict advanced expendable countermeasure effectiveness and develop and define Air Force requirements
- Performing activity varies; conducted by AFRL and Georgia Tech Research Center

Range Test

- This is the cost to use the range for testing (Radiometric, Captive Seeker, Flight, etc.)
- Performing Activity & Location varies; 96th Test Wing, Eglin AFB, FL, White Sands Missile Range, NM, Gila Bend, AZ

Test Support

- This includes but is not limited to Seeker Test Vans (multiple vans required for Captive Seeker), duo chrome camera, and other test equipment
- Activities/support during testing (i.e. communications/electric/security)
- Performing Activity & Location should remain "Various: TBD", multiple activities are included

<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Program Office/ Government Support	Various	Air National Guard Air Force Reserve Command Test Center : Tucson, AZ	-	0.020	May 2019	-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	0.020		-		-		-		-	Continuing	Continuing	N/A

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>	<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>
--	---	--

<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			

**Remarks**  
AATC provides all the management, preparation and coordination of advanced expendable countermeasure testing efforts for ACC/CAF (this does not include support for AMC or AFSOC)

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	1.839	2.066	2.098	-	2.098	Continuing	Continuing	N/A

**Remarks**



**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604270F / <i>Electronic Warfare Development</i>	<b>Project (Number/Name)</b> 653891 / <i>Adv Infrared Counter Measures(Aircm)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Advance IR Aircm</i></b>				
Modeling and Simulation - Threat Exploitation	1	2019	4	2025
Pulse Kinematic Flare Development	1	2019	3	2023
Advanced IR Flare Development - Threat 1	1	2021	4	2024
Advanced IR Flare Development - Threat 2	1	2025	4	2025