Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

R-1 Program Element (Number/Name)

2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced

PE 0604319A I Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)

Component Development & Prototypes (ACD&P)

COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	0.000	11.303	51.030	-	51.030	146.731	132.361	156.732	21.528	0.000	519.685
DU3: IFPC2	-	0.000	11.303	51.030	-	51.030	146.731	132.361	156.732	21.528	0.000	519.685

Program MDAP/MAIS Code: Pre

#### Note

Army

Funding in years prior to FY17 on BA4, PE 0604319/DU3 was for IFPC Inc 2-I Block 1 system development. Funding for FY17 and out for IFPC Inc 2-I Block 1 system development activities has been realigned from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7 as the program transitions to EMD. Funding for FY18 and out is programmed for Expanded Mission Area Missile (EMAM) interceptor.

### A. Mission Description and Budget Item Justification

EMAM program supports the overall Integrated Air and Missile Defense (IAMD) architecture and expands the Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) Block 1 system's target set by enabling an initial counter-Rocket, Artillery, and Mortar (RAM) capability while providing a second kinetic interceptor capability against Cruise Missiles (CM) and Unmanned Aircraft System (UAS).

The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that is designed to acquire, track, engage, and defeat the UAS, CM, and RAM threats. Initial IFPC 2-I system development was funded on this line through FY16. The system provides 360-degree protection and simultaneously engages threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The IFPC Inc 2-I Block 1 system consists of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM defeat mission. The IFPC Inc 2-I system is compatible with the Army Integrated Air and Missile Defense (IAMD) Command and Control (C2) architecture. The IFPC Inc 2-I system is transportable by Army common mobile platforms.

FY2019 base dollars in the amount of \$51.030 million funds integration and testing of a EMAM interceptor into the IFPC Inc 2-I Block 1 Multi-Mission Launcher.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)

R-1 Program Element (Number/Name)

PE 0604319A I Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	11.303	52.604	-	52.604
Current President's Budget	0.000	11.303	51.030	-	51.030
Total Adjustments	0.000	0.000	-1.574	-	-1.574
<ul> <li>Congressional General Reductions</li> </ul>	-	-			
<ul> <li>Congressional Directed Reductions</li> </ul>	-	-			
<ul> <li>Congressional Rescissions</li> </ul>	-	-			
<ul> <li>Congressional Adds</li> </ul>	-	-			
<ul> <li>Congressional Directed Transfers</li> </ul>	-	-			
Reprogrammings	-	-			
SBIR/STTR Transfer	-	-			
<ul> <li>Adjustments to Budget Year</li> </ul>	-	-	-1.574	-	-1.574

## **Change Summary Explanation**

Program Office core employee labor costs moved from RDTE to OMA as part of an OSD auditability directive and revised economic assumptions.

Exhibit R-2A, RDT&E Project Ju	ustification	: PB 2019 A	Army							Date: Febr	uary 2018	
Appropriation/Budget Activity 2040 / 4					PE 06043	19A I Indire	t (Number/ ct Fire Prote 2-Intercept (	ection	Project (N DU3 / IFPO	umber/Nan C2	ne)	
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DU3: IFPC2	-	0.000	11.303	51.030	-	51.030	146.731	132.361	156.732	21.528	0.000	519.685
Quantity of RDT&E Articles	-	-	-	-	_	-	-	-	-	-		

#### Note

Army

Funding in years prior to FY17 on BA4, PE 0604319/DU3 was for IFPC Inc 2-I Block 1 system development. Funding for FY17 and out for IFPC Inc 2-I Block 1 system development activities has been realigned from BA4, PE 0604319/DU3 to BA5, PE 0605052/EY7 as the program transitions to EMD. Funding for FY18 and out is programmed for Expanded Mission Area Missile (EMAM) interceptor.

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

The EMAM program supports the overall Integrated Air and Missile Defense (IAMD) architecture and expands the Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) Block 1 system's target set by enabling an initial counter-Rocket, Artillery, and Mortar (RAM) capability while providing a second kinetic interceptor capability against Cruise Missiles (CM) and Unmanned Aircraft System (UAS).

The Indirect Fire Protection Capability Increment 2 - Intercept (IFPC Inc 2-I) is a ground-based weapon system that is designed to acquire, track, engage, and defeat the UAS, CM, and RAM threats. Initial IFPC 2-I system development was funded on this line through FY16. The system provides 360-degree protection and simultaneously engages threats arriving from different azimuths. A block acquisition approach will be used to provide this capability. The IFPC Inc 2-I Block 1 system consists of an existing interceptor and sensor and development of fire control software and a Multi-Mission Launcher (MML) to support the UAS and CM defeat mission. The IFPC Inc 2-I system is compatible with the Army Integrated Air and Missile Defense (IAMD) Command and Control (C2) architecture. The IFPC Inc 2-I system is transportable by Army common mobile platforms.

FY2019 base dollars in the amount of \$51.030 million funds integration and testing of a EMAM interceptor into the IFPC Inc 2-I Block 1 Multi-Mission Launcher.

B. Accomplishments/Planned Programs (\$ in Millions)			FY 2019	FY 2019	FY 2019
	FY 2017	FY 2018	Base	oco	Total
Title: System Engineering & Program Management (SEPM)	-	6.503	14.459	-	14.459
Description: Funding is provided for the following efforts:					
FY 2018 Plans:					
- Initiate RDT&E efforts associated with IFPC Increment 2-I Block 1 second interceptor					
- Perform system engineering, integration, logistics engineering, system test and evaluation management,					
technical configuration control, cost and business management activities					
- Conduct system technical reviews and program management reviews					
- Perform technical assessments, concept studies, cost reduction, risk reduction, and required documentation					

PE 0604319A: Indirect Fire Protection Capability Incr...

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R-1 Line #80

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: Febr	uary 2018	
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number PE 0604319A I Indirect Fire Prote Capability Increment 2-Intercept	ection	Project (N DU3 / IFP	umber/Nan C2	ne)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
- Conduct program decision preparation, documentation, and execu	ution activities					
FY 2019 Base Plans:  Continue RDT&E efforts associated with Second interceptor  Perform system engineering, integration, logistics engineering, systechnical configuration control, cost and business management active.  Conduct system technical reviews and program management review Requirement Review (SRR) and Systems Functional Review (SFR).  Develop Tailored Acquisition Strategy.  Verify Technology Readiness.  Down Selection process from 3 Vendors to 1 Vendor for Material Strategy.  Conduct Preliminary Design Review (PDR).  Perform technical assessments, concept studies, cost reduction, refor Milestone B Decision.  Conduct program decision preparation, Milestone B documentation execution activities.	vities ews to include Design Review 2, Systems of 3 Vendors  Solution. isk reduction, and required documentation					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding supports events planned in their respective years.						
Title: Engineering and Technical Support		-	0.200	1.252	-	1.252
<b>Description:</b> Funding is provided for the following efforts:						
FY 2018 Plans:  - Initiate IFPC Increment 2-I Block 1 second interceptor engineering hardware, software, and integration requirements  - Participate in system technical and program management reviews  - Perform technical assessments, concept studies, cost reduction, r	3.					
FY 2019 Base Plans:  - Continue Second Interceptor engineering and technical support for integration requirements  - Develop Tailored Acquisition Strategy  - Verify Technology Readiness  - Down Selection process from 3 Vendors to 1 Vendor for Material Strategy						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: Febr	uary 2018	
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number PE 0604319A I Indirect Fire Program Capability Increment 2-Intercept	tection	Project (N DU3 / IFP	umber/Nan 02	ne)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<ul> <li>Conduct Preliminary Design Review (PDR)</li> <li>Perform technical assessments, concept studies, cost reduction, risk r for Milestone B Decision</li> <li>Conduct program decision preparation, Milestone B documentation, Sexecution activities Participate in system technical and program manages</li> <li>Preparation of Milestone B Decision Briefings and Documentation.</li> </ul>	Source Selection documentation and					
FY 2018 to FY 2019 Increase/Decrease Statement: Funding supports events planned in their respective years.						
Title: System/Subsystem Development and Integration		-	4.191	33.606	_	33.606
<b>Description:</b> Funding is provided for the following efforts:						
<ul> <li>FY 2018 Plans:</li> <li>Initiate IFPC Increment 2-I Block 1 second interceptor hardware and s</li> <li>Participate in system technical and program management reviews</li> <li>Perform technical assessments, concept studies, cost reduction, required</li> <li>component risk reduction</li> </ul>	-					
FY 2019 Base Plans:  Continue Second Interceptor hardware and software integration activity.  Participate in system technical and program management reviews.  Perform technical assessments, concept studies, cost reduction, requies component risk reduction.  Develop Tailored Acquisition Strategy.  Verify Technology Readiness.  Down Selection process from 3 Vendors to 1 Vendor for Material Solution.  Conduct Preliminary Design Review (PDR).  Conduct program decision preparation, Milestone B documentation, Strategy.	ired documentation, integration and tion.					
FY 2018 to FY 2019 Increase/Decrease Statement:						
Funding supports events planned in their respective years.			0.400	4 740		4 74
Title: System/Subsystem Developmental Testing		-	0.409	1.713	-	1.71

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PE 0604319A: Indirect Fire Protection Capability Incr... Page 5 of 11 R-1 Line #80 Army

Exhibit R-2A, RDT&E Project Justi	fication: PB	2019 Army							Date: Feb	ruary 2018	
Appropriation/Budget Activity 2040 / 4				PE 06	rogram Eler 604319A / Ind bility Increme	lirect Fire Pr	otection	Project (N DU3 / IFP	lumber/Na C2	me)	
B. Accomplishments/Planned Prog	grams (\$ in	<u>Millions)</u>					FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: - Initiate Developmental testing activ - Initiate Modeling and Simulation tes - Initiate Cyber Security test activities	st activities										
FY 2019 Base Plans:  - Continue Developmental testing ac  - Continue Modeling and Simulation  - Continue Cyber Security test activit  - Participate in system technical and  - Perform technical assessments, component risk reduction  - Develop Tailored Acquisition Strate  - Verify Technology Readiness  - Down Selection process from 3 Ve  - Conduct Preliminary Design Revie  - Conduct program decision prepara	test activities ties d program material procept studie egy endors to 1 Vew (PDR) ation, Milestonease Statem	anagement rese, cost reductions  Sendor for Maine B documents	ction, require	n.							
Funding supports events planned in	their respect		Accomplish	mente/Pla	nned Progra	ıme Suhtota	ıle -	11.303	51.030	) -	51.030
C. Other Program Funding Summa	arv (\$ in Mill		Accomplisi	intents/i la	illieu i rogia	iiis Subtote	113	11.505	31.000	<u> </u>	31.030
		<b>-</b>	FY 2019	FY 2019	FY 2019					<b>Cost To</b>	
<u>Line Item</u>	FY 2017	FY 2018	<u>Base</u>	000	<u>Total</u>	FY 2020	FY 2021	FY 2022		<b>Complete</b>	
• C53101: MSE Missile	809.201	1,106.040	871.276		1,131.276	512.775	734.152	727.032	813.280		6,627.186
<ul> <li>0205456A: Lower Tier Air and Missile Defense (AMD) System</li> </ul>	61.449	78.926	79.283	-	79.283	107.785	111.124	121.376	117.336	Continuing	Continuin
• 0604114A: Lower Tier Missile     Defense (LTAMD) Capability	33.780	76.728	120.374	-	120.374	125.772	376.738	332.322	241.461	0.000	1,307.17
C50016: Lower Tier Air and Missile Defense (AMD)	126.470	140.826	111.395	_	111.395	130.051	105.044	107.288	106.178	0.000	827.252

PE 0604319A: Indirect Fire Protection Capability Incr... Army

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R-1 Line #80

Appropriation/Budget Activity 2040 / 4  R-1 Program Element (Number/Name) PE 0604319A / Indirect Fire Protection Capability Increment 2-Intercept (IFPC2)  Project (Number/Name) DU3 / IFPC2	018
C. Other Program Funding Summary (\$ in Millions)  FY 2019 FY 2019 Cos	То

C. Other Program Funding Summar	ry (\$ in Milli	ons)									
		-	FY 2019	FY 2019	FY 2019					<b>Cost To</b>	
<u>Line Item</u>	<b>FY 2017</b>	<b>FY 2018</b>	Base	OCO	<u>Total</u>	FY 2020	FY 2021	FY 2022	FY 2023	Complete	<b>Total Cost</b>
<ul> <li>0605052A: Indirect Fire</li> </ul>	80.781	175.069	157.710	-	157.710	77.599	32.517	-	-	0.000	523.676
Protection Capability Increment 2											
• C62002: <i>IFPC INC 2-</i>	-	-	0.000	-	0.000	175.576	303.422	273.802	388.377	0.000	1,141.177
I BLOCK 1 SYSTEM											
<ul> <li>C61001: INDIRECT FIRE</li> </ul>	-	57.742	145.636	-	145.636	319.042	402.938	300.466	424.655	Continuing	Continuing
PROTECTION CAPABILITY INC 2-I											
• E10: Sentinel	15.368	32.968	39.338	_	39.338	91.534	96.427	80.394	43.874	0.000	399.903
<ul> <li>S40: Army Integrated</li> </ul>	273.240	336.420	277.607	-	277.607	200.275	130.860	63.741	33.196	0.000	1,315.339
Air and Missile Defense											
• BZ5075: IAMD Battle	-	-	0.000	-	0.000	72.307	323.680	428.572	497.974	Continuing	Continuing
Command System											
• 0604741A: Air Defense Command,	200.205	28.726	95.172	119.300	214.472	15.577	9.310	2.915	29.489	0.000	500.694
Control and Intelligence - Eng Dev											
AD5070: AIR & MSL Defense	126.539	35.735	33.837	_	33.837	24.983	49.385	68.021	63.273	0.000	401.773
Planning & Control Sys											
• C62005: IFPC INC	-	_	0.000	_	0.000	-	-	12.192	36.278	0.000	48.470
2-I Block 1 Missile 2											

#### Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.

## D. Acquisition Strategy

The EMAM Product Office will seek a program decision in 1QFY18. The EMAM Product Office plans to award funds for the integration and testing of the second interceptor utilizing a two-phased approach with a demonstration of interceptors from multiple vendors during phase one with a down-select to a single vendor for phase two. Phase two will consist of activities to finalize design and integration of the interceptor and conduct developmental testing.

### E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army

Appropriation/Budget Activity

2040 / 4

R-1 Program Element (Number/Name)
PE 0604319A I Indirect Fire Protection

Capability Increment 2-Intercept (IFPC2)

Project (Number/Name)

DU3 I IFPC2

Management Servic	es (\$ in M	illions)		FY 2	2017	FY	2018	FY 2 Ba	2019 ise	FY 2	2019 CO	FY 2019 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	Total Cost	Target Value of Contract
Program Management Admin (IFPC Base System)	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	28.644	-		-		-		-		-	Continuing	Continuing	Continuing
Program Management Admin	Various	Multiple Activities : Redstone Arsenal, Alabama	-	-		4.903	Oct 2017	5.753	Oct 2018	-		5.753	Continuing	Continuing	Continuing
		Subtotal	28.644	-		4.903		5.753		-		5.753	Continuing	Continuing	N/A

Product Developmen	nt (\$ in Mi	illions)		FY 2	2017	FY 2	2018		2019 Ise	FY 2	2019 CO	FY 2019 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	Total Cost	Target Value of Contract
System Engineering & Integration (IFPC Base System)	MIPR	Cruise Missile Defense Systems Project Office : Huntsville, AL	54.463	-		-		-		-		-	Continuing	Continuing	Continuing
System Engineering & Integration	Various	Multiple Activities : Huntsville, AL	-	-		1.600	Oct 2017	3.871	Oct 2018	-		3.871	Continuing	Continuing	Continuin
Engineering and Technical Support (IFPC Base System)	MIPR	Multiple Activities : Multiple Locations	140.824	-		-		-		-		-	Continuing	Continuing	Continuinç
Engineering and Technical Support	Various	Multiple Activities : Multiple Locations	-	-		0.200	Oct 2017	1.252	Oct 2018	-		1.252	Continuing	Continuing	Continuin
System/Subsystem Development and Integration (IFPC Base System)	MIPR	Multiple Activities : Multiple Locations	120.035	-		-		-		-		-	Continuing	Continuing	Continuing
System/Subsystem Development and Integration	C/CPFF	TBD : Multiple Locations	-	-		4.191	Jan 2018	33.606	Feb 2019	-		33.606	Continuing	Continuing	Continuinç
		Subtotal	315.322	-		5.991		38.729		-		38.729	Continuing	Continuing	N/A

PE 0604319A: Indirect Fire Protection Capability Incr... Army

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Exhibit R-3, RDT&E	Project C	ost Analysis: PB 2	019 Arm	y								Date:	February	2018	
Appropriation/Budg 2040 / 4	et Activity	1				PE 060	4319A <i>I Ir</i>	ndirect Fi	umber/Na re Protect ercept (IF	ion	Project DU3 / IF	(Number	r/Name)		
Support (\$ in Million	ıs)			FY 2	2017	FY 2	2018		2019 ise		2019 CO	FY 2019 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	Total Cost	Target Value of Contract
Log Support	Various	Multiple Activities : Redstone Arsenal, Alabama	-	-		-		1.934	Oct 2018	-		1.934	0.000	1.934	-
		Subtotal	-	-		-		1.934		-		1.934	0.000	1.934	N/A
Test and Evaluation	(\$ in Milli	ons)		FY 2	2017	FY 2	2018		2019 ise		2019 CO	FY 2019 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	Total Cost	Target Value of Contract
System/Subsystem Developmental Testing	MIPR	Multiple Activities : Multiple Locations	-	-		0.409	Oct 2017	1.713	Oct 2018	-		1.713	Continuing	Continuing	Continuing
Developmental Testing Support	Various	Multiple Activities : Redstone Arsenal, Alabama	-	-		-		2.901	Oct 2018	-		2.901	Continuing	Continuing	Continuing
		Subtotal	-	-		0.409		4.614		-		4.614	Continuing	Continuing	N/A
			Prior Years	FY 2	2017	FY 2	2018		2019 ise		2019 CO	FY 2019 Total	Cost To	Total Cost	Target Value of Contract
		Project Cost Totals	343.966	-		11.303		51.030		-		51.030	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

2040 / 4

R-1 Program Element (Number/Name)
PE 0604319A I Indirect Fire Protection

DU3 / IFPC2

Project (Number/Name)

Capability Increment 2-Intercept (IFPC2)

FY 2017 FY 2018 FY 2019 FY 2020 FY 2021 FY 2022 FY 2023 **Event Name** 2 3 4 1 2 3 4 1 2 3 4 3 4 2 3 4 1 2 3 4 2 Block 1 Pre-Milestone (MS) B Activities Blk 1 Pre-MS B Activities EMAM Interceptor Pre-MS B Activities Pre-MS B Activities EMAM Interceptor MS B EMAM Interceptor Engineering and Manufacturing Developmen Engineering and Manufacturing Development EMAM Interceptor MS C EMAM Interceptor Low Rate Initial Production (LRIP) EMAM Interceptor Initial Operational Capability (IOC)

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 4	, ,	Project (Ni DU3 / IFPC	umber/Name) 22

# Schedule Details

	St	Start		End	
Events	Quarter	Year	Quarter	Year	
Block 1 Pre-Milestone (MS) B Activities	1	2014	1	2017	
Engineering Demonstration (ED)	2	2016	3	2016	
EMAM Interceptor Pre-MS B Activities	1	2018	4	2019	
EMAM Interceptor MS B	1	2020	1	2020	
EMAM Interceptor Engineering and Manufacturing Development	1	2020	1	2023	
EMAM Interceptor MS C	1	2023	1	2023	
EMAM Interceptor Low Rate Initial Production (LRIP)	1	2023	4	2023	
EMAM Interceptor Initial Operational Capability (IOC)	4	2023	4	2023	